



ENVIRONMENTAL PROTECTION AGENCY

40 CFR Part 241

[EPA–HQ–RCRA–2013–0110; FRL-9929-56-OLEM]

RIN- 2050-AG74

Additions to List of Categorical Non-Waste Fuels

AGENCY: Environmental Protection Agency (EPA).

ACTION: Final rule.

SUMMARY: The Environmental Protection Agency (EPA or the Agency) is issuing amendments to the Non-Hazardous Secondary Materials rule, initially promulgated on March 21, 2011, and amended on February 7, 2013, under the Resource Conservation and Recovery Act. The Non-Hazardous Secondary Materials rule generally established standards and procedures for identifying whether non-hazardous secondary materials are solid wastes when used as fuels or ingredients in combustion units. In the February 2013 amendments, the EPA listed particular non-hazardous secondary materials as “categorical non-waste fuels” provided certain conditions are met. Persons burning these non-hazardous secondary materials do not need to evaluate them under the general case-by-case standards and procedures that would otherwise apply to non-hazardous secondary materials used in combustion units. This action adds three materials to the list of categorical non-waste fuels: construction and demolition wood processed from construction and demolition debris according to best management practices; paper recycling residuals generated from the recycling of recovered paper, paperboard and corrugated containers and combusted by paper recycling mills whose boilers are designed to burn solid fuel; and creosote treated railroad ties that are processed and then combusted in the following types of

units: units designed to burn both biomass and fuel oil as part of normal operations and not solely as part of start-up or shut-down operations, and units at major source pulp and paper mills or power producers subject to 40 CFR part 63, subpart DDDDD that combust CTRT and had been designed to burn biomass and fuel oil, but are modified (e.g. oil delivery mechanisms are removed) in order to use natural gas instead of fuel oil, as part of normal operations and not solely as part of start-up or shut-down operations.

DATES: This rule is effective [insert date 30 days after date of publication in the *Federal Register*].

ADDRESSES: The EPA has established a docket for this action under Docket ID No. EPA–HQ–RCRA–2013–0110. All documents in the docket are listed on the <http://www.regulations.gov> web site. Although listed in the index, some information is not publicly available, e.g., CBI or other information whose disclosure is restricted by statute. Certain other material, such as copyrighted material, is not placed on the Internet and will be publicly available only in hard copy form. Publicly available docket materials are available either electronically at <http://www.regulations.gov> or in hard copy at the RCRA Docket, EPA/DC, EPA West, Room 3334, 1301 Constitution Ave., NW, Washington, DC. The Public Reading Room is open from 8:30 a.m. to 4:30 p.m. Monday through Friday, excluding legal holidays. The telephone number for the Public Reading Room is (202) 566-1744, and the telephone number for the RCRA Docket is (202) 566-0270.

FOR FURTHER INFORMATION CONTACT: George Faison, Office of Resource Conservation and Recovery, Materials Recovery and Waste Management Division, MC 5304P, Environmental Protection Agency, 1200 Pennsylvania Ave., NW., Washington, DC 20460; telephone number: (703) 305–7652; email: faison.george@epa.gov.

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I. General Information

A. Does this Action Apply to Me?

Categories and entities potentially affected by this action, either directly or indirectly, include, but may not be limited to the following:

Generators and Potential Users^a of the New Materials to be Added to the List of Categorical Non-Waste Fuels

Primary Industry Category or Sub Category	NAICS^b
Utilities	221
Construction of Buildings	236
Site Preparation Contractors	238910
Manufacturing	31, 32, 33
Wood Product Manufacturing	321
Sawmills	321113
Wood Preservation (includes crosstie creosote treating)	321114
Pulp, Paper, and Paper Products	322

Generators and Potential Users^a of the New Materials to be Added to the List of Categorical Non-Waste Fuels

Primary Industry Category or Sub Category	NAICS^b
Cement manufacturing	32731
Railroads (includes line haul and short line)	482
Scenic and Sightseeing Transportation, Land (Includes: railroad, scenic and sightseeing)	487110
Port and Harbor Operations (Used railroad ties)	488310
Landscaping Services	561730
Solid Waste Collection	562111
Solid Waste Landfill	562212
Solid Waste Combustors and Incinerators	562213
Marinas	713930

^a Includes: Major Source Boilers, Area Source Boilers, and Solid Waste Incinerators

^b NAICS - North American Industrial Classification System

This table is not intended to be exhaustive, but rather provides a guide for readers regarding entities potentially impacted by this action. This table lists examples of the types of entities of which the EPA is aware that could potentially be affected by this action. Other types of entities not listed could also be affected. To determine whether your facility, company, business, organization, etc., is affected by this action, you should examine the applicability criteria in this rule. If you have any questions regarding the applicability of this action to a particular entity, consult the person listed in the **FOR FURTHER INFORMATION CONTACT** section.

B. Why is the EPA taking this Action?

The Non-Hazardous Secondary Materials (NHSM) regulations at 40 CFR part 241 generally establish standards and procedures for identifying whether NHSMs are solid wastes when used as fuels or ingredients in combustion units. In the February 2013 amendments, the EPA listed particular NHSMs as “categorical non-waste fuels” provided certain conditions are met. Persons burning these NHSMs do not need to evaluate them under the general case-by-case standards and procedures that would otherwise apply to NHSMs used in combustion units. This

action adds three materials to the list of categorical non-waste fuels: (1) Construction and demolition (C&D) wood processed from C&D debris according to best management practices, (2) paper recycling residuals generated from the recycling of recovered paper, paperboard and corrugated containers and combusted by paper recycling mills whose boilers are designed to burn solid fuels; and (3) creosote treated railroad ties that are processed and then combusted in the types of units described herein.

Abbreviations and Acronyms. The following acronyms and abbreviations are used in this document.

ATCM	Airborne Toxic Control Measure
BMP	Best management practice
Btu	British thermal unit
C&D	Construction and demolition
CAA	Clean Air Act
CARB	California Air Resources Board
CBI	Confidential business information
CCA	Chromated copper arsenate
CFR	Code of Federal Regulations
CISWI	Commercial and Industrial Solid Waste Incinerator
CTRT	Cresosote-treated railroad tie
EPA	U.S. Environmental Protection Agency
FR	Federal Register
HAP	Hazardous air pollutant
ICR	Information collection request
MACT	Maximum achievable control technology
NAICS	North American Industrial Classification System
ND	Non-detect
NESHAP	National emission standards for hazardous air pollutants
NHSM	Non-hazardous secondary material
OCC	Old Corrugated Cardboard
OMB	Office of Management and Budget
PAH	Polycyclic aromatic hydrocarbons
ppm	Parts per million
PRR	Paper recycling residual

PVC	Polyvinyl chloride
RCRA	Resource Conservation and Recovery Act
RIN	Regulatory information number
SBA	Small Business Administration
SO ₂	Sulfur dioxide
SVOC	Semi-volatile organic compound
TCLP	Toxicity characteristic leaching procedure
UMRA	Unfunded Mandates Reform Act
UPL	Upper prediction limit
U.S.C.	United States Code
VOC	Volatile organic compound
XRF	X-ray fluorescence

II. Statutory Authority

The EPA is issuing final amendments to list certain NHSMs as categorical non-waste fuels in 40 CFR 241.4(a) under the authority of sections 2002(a)(1) and 1004(27) of the Resource Conservation and Recovery Act (RCRA), as amended, 42 U.S.C. 6912(a)(1) and 6903(27). Section 129(a)(1)(D) of the Clean Air Act (CAA) directs the EPA to establish standards for Commercial and Industrial Solid Waste Incinerators (CISWI), which burn solid waste. Section 129(g)(6) of the CAA provides that the term “solid waste” is to be established by the EPA under RCRA (42 U.S.C. 7429). 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 stated in RCRA section 1004(27).

III. Introduction-Summary of Regulations Being Finalized

Regulations concerning NHSMs used as fuels or ingredients in combustion units are codified in 40 CFR part 241.¹ This action amends the part 241 regulations by adding three

¹ 40 CFR 241.2 defines non-hazardous secondary material as a secondary material that, when discarded, would not be identified as a hazardous waste under 40 CFR part 261.

NHSMs to the list of categorical non-waste fuels codified in § 241.4(a). These new categorical listings are for:

- Construction and demolition (C&D) wood processed from C&D debris according to best management practices
- Paper recycling residuals generated from the recycling of recovered paper, paperboard and corrugated containers and combusted by paper recycling mills whose boilers are designed to burn solid fuel.
- Creosote treated railroad ties that are processed and then combusted in the following types of units: units designed to burn both biomass and fuel oil as part of normal operations and not solely as part of start-up or shut-down operations, and units at major source pulp and paper mills or power producers² subject to 40 CFR part 63, subpart DDDDD that combust CTRT and had been designed to burn biomass and fuel oil, but are modified (e.g. oil delivery mechanisms were removed) in order to use natural gas instead of fuel oil, as part of normal operations and not solely as part of start-up or shut-down operations.

(Refer to section V of this preamble or the regulatory text for a full description of the categorical listings).

Determining whether a material is a solid waste is of particular importance as it relates to CAA section 129. That section states the term “solid waste” shall have the meaning “established

² 40 CFR 241.2 defines power producer as a boiler unit producing electricity for sale to the grid. The term does not include units meeting the definition of electricity generating unit under 40 CFR 63.10042 of the Utility Mercury and Air Toxics Standards rule.

by the Administrator pursuant to the Solid Waste Disposal Act.” Id at 7429(g)(6). The Solid Waste Disposal Act, as amended, is commonly referred to as the Resource Conservation and Recovery Act or RCRA. If a material is a solid waste under RCRA, a combustion unit burning that material is required to meet the CAA section 129 emission standards for solid waste incineration units. If the material is not a solid waste, combustion units are required to meet the CAA section 112 emission standards for commercial, industrial, and institutional boilers or, if the combustion unit is a cement kiln, the CAA section 112 emissions standards for Portland cement kilns. Under CAA section 129, the term “solid waste incineration unit” is defined, in pertinent part, to mean “a distinct operating unit of any facility which combusts any solid waste material from commercial or industrial establishments...” 42 U.S.C. 7429(g)(1). The courts have determined that the CAA unambiguously requires any unit that combusts “any solid waste material at all”—regardless of whether the material is being burned for energy recovery—to be regulated as a solid waste incineration unit. See NRDC v. EPA (489 F.3d 1250 (DC Cir. 2007)).

RCRA 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... resulting from industrial, commercial, mining, and agricultural operations, and from community activities...” (RCRA section 1004 (27) (emphasis added)). The key concept is that of “discard” and, in fact, this definition turns on the meaning of the phrase, “other discarded material,” since this term encompasses all other examples provided in the definition. In determining the meaning of discard, the courts have determined that the ordinary, plain English definition controls, i.e., discard means “disposed of,” “thrown away” or “abandoned.” See American Mining Congress v. EPA 824 F. 2d 1177 (DC Dir. 1987); see 76 FR 15460 for a detailed discussion on the RCRA definition of solid waste and CAA section 129.

IV. Background

A. History of the NHSM Rulemakings

The Agency first solicited comments on how the RCRA definition of solid waste should apply to NHSMs when used as fuels or ingredients in combustion units in an advanced notice of proposed rulemaking (ANPRM), which was published in the Federal Register on January 2, 2009 (74 FR 41). We then published an NHSM proposed rule on June 4, 2010 (75 FR 31844), which the EPA made final on March 21, 2011 (76 FR 15456).

In the March 21, 2011 rule, the EPA finalized standards and procedures to be used to identify whether NHSMs are solid wastes when used as fuels or ingredients in combustion units. “Secondary material” was defined for the purposes of that rulemaking as any material that is not the primary product of a manufacturing or commercial process, and can include post-consumer material, off-specification commercial chemical products or manufacturing chemical intermediates, post-industrial material, and scrap (codified in 40 CFR 241.2). “Non-hazardous secondary material” is a secondary material that, when discarded, would not be identified as a hazardous waste under 40 CFR part 261 (codified in 40 CFR 241.2). Traditional fuels, including historically managed traditional fuels (e.g., coal, oil, natural gas) and “alternative” traditional fuels (e.g., clean cellulosic biomass) are not secondary materials and thus, are not solid wastes under the rule unless discarded.

A key concept under the March 21, 2011 rule is that NHSMs used as non-waste fuels in combustion units must meet the legitimacy criteria specified in 40 CFR 241.3(d)(1). Application of the legitimacy criteria helps ensure that the fuel product is being legitimately and beneficially used and not simply being discarded through combustion (i.e., via sham recycling). To meet the legitimacy criteria, the NHSM must be managed as a valuable commodity, have a meaningful

heating value and be used as a fuel in a combustion unit that recovers energy, and contain contaminants or groups of contaminants at concentrations comparable to (or lower than) those in traditional fuels which the combustion unit is designed to burn.

Based on these criteria, the March 21, 2011 rule identified the following NHSMs as not being solid wastes:

- The NHSM is used as a fuel and remains under the control of the generator (whether at the site of generation or another site the generator has control over) that meets the legitimacy criteria (40 CFR 241.3(b)(1));
- The NHSM is used as an ingredient in a manufacturing process (whether by the generator or outside the control of the generator) that meets the legitimacy criteria (40 CFR 241.3(b)(3));
- Discarded NHSM has been sufficiently processed to produce a fuel or ingredient that meets the legitimacy criteria (40 CFR 241.3(b)(4)); or
- Through a case-by-case petition process, it has been determined that the NHSM handled outside the control of the generator has not been discarded and is indistinguishable in all relevant aspects from a fuel product, and meets the legitimacy criteria (40 CFR 241.3(c)).

In October 2011, the Agency announced it would be initiating a new rulemaking proceeding to revise certain aspects of the NHSM rule.³ On February 7, 2013, the EPA published a final rule, which addressed specific targeted amendments and clarifications to the 40 CFR part 241 regulations (78 FR 9112). These revisions and clarifications were limited to certain issues on

³ See October 14, 2011, Letter from Administrator Lisa P. Jackson to Senator Olympia Snowe. A copy of this letter has been placed in the docket for this final rule (EPA-HQ-RCRA-2008-1873).

which the Agency had received new information, as well as targeted revisions that the Agency believed were appropriate in order to allow implementation of the rule as the EPA originally intended. The amendments modified 40 CFR 241.2 and 241.3, added 40 CFR 241.4, and included the following:⁴

- Revised Definitions: The EPA revised three definitions discussed in the proposed rule: (1) “clean cellulosic biomass,” (2) “contaminants,” and (3) “established tire collection programs.” In addition, based on comments received on the proposed rule, the Agency revised the definition of “resinated wood.”
- Contaminant Legitimacy Criterion for NHSMs Used as Fuels: The EPA issued revised contaminant legitimacy criterion for NHSMs used as fuels to provide additional details on how contaminant-specific comparisons between NHSMs and traditional fuels may be made. The revisions include: (1) The ability to compare groups of contaminants where technically reasonable; (2) clarification that “designed to burn” means can burn or does burn, and not necessarily permitted to burn; (3) the ability to use traditional fuel data from national surveys and other sources beyond a facility’s current fuel supplier; and (4) the ability to use ranges of traditional fuel contaminant levels when making contaminant comparisons, provided the variability of the NHSM contaminant levels is also considered.
- Categorical Non-Waste Determinations for Specific NHSMs Used as Fuels. The EPA codified determinations that certain NHSMs are non-wastes when used as fuels. If a material is categorically listed as a non-waste fuel, persons that generate or burn these

⁴ See 78 FR 9112 (February 7, 2013) for a discussion of the rule and the Agency’s basis for its decisions.

NHSMs will not need to make individual determinations, as required under the existing rules, that these NHSMs meet the legitimacy criteria. Except where otherwise noted, combustors of these materials will not be required to provide further information demonstrating their non-waste status. Based on all available information, the EPA determined the following NHSMs are not solid wastes when burned as a fuel in combustion units and has categorically listed them in 40 CFR 241.4(a).⁵

- 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;
 - Resinated wood;
 - Coal refuse that has been recovered from legacy piles and processed in the same manner as currently-generated coal that would have been refuse if mined in the past;
 - 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.
- Rulemaking Petition Process for Other Categorical Non-Waste Determinations: EPA made final a process in 40 CFR 241.4(b) that provides persons an opportunity to submit a

⁵ In the March 21, 2011 NHSM rule (76 FR 15456), EPA identified two NHSMs as not being solid wastes, although persons would still need to make individual determinations that these NHSMs meet the legitimacy criteria: (1) Scrap tires used in a combustion unit that are removed from vehicles and managed under the oversight of established tire collection programs and (2) resinated wood used in a combustion unit. However, in the February 2013 NHSM rule, the Agency amended the regulations and categorically listed these NHSMs as not being solid wastes.

rulemaking petition to the Administrator, seeking a determination for additional NHSMs to be categorically listed in 40 CFR 241.4(a) as non-waste fuels, if they can demonstrate that the NHSM meets the legitimacy criteria or, after balancing the legitimacy criteria with other relevant factors, EPA determines that the NHSM is not a solid waste when used as a fuel. Based on these non-waste categorical determinations, as discussed above, facilities burning NHSMs that meet the categorical listing description will not need to make individual determinations that the NHSM meets the legitimacy criteria or provide further information demonstrating their non-waste status on a site-by-site basis, provided they meet the conditions of the categorical listing. Please refer to section IV.C of this preamble for details on the petition process.

B. Background to Final Rule

As discussed in the February 2013 final rule,⁶ the Agency had received comments that additional NHSMs should be categorically listed as non-waste fuels for which the Agency had not requested information as a part of that proposal. We did not respond to such comments and issues since they were beyond the scope of that rulemaking and indicated that, because the Agency did not specifically solicit comments or propose that those NHSMs be categorically listed in 40 CFR 241.4(a), the Agency must go through notice and comment rulemaking before making a final decision. The February 2013 rule noted, however, that two NHSMs—paper recycling residuals (including old corrugated cardboard (OCC) rejects) and construction and demolition debris processed pursuant to best practices—would be good candidates for a future

⁶ 78 FR 9160

proposal based on information provided to the Agency and that EPA expected to propose those listings in a subsequent rulemaking.

To supplement the comments identified in the February 2013 rule, the Agency received additional information on these two NHSMs from stakeholders (see section V of this preamble). As discussed in the following sections, the EPA has determined the information received to date, when taken together, supports a categorical determination of these materials as non-waste fuels and is today listing them as categorical non-waste fuels in 40 CFR 241.4(a).

In addition to paper recycling residuals and construction and demolition debris, the Agency identified creosote-treated railroad ties in the February 2013 final rule as a potential candidate for a categorical non-waste listing based on comments from stakeholders. However, the Agency indicated that additional information would need to be submitted before this NHSM could be addressed. If such information supported the representations made by industry—that is, the American Forest & Paper Association (AF&PA) and the American Wood Council—EPA stated that it expected to propose a categorical listing for this material as well. Finally, we noted in the February 2013 final rule that the Agency received a letter from the Treated Wood Council asking that non-hazardous treated wood be categorically listed—a broad category that would include creosote-treated railroad ties. The Agency noted it was in the process of reviewing the information in the letter and would consider whether to propose a categorical listing for this broader set of treated wood material.

The Agency has reviewed the information submitted from stakeholders regarding creosote-treated railroad ties. As discussed in the following sections, the EPA has determined that the information received to date, when taken together, supports a categorical determination for creosote-treated railroad ties when combusted in the types of units described herein and is

listing them as categorical non-wastes fuels in 40 CFR 241.4(a).⁷ (refer to section V of this preamble or the regulatory text for a full description of this categorical listing).

C. How Does the EPA Make Categorical Non-Waste Determinations?

The February 7, 2013 revisions to the NHSM rule discuss the process and decision criteria whereby the Agency would make additional categorical non-waste determinations. (See 78 FR 9158.) While the categorical non-waste determinations in this action are not based on rulemaking petitions, the criteria the EPA used to assess these NHSMs as categorical non-wastes match the criteria to be used by the Administrator to determine whether to grant or deny the categorical non-waste petitions.^{8,9} These determinations follow the criteria set out in 40 CFR 241.4(b)(5) to assess additional categorical non-waste petitions and follow the statutory standards as interpreted by the EPA in the NHSM rule for deciding whether secondary materials are wastes. Those criteria include: (1) Whether each NHSM has not been discarded in the first instance (i.e., was not initially abandoned or thrown away) 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; and, (2) if the NHSM does not meet the legitimacy criteria described in 40 CFR 241.3(d)(1) , whether the NHSM is integrally tied to the industrial production process,

⁷ As noted above, the Agency also received a petition from the Treated Wood Council asking that non-hazardous treated wood be categorically listed—a broad category that would include creosote-treated railroad ties. Other treated wood addressed in the petition included waterborne borate-based preservatives, waterborne organic-based preservatives, waterborne copper-based wood preservatives (ammoniacal/alkaline copper quat, copper azole, copper HDO, alkaline copper betaine, or copper naphthenate); creosote; oilborne copper naphthenate; pentachlorophenol; or dual-treated with any of the above. The Agency is in the process of reviewing that petition and supplementary information submitted subsequent to the petition. Accordingly, while creosote treated wood railroad ties is included in the current rule, other treated wood materials identified in the Treated Wood Council’s petition are not addressed in this action. If upon completion of the Agency’s review, the information supports a categorical listing of one or more of these other treated wood materials, the Agency would propose those materials in a future rulemaking. See also discussion under Comments and Information Received on Other Types of Treated Wood in section V.A.6.c..

⁸ For a full discussion regarding the petition process for receiving a categorical non-waste determination, see 78 FR 9111, February 7, 2013 (page 9158-9159).

⁹ Supplementary information received from by M.A. Energy Resources (February 2013) in support of the crosstie derived fuel was submitted as a categorical petition in accordance 40 CFR 241.4(b).

the NHSM is functionally the same as the comparable traditional fuel, or other relevant factors as appropriate.

Based on the information in the rulemaking record, including stakeholder comments, the Agency is amending 40 CFR 241.4(a) by listing three additional NHSMs as categorical non-wastes. Specific determinations regarding C&D wood, paper recycling residuals, and creosote-treated railroad ties as categorical non-wastes and how the information was assessed by EPA according to the criteria in 40 CFR 241.4(b)(5) are discussed in detail in section V of this preamble.

V. Comments on the Proposed Rule and Rationale for Final Decisions

In this section, the EPA provides the rationale for its determination that the three additional NHSMs are appropriate for listing as categorical non-wastes, under certain conditions. It also addresses major comments the Agency received regarding the three NHSMs proposed in the April 14, 2014 rule (79 FR 21005).

A. Construction and Demolition Debris Processed According to Best Management Practices

The April 14, 2014 proposed rule described C&D wood in detail (79 FR 21010-11), explained the status of C&D wood under current rules, discussed comments received during previous proceedings, as well as the scope of the proposed non-waste listing (79 FR 21011-12). The proposed rationale for the listing is found in the proposal at 79 FR 21012-16 and is summarized and incorporated into this final rule, along with all sources referenced in that discussion and cited therein. The final decision in this rule is based on the information in the proposal and supporting materials in the rulemaking record. Any changes made to the final rule are based on the rationale, as described below.

1. Detailed Description of C&D Wood

As described in the proposed rule (79 FR 21010-11) and reiterated here, C&D wood is generated from the processing of debris from construction and demolition activities for the purposes of recovering wood. At construction activities, this debris results from cutting wood down to size during installation or from purchasing more wood than a project ultimately requires, while at demolition activities, this debris results from dismantling buildings and other structures or removing materials during renovation.¹⁰ Information previously compiled by the Agency indicates C&D activities generate an estimated 33 to 49 million tons of scrap wood each year, approximately half of which is of acceptable size, quality, and condition to be considered available for recovery. However, information on the amount of processed C&D wood that is burned for energy recovery is unavailable, although sources surveyed by EPA for the 2010 proposed CISWI rule and the National Emission Standards for Hazardous Air Pollutants for Area and Major Industrial, Commercial, and Institutional Boilers (Boilers) rule indicate that between 4.7 to 11.2 million tons per year of processed C&D wood may be burned for energy recovery.¹¹

Also, because clean C&D wood is considered “clean cellulosic biomass” and is already excluded from being a solid waste,¹² the Agency expected the proposed rule would address C&D wood generated predominantly from demolition activities. However, the proposal acknowledged clean C&D wood generated from construction activities that is mixed with contaminated C&D

¹⁰ Two revisions have been made to the definition of C&D wood. Please refer to section V.A.3. of this preamble for a discussion of the revisions to the definition of C&D wood for the final rule.

¹¹ Materials Characterization Paper: Construction and Demolition Materials. February 3, 2011. EPA-HQ-RCRA-2008-0329-1811

¹² Clean C&D wood is included in the definition of “clean cellulosic biomass” and thus, may be combusted as a traditional fuel if it does not contain contaminants at concentrations not normally associated with virgin wood. Conversely, C&D wood that is not “clean” is that which must be processed to remove contaminants such as lead-painted wood, treated wood containing contaminants, such as arsenic and chromium, metals and other non-wood materials. (See 76 FR 15485, March 21, 2011; 78 FR 9138-39, February 7, 2013; and 40 CFR section 241.2)

debris would be subject to the same practices and requirements described in the proposed rulemaking, because it is comingled with contaminated materials that would not constitute “clean cellulosic biomass.” The Agency finds, similarly, the practices and requirements adopted in this final rule, which are modified slightly from the proposal, also apply to the comingled materials generated from construction activities. No information was presented in this rulemaking to cause the Agency to find otherwise.

With respect to how C&D debris is handled, we noted in the proposal and find in this final rule that, although contractors may segregate C&D debris at building sites, the common practice—at demolition sites in particular—is to send co-mingled debris to independent C&D recycling or processing facilities. At these facilities, operators recover wood scraps from a mixture of building materials that often includes metals, concrete, plastics, and other items that are unsuitable for energy recovery in combustion units. Some operators use “positive sorting” techniques, meaning they specifically remove wood scraps from the co-mingled debris, picking out only desirable wood and leaving all other C&D debris behind for disposal or other recycling processes. Other operators use “negative sorting” techniques, meaning they achieve a similarly clean final product by removing or excluding contaminated or otherwise undesirable material from the C&D debris. Regardless of whether they use positive or negative sorting, processing facilities then grind the recovered wood to a specified size and deliver it to energy recovery facilities.

C&D wood processing facilities can use a variety of techniques to remove or exclude debris unsuitable for a product fuel. Typically, processors use some combination of source control, inspection, sorting, and screening to meet the specifications identified by their customers (i.e., combustion facilities). The nature of the incoming C&D debris, the extent of material

segregation prior to arrival at the processing facility, whether positive or negative sorting is employed, and the scale of the processing facility (e.g., the degree of sorting and number of screening devices) help determine which combination of practices will be most effective. Individual states also have different requirements related to the processing and combustion of C&D wood.¹³ Despite the variety of options, the Agency finds certain practices are essential to ensure processing of the C&D debris produces a legitimate product fuel. These practices, described in the proposal as best management practices, have been adopted in this final rule with minor changes and are discussed later in section V.A.3. of this preamble. In addition to excluding or removing a set list of C&D materials known to contain contaminants (e.g., certain types of treated wood), processors must take steps to eliminate less obvious contaminant sources (e.g., lead-based paint). Consequently, the standards proposed and finalized in this document, ensure that the contaminants in the fuel that is burned will not be unpredictable, even though the sources of the wood may vary.

2. C&D Wood under Current NHSM Rules

a. March 21, 2011 and February 2013 Final Rules

In both the March 21, 2011 and February 7, 2013 NHSM final rules, EPA discussed two scenarios under which the Agency would consider C&D wood to be a non-waste fuel.¹⁴ First, “clean” C&D wood can be burned as a traditional fuel without any requirement for testing or recordkeeping—because it is a “clean cellulosic biomass” material indistinguishable in

¹³ This final rulemaking does not change or replace existing state requirements regarding C&D wood. See section VIII. State Authority A. Relationship to State Programs of this preamble.

¹⁴ 76 FR 15485, March 21, 2011 and 78 FR 9138, February 7, 2013.

composition from virgin wood.¹⁵ Second, wood recovered from C&D debris (i.e., contaminated wood) can be sufficiently processed to meet the legitimacy criteria and, thus, would be a non-waste fuel, although combustion facilities burning the material would need to keep records documenting the material's non-waste status. Records would need to document not only how the processing operations meet the definition of processing in 40 CFR 241.2, but also how the product fuel meets the NHSM legitimacy criteria in 40 CFR 241.3(d)(1).^{16,17}

b. December 2011 Proposed Rule

Although the December 2011 NHSM proposed rule did not discuss or solicit comments on processed C&D wood, a number of commenters submitted comments arguing processed C&D wood (i.e., recovered from demolition activities) should be categorically listed as a non-waste fuel under 40 CFR 241.4(a), or otherwise a non-waste.¹⁸ The commenters' rationale for listing processed C&D wood as a non-waste is as follows.

- It is utilized in combination with other biomass materials to optimize and manage combustion in boilers due to its low moisture/high heat characteristics.
- It is sufficiently processed to remove impurities.
- From a practical materials management standpoint, C&D materials are not discarded; collection of most of these materials is planned for, with C&D recycle sorting and

¹⁵ In the February 7, 2013 final rule (78 FR 9139), the Agency emphasized that, "determinations that the cellulosic biomass used as a fuel or ingredient is clean, do not presuppose any testing of contaminant levels. Persons can use expert or process knowledge of the material to justify decisions regarding presence of contaminants."

¹⁶ Recordkeeping requirements for area source boilers are found at 40 CFR 63.11225(c)(2)(ii), while recordkeeping requirements for major source boilers are found at 40 CFR 63.7555(d)(2).

¹⁷ While the combustor would be responsible for maintaining the records that such NHSM met the legitimacy criteria, the combustor could request that the person that generated the C&D wood provide documentation that the processing operations meet the definition of processing, as well as the legitimacy criteria, especially the contaminant legitimacy criterion.

¹⁸ Comments submitted on the December 23, 2011 proposed rule are included in docket: EPA-HQ-RCRA-2008-0329. Specifically, see the document ID#'s ending in -1902, -1910, -1950, -1930, -1928, -1946, -1957, -1927, -1893, and -1905.

processing yards receiving the materials as a destination and the point of generation of the fuel product.

- Commenters detail the processing and test data available for C&D materials, which demonstrates their value as a fuel.
- Commenters noted the EPA has already included clean C&D materials in their proposed clean cellulosic biomass definition for traditional fuels, but EPA elsewhere identifies C&D materials that are not clean as subject to the legitimacy criteria.

The commenters argued, therefore, the EPA should remove doubt and list these materials in the newly proposed 40 CFR 241.4(a) as a non-waste fuel given both their demonstrated fuel value and the industry that has been established for recycling these NHSMs into useful product fuel.

Expanding further on these comments, several trade organizations submitted information in support of a categorical non-waste determination that would list processed C&D wood as a product fuel when burned in combustion units. The information suggested that a non-waste listing include all C&D wood processed in accordance with industry practices proven to produce a wood product meeting the NHSM legitimacy criteria. The commenters identified “proven practices” as the sorting (both mechanical and manual) of C&D material to separate the following contaminants: non-wood material, wood treated with pentachlorophenol, chromated copper arsenic (CCA) treated wood, or other copper, chromium or arsenical preservatives, and lead (through the separation of either lead-painted wood or fines or through other means as specified in applicable state law). Commenters also compiled a dataset of contaminant concentrations in processed C&D wood from nine combustion facilities in seven states to demonstrate the efficacy of the identified practices.

Case-by-case analysis is not necessary, the trade organizations contended, to ensure sufficient processing occurs and that C&D wood products—produced by different processors using different sorting techniques—are consistently managed as a valuable commodity, have meaningful heating values, and contain contaminants at levels comparable to or lower than traditional fuels. Instead, they argued persons burning C&D wood for energy recovery only need to certify the processed C&D wood came from a facility using the aforementioned sorting practices.

Other commenters on the December 2011 NHSM proposed rule asserted that C&D wood should be regulated as a solid waste because they view it as having been discarded similar to scrap tires. Another commenter requested the EPA require testing for contamination based on what they described as highly unpredictable contaminant levels. The commenter referenced specific combustion facilities that accepted C&D wood, including lead-painted wood and CCA-treated wood, as well as plastics and foreign debris to support a requirement for testing. In addition, the same commenter argued that C&D wood should only be compared to clean untreated wood when conducting a contaminant comparison, not necessarily what the unit is designed to burn.¹⁹ The Agency's decision on this final rule considers the issues raised in these comments on the December 2011 proposed rule. Responses to the issues raised in these comments are included in section V.A.6. of this preamble.

3. Scope of the Proposed Rule and Final Categorical Non-Waste Listing for C&D Wood

Based on information in the record, including comments submitted before proposal, the Agency proposed the categorical non-waste listing for wood recovered from C&D debris which has been processed according to best management practices to remove certain contaminants, as a

¹⁹ Comments submitted on the December 23, 2011 proposed rule (76 FR 80452) are included in docket: EPA-HQ-RCRA-2008-0329. Specifically, see the document ID numbers ending in -1959 and -1974.

categorical non-waste in 40 CFR 241.4(a). Under the proposed rule, combustors of C&D wood must obtain a written certification from C&D processing facilities that the C&D wood has been processed by trained operators in accordance with best management practices.²⁰ Such practices include sorting by trained operators that excludes or removes non-wood materials (e.g., polyvinyl chloride and other plastics, drywall, concrete, aggregates, dirt, and asbestos), and wood treated with creosote²¹, pentachlorophenol, chromated copper arsenate, or other copper, chromium, or arsenical preservatives. In addition, C&D processing facilities that use positive sorting (where operators pick out desirable wood from co-mingled debris) must either exclude all painted wood from the final product fuel, use X-ray Fluorescence to ensure that painted wood included in the final product fuel does not contain lead-based paint, or require documentation that a building has been tested for and does not include lead-based paint before accepting demolition debris from that building.

C&D processing facilities that use negative sorting (where operators remove contaminated or otherwise undesirable materials from co-mingled debris) must remove fines, i.e., small-sized particles that may contain relatively high concentrations of lead and other contaminants, and either remove painted wood, use X-ray Fluorescence to detect and remove lead-painted wood, or require documentation that a building has been tested for and does not include lead-based paint before accepting demolition debris from that building.

²⁰ If the processed C&D wood does not meet the categorical listing, the wood may still be considered a non-waste fuel (on a case-by-case basis), although any combustor that burns such processed C&D wood would need to keep records documenting the materials non-waste status pursuant to 40 CFR 63.11225(c)(2)(ii) and 40 CFR 63.7555(d)(2).

²¹ Although industry trade groups did not list creosote treated wood as wood that is excluded or removed, they provided information indicating that C&D debris can include creosote treated wood. Based upon the contaminants present in creosote treated wood and the types of boilers that burn C&D wood (i.e., those that are designed to burn clean wood and biomass), operators must exclude or remove creosote treated wood. With respect to creosote and as discussed later in section V.C of this preamble, the Agency evaluated data provided for creosote-treated railway ties and determined that boiler design was an integral factor in satisfying the contaminant legitimacy criterion.

This rule finalizes the criteria and requirements discussed in the proposal for reasons explained in the proposal, with three changes to the regulatory language for lead elimination requirements for both positive and negative sorting facilities, two changes to the definition of C&D wood, and the addition of new language for the processor's written certification and training requirements. The changes and additions were made in response to comments received and based on other supporting information in the record and to provide clarity to the best management practice requirements, as well as the definition of C&D wood. The rationale for the changes and additions that have been made in the final rule are explained below in this section. The general rationale for the final listing is provided in the next section V.A.4. of this preamble.

Lead Elimination Requirements. One of the changes between the proposed rule and final rule concerns the lead elimination requirements for positive sorting processors. The lead exclusion language for positive sorting processors proposed at 40 CFR 241.4(a)(5)(i) did not specifically provide that facilities receiving pre-sorted wood from positive sorting entities who may need to remove small amounts of unwanted material prior to chipping and grinding the wood are also considered positive sorting facilities. Because these facilities remove some materials, they could be considered negative sorters.

The proposed regulatory language resulted from a presumed scenario in which C&D debris was sent to a single, centralized processing facility. However, there are other processors who receive segregated or pre-sorted C&D wood from small generators.²² These small generators (e.g., contractors, community collections, citizen drop-off locations, and transfer stations) segregate and collect clean C&D wood using positive sorting and provide the recovered

²² See comments and data submitted by Covanta (EPA –HQ-RCRA-2013-0110-0084), comments from American Reclamation Inc. (EPA-HQ-RCRA-2013-0110-0073), and comments from Genesee Power Station (GPS) (EPA-HQ-RCRA-2013-0110-0091),

C&D wood to “chip and grind” processors. The chip and grind processors then conduct additional sorting, using negative sorting techniques, to remove small amounts of unwanted materials from the shipment prior to processing. These processors should not be considered negative sorters.

Recall that negative sorters are required to remove fines to ensure lead concentrations in the product fuel are comparable to or lower than wood or biomass. Positive sorters, however, are not required to remove fines because only the desirable wood is picked from the C&D debris. Thus, to require a “chip and grind” processing operation that has received positive sorted C&D wood to remove fines when there are none present is unnecessary. Therefore, the language for positive sorting has been revised to include processors that receive pre-sorted wood from positive sorting entities. This revision clarifies that these processors are not negative sorters for purposes of identifying which lead requirements are applicable. Specifically, the final language at 40 CFR 241.4(a)(5)(i) includes new text (see italic print) to capture these facilities: “C&D processing facilities that use positive sorting—where operators pick out desirable wood from co-mingled debris—*or that receive and process positive sorted C&D wood* must either...”

Another change was made to the lead elimination requirements, but for negative sorters. The term “all” was added to the options for removing painted wood under 40 CFR 241.4(a)(5)(ii)(A). This requirement is now consistent with the corresponding requirement for positive sorting facilities and emphasizes that if processors choose this particular lead elimination option, then any painted wood received must be removed (or excluded in the case of positive sorting facilities). The purpose of this change is to ensure all painted wood, regardless of sorting practices, is eliminated from the final product if the processor chooses this lead elimination strategy. While it is expected that processors will make every effort to remove or

exclude all painted wood under this option, de minimis amounts could be present and still render the resultant material a product fuel. The final regulatory language adds new text to 40 CFR 241.4(a)(5)(ii)(A), and now states “[r]emove *all* painted wood.”

The third change that has been made applies to both positive and negative sorters. As stated in the previous paragraph, the term “all” has been added to the negative sorting requirements for consistency and to reaffirm that this particular option is intended to be a stringent standard. However, to provide additional clarity regarding the Agency’s position on de minimis amounts, we have added the following language as a parenthetical to both 40 CFR 241.4(a)(5)(i)(A) and (ii)(A): “(to the extent that only de minimis quantities inherent to processing limitations may remain)”.

Definition of C&D wood. Two revisions to the definition of C&D wood (40 CFR 241.2) have been made. One revision is to include disaster debris and the second revision is to broaden what the Agency considers to be wood recovered from construction activities.

In the proposed rule, the Agency noted clean wood in disaster debris had been included in the definition for “clean cellulosic biomass” in a prior rulemaking, but had not addressed clean wood from disaster debris mixed with contaminated materials (e.g., lead-based painted wood, CCA treated wood, asbestos containing materials, utility poles, etc.) and sent for processing without any prior sorting. Also noted in the proposal, and of particular concern to the Agency, was that management of disaster debris is more expedited and less controlled and thus, prone to include contaminants that might otherwise be sorted out prior to processing.²³ Therefore, the

²³ Management of disaster debris can involve significantly greater volumes. For example, prior to the 1994 Northridge earthquake in Los Angeles, one local company processed 150 tons of C&D debris per day. After the earthquake, the city picked up as much as 10,000 tons of C&D debris per day.

Agency solicited comment on whether disaster debris should be included in the definition of C&D wood despite some concerns related to processing large volumes of material expeditiously.

The Agency finds that these concerns regarding the management of large volumes of material in an expeditious nature would only be relevant if the best management practices as finalized in this rule are not used to process wood from natural disaster debris. The Agency finds that the best management practices set forth in this rule are sufficient to ensure natural disaster debris is handled and processed in the same manner as other C&D debris, regardless of the source or quantity of material to be processed. In other words, processors that comply with the best management practices for this listing would not be altering the way in which they process the debris. Should a processor choose to hire and train additional sorters or extend operational hours to process higher volumes, the limiting factors in this rule that will continue to ensure the quality of the processed material are the best management practices and the training and certification requirements. Furthermore, the information provided to the Agency discusses that when the incoming material exceeds processing capacity, the excess material is stored or sent to a landfill.²⁴ Given the best management practices and information indicating the typical handling of excess material, the Agency has determined it is appropriate to include disaster debris in the definition of C&D wood. Thus, clean wood from natural disaster debris mixed with other materials and delivered to a processing facility has been added to the definition of C&D wood. However, the natural disaster debris must be processed in the same manner as C&D wood recovered from C&D activities to qualify for this categorical non-waste listing. The last sentence of the definition for C&D wood at 40 CFR 241.2 has been revised to add text for natural

²⁴ See comments from American Forest & Paper Association (EPA-HQ-RCRA-2013-0110-0076) and Waste Management (EPA-HQ-RCRA-2013-0110-0094).

disasters and now reads: “C&D wood from demolition activities results from dismantling buildings and other structures, removing materials during renovation, *or from natural disasters.*”

The second revision made to the definition of C&D wood is to broaden the description of C&D wood generated from construction activities. As proposed, commenters interpreted it to be limited in scope because it did not capture the many sources of wood generated from construction activities, particularly for installation activities. The wording in the second sentence of the proposed definition for C&D wood at 40 CFR 241.2 read: “C&D wood from construction activities results from *cutting wood down to size* during installation or from purchasing more wood than a project ultimately requires.” A commenter suggested listing additional types of installation activities associated with construction such as incorrectly cut wood, wood forms, support braces, stakes, etc. Rather than trying to provide an exhaustive list, which may not include every possible type of installation activity, the Agency has decided to revise the language to capture any type of installation activity that can generate construction wood debris. The second sentence of the definition now reads “C&D wood from construction activities results from wood generated *during any installation activity* or from purchasing more wood than a project ultimately requires.” The change acknowledges there are several ways installation activities can generate wood without limiting those activities.

Training and certification. Two regulatory additions have been made based on concepts that had been discussed in the proposed rule preamble. One addition is a requirement for C&D processors to train their operators. The approach taken in the proposal was to not include a specific training requirement for processors, but to rely on a written certification as a means for processors to show they had used “trained” operators (79 FR 21026). However, the Agency finds this approach does not provide any assurance that the processor is conducting the necessary

training in order to ensure that the resultant material is not discarded when combusted and is, therefore, not waste. Although the written certification statement, as proposed (and finalized in this rule), must state the processed C&D wood has been sorted by “trained” operators in accordance with best management practices, it did not require any evidence that training has taken place, nor did it hold the processor accountable to their customers. Thus, a mechanism is necessary to document when the training has been conducted so that processors are accountable when certifying they have used trained operators. This mechanism is implemented via new regulatory language at 40 CFR 241.4(a)(5)(iii) which states “[p]rocessors must train operators to exclude or remove the materials as listed in paragraph (a)(5) of this section from the final product fuel. Records of training must include dates of training held and must be maintained for a period of three years.” The training requirement serves as an additional condition of this categorical non-waste listing. For further discussion, see section V.A.5 of this preamble.

The second regulatory addition is to specify the written certification requirements. As discussed in the proposal, to ensure the C&D wood is processed according to best management practices, it is important for the processor to certify they are meeting such best management practices using trained operators (79 FR 21013). The Agency has determined a written certification from the processor is a necessary mechanism for ensuring best management practices have been used and for indicating that the processor has used trained operators. The Agency recognizes contracts and purchase agreements can indicate a commitment to quality, but also specifications can vary according to the needs of one combustor versus another. More importantly, the contracts and purchase agreements that the Agency has seen do not show that C&D wood has been processed according to any particular best management practices, and consequently, cannot ensure that the resulting material is not a waste when combusted.

Therefore, the written certification is finalized at 40 CFR 241.4(a)(5)(iv) and states “[a] written certification must be obtained by the combustor for every new or modified contract, purchase agreement, or other legally binding document, from each final processor of C&D wood and must include the statement: the processed C&D wood has been sorted by trained operators in accordance with best management practices.” This certification will assist the combustor’s determination that the C&D wood has been sufficiently processed to meet the conditions of this categorical non-waste listing. Refer to the section V.A.5 of this preamble for additional background.

4. Rationale for Final Rule

This section discusses the reasoning provided in the proposed rule and the reasons for the EPA’s final determinations for the categorical listing of C&D wood. EPA adopts the reasoning in the proposed rule and further explains it in this preamble. Further explanations for the Agency’s decision are provided in the Response to Comments below. The proposal, this section, and the Response to Comments all constitute the Agency’s final determination supporting this rule.

a. Discard

When deciding whether an NHSM should be listed as a categorical non-waste fuel in accordance with 40 CFR 241.4(b)(5), the Agency first evaluates whether or not the NHSM has been discarded in the first instance and, if not so discarded, whether or not the material could be considered discarded because it is not legitimately used as a product fuel in a combustion unit. Based on the rulemaking record, as discussed below, the Agency has determined C&D wood is not discarded when: it is processed in accordance with best management practices described herein; it is legitimately used as a product fuel in a combustion unit; and when combustors of

C&D wood have obtained a written certification from C&D processing facilities that the C&D wood has been processed by trained operators.

i. Processing of C&D Wood.

In the April 14, 2014 proposed rule (79 FR 21012), the Agency reiterated the determination in the existing rules that the wood present in C&D debris is considered to be a solid waste prior to processing and that persons must transform the debris into a legitimate product fuel in order to burn the material as a non-waste fuel.²⁵ In accordance with 40 CFR 241.2, processing must include operations that transform discarded NHSM into a non-waste fuel or non-waste ingredient, including operations necessary to: remove or destroy contaminants; significantly improve the fuel characteristics (e.g., sizing or drying of 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 the purposes of the definition.

Compared to mixed C&D debris, processed C&D wood will have significantly fewer contaminants and improved fuel characteristics. Specifically, the removal or exclusion of specified materials, such as creosote-treated wood (PAHs, dibenzofuran), pentachlorophenol-treated wood (pentachlorophenol, dioxins), CCA-treated wood (chromium, arsenic), other copper, chromium, and arsenical treated wood, plastics (chlorine), drywall (sulfur), lead-based paint (lead), as well as insulation and other materials containing asbestos,²⁶ will result in

²⁵This rulemaking does not change the waste status of C&D wood prior to processing, up to which point the material would likely be a solid waste subject to appropriate federal, state, and local requirements unless it meets the definition of “clean cellulosic biomass.”

²⁶ CAA regulations provide additional safeguards to ensure asbestos is removed from buildings prior to demolition. Part 61, subpart M (40 CFR 61.145) requires that owners or operators of a demolition or renovation activity to inspect the affected building for the presence of asbestos prior to demolition or renovation and notify the Administrator. EPA notes, however, that the 40 CFR 61.141 definition of “facility” explicitly excludes “residential buildings having four or fewer dwelling units” thus, small residential buildings that are demolished or renovated are

significant contaminant removal. In addition, the removal of concrete, aggregates, dirt, and other non-combustible material will significantly increase the material's energy value. Finally, grinding all remaining wood to a specified size will allow combustors to transport, store, and use processed C&D wood in the same manner as virgin wood and biomass materials.

For incoming C&D debris, processing facilities can use a variety of techniques to exclude or remove debris unsuitable for a product fuel. Typically, processors use some combination of source control, inspection, sorting, screening, and grinding to meet the specifications identified by their customers (i.e., combustion facilities). The nature of the incoming C&D debris, the extent of material segregation prior to arrival at the processing facility, whether positive or negative sorting is employed, and the scale of the processing facility (e.g., the degree of sorting and number of screening devices) help determine which combination of practices will be most effective. The Agency has determined that the best management practices, when performed by trained operators, addresses the variability within the industry such that C&D processing facilities will produce a non-waste product with contaminants that are no greater than clean wood and biomass, regardless of the characteristics that can influence the level of contaminants in the C&D wood. Thus, the Agency finds such processing meets the definition of processing in 40 CFR 241.2.

ii. Certification.

Further, to ensure the C&D wood is processed according to best management practices, the Agency had proposed to require processors to certify they are meeting such best management practices using trained operators. This requirement has been finalized in this rule for the reasons

not covered by the Federal asbestos NESHAP regardless of whether the demolition or renovation is performed by agents of the owner of the property or whether the demolition or renovation is performed by agents of the municipality. See also the "Asbestos NESHAP Clarification of Intent" (60 FR 38725; July 28, 1995).

discussed earlier in section V.A.3. of this preamble. Combustors must obtain a written certification for every new or modified contract, purchase agreement, or other legally binding document, from each final processor of C&D wood. The written certification must include the statement: the processed C&D wood has been sorted by trained operators in accordance with best management practices. Combustors have the ultimate responsibility to determine the C&D wood has been sufficiently processed.

The Agency has determined that, when C&D wood is processed according to the best management practices, it will have significantly fewer contaminants and improved fuel characteristics. The best management practices ensure the contaminants in the fuel that is burned will not be unpredictable, regardless of the type or number of processing techniques used. Thus, this rule finalizes the best management practices, with some minor changes from the proposed regulatory language as discussed previously in section V.A.3. of this preamble.

b. Legitimacy Criteria

In determining whether to list processed C&D wood as a categorical non-waste fuel in 40 CFR 241.4(a), the Agency evaluated the legitimacy criteria in 40 CFR 241.3(d)(1)—that is, whether it is managed as a valuable commodity, whether it has a meaningful heating value and is used as a fuel in a combustion unit to recover energy, and whether contaminants or groups of contaminants are at levels comparable to or less than those in the traditional fuel the unit is designed to burn. To the extent that processed C&D wood does not meet one or more of the legitimacy criteria, the Agency has considered other relevant factors in determining to list C&D wood as a categorical non-waste fuel in 40 CFR 241.4(b)(5)(ii) (see discussion on formaldehyde below).

i. Managed as a Valuable Commodity.

Regarding the first legitimacy criterion, the information in the record in support of the proposal and this final rule demonstrates that both processors and combustors manage processed C&D wood as a valuable commodity. Specifically, after processing, including grinding to size, processors ship the material to energy recovery facilities in covered chip vans or semi-trailers. The material is then stored on-site at the combustion facilities in wood fuel storage yards and generally used within 90 days of delivery.²⁷ Because storage does not exceed reasonable time frames, and management is similar to that of virgin wood and biomass, the Agency has determined that processed C&D wood meets this legitimacy criterion.

ii. Meaningful Heating Value and Used as a Fuel to Recover Energy.

With respect to the second legitimacy criterion, the record shows that processed C&D wood has a meaningful heating value and is used as a fuel to recover energy. Specifically, information in the rulemaking record demonstrates that processed C&D wood has an average as-fired energy content of 6,640 Btu/lb,²⁸ which is greater than 5,000 Btu/lb, which the Agency considers to have a meaningful heating value (see 76 FR 15541, March 21, 2011). This also compares favorably to information compiled by the Agency in 2011, in which 95 samples of unadulterated timber burned by major source boilers²⁹ across the country exhibited an average as-fired energy content of 5,150 Btu/lb.³⁰ According to C&D trade organizations, energy recovery facilities purchase processed C&D wood and burn the material as fuel to generate

²⁷ See December 7, 2012 letter from Susan Bodine to Suzanne Rudzinski, page 3. EPA-HQ-RCRA-2008-0329-2009.

²⁸ Appendix A of April 25, 2013, submittal from Susan Bodine on behalf of BPA and CMRA, available in the Docket at EPA-HQ-RCRA-2013-0110.

²⁹ Major sources are

³⁰ USEPA, Office of Air Quality Planning and Standards, Emissions Database for Boilers and Process Heaters Containing Stack Test, CEM & Fuel Analysis Data Reported Under ICR No. 2286.01 and ICR No. 2286.03 (Version 6). EPA Docket/Document Number EPA-HQ-OAR-2002-0058-3255. February 2011.

electricity. Thus, the Agency has determined that processed C&D wood meets this legitimacy criterion.

iii. Contaminants Comparable to or Lower than Traditional Fuels.

For the third legitimacy criterion, C&D trade organizations provided the Agency with contaminant analyses of more than 220 samples of processed C&D wood from nine combustion facilities in California, Maine, Massachusetts, Minnesota, New York, the state of Washington, and Wisconsin in support of the proposed categorical listing for processed C&D wood. The Agency compared the contaminant levels found in the processed C&D wood to the contaminant levels found in clean wood and biomass materials since any unit burning processed C&D wood can clearly burn clean wood and biomass materials as well.³¹

As first presented in the April 14, 2014 proposed rule (79 FR 21013-14), summary results for the contaminant comparisons are provided in Table 1 of this preamble, with the contaminants most likely to be present in unprocessed C&D debris listed first. The Agency finds that they support the final determination that processed C&D wood meets the contaminant legitimacy criterion, with the appropriate qualifications as noted below.

Specifically, arsenic and chromium are present due to CCA-treated wood; lead due to lead-based paint chips; mercury due to light bulbs, ballasts, thermostats and other mercury-containing devices present in buildings; chlorine due to PVC and other plastics; sulfur due to plaster or drywall containing gypsum, a sulfate mineral; formaldehyde due to resinated wood;

³¹ In response to the proposal, EPA did receive data showing a contaminant comparison to coke and coal. However, the data was specific to cement kilns and cannot be considered to be representative for all unit types that combust processed C&D wood (i.e., some boilers cannot burn coal depending upon feed systems or boiler design type) and therefore, was not analyzed for this final rule. A case-by-case comparison, however, can be made using traditional fuels such as coke and coal if the combustion unit is designed to burn these materials and if the concentrations of contaminants are found to be comparable to or less than those present in C&D wood, then the contaminant criterion would be met.

and pentachlorophenol due to utility poles and other treated wood products currently accepted by some combustion facilities. Although sources of fluorine in C&D debris are less clear, the contaminant's presence may be due to its use in flame retardants incorporated into carpet, furniture, and other building materials.

TABLE 1. Comparison of Contaminants in Clean Wood/Biomass and Processed C&D Wood^{32,33,34}

Contaminant	Clean Wood/Biomass	# samples	Processed C&D Wood		
	Range		Average	90% UPL	Maximum
Contaminants Most Likely to be Present in C&D Debris					
Arsenic	ND – 298	n = 221	35.9	91.8	261
Chromium	ND – 340	n = 212	45.0	116	283
Lead	ND – 340	n = 224	53.9	136	482
Mercury	ND – 1.1	n = 180	0.1	0.16	0.7
Chlorine	ND – 5400	n = 173	809	1567	3521
Fluorine	ND – 300	n = 86	45.9	139	313
Sulfur	ND – 8700	n = 183	1300	2200	7300
Formaldehyde	1.6 – 27	n = 45	47.6	104.2	176.8
Pentachlorophenol	ND	n = 21	19.7	N/A	126
Contaminants Less Likely to be Present in C&D Debris					
Antimony	ND – 26	n = 50	2.6	7.1	16.6
Beryllium	ND – 10	n = 50	0.1	0.23	0.3
Cadmium	ND – 17	n = 107	0.3	0.53	1.3
Cobalt	ND – 213	n = 50	1.1	2.1	3.5
Manganese	ND – 15800	n = 50	78.8	115	180
Nickel	ND – 540	n = 50	4.0	8.6	27.4
Selenium	ND – 9	n = 43	0.4	1.0	1.3

³² Sources: Clean Wood/Biomass ranges taken from a combination of EPA data and literature sources, as presented in EPA document Contaminant Concentrations in Traditional Fuels: Tables for Comparison, November 29, 2011, available at www.epa.gov/epawaste/nonhaz/define/index.htm. Processed C&D Wood data from April 26, 2013, submittal by Susan Bodine on behalf of BPA and CMRA, available in the Docket at EPA-HQ-RCRA-2013-0110

³³ All units expressed in parts per million (ppm) on a dry weight basis.

³⁴ Upper Prediction Limit (UPL) calculations were made by commenters using EPA's ProUCL software, using either a lognormal distribution or nonparametric statistics, as appropriate.

Contaminant	Clean	Processed C&D Wood			
	Wood/Biomass	# samples	Average	90% UPL	Maximum
	Range				
Nitrogen	200 – 39500	n = 75	3900	8000	12600

With the exception of four contaminants—fluorine, lead, formaldehyde and pentachlorophenol, every sample of processed C&D wood’s contaminant levels was well within the range of clean wood and biomass materials. With respect to these four contaminants:

- **Fluorine:** This contaminant was first discussed in the proposal at 79 FR 21014. While only one sample out of 45 samples of processed C&D wood exceed the range for fluorine in clean wood and biomass, the Agency still considers fluorine to be at levels comparable to those found in clean wood and biomass since this lone sample is present within a small acceptable range (i.e., 313 ppm is comparable to 300 ppm).^{35, 36} Thus, the final rule does not include controls specific to fluorine.
- **Lead:** As first discussed in the proposal at 79 FR 21014-15, April 14, 2014, despite efforts by C&D processing facilities to remove lead, the data demonstrate that some processing facilities do a better job than others, with isolated samples from Massachusetts reaching 407 and 437 ppm lead, and one of seven samples from Wisconsin reaching 482 ppm lead. While most of the 224 samples detected lead within the range found in clean wood and biomass materials (ND – 340 ppm), it is important to recognize that each high sample could represent a large amount of processed C&D wood produced by an outlier

³⁵ 76 FR 15523-24, March 21, 2011.

³⁶ In addition to determining that the one sample of fluorine is within a small acceptable range, one can consider that the Upper Prediction Limit (UPL) for fluorine in processed C&D wood, when calculated at a 90 percent confidence level based on all 45 samples (139 ppm), is well within the range of clean wood and biomass materials. The UPL taken at a 90 percent confidence level yields a number (i.e., 139 ppm), and in the context of analyzing contaminant samples, persons can be confident that the next sample taken will be at or below that number 90 percent of the time.

facility. Accordingly, an overly broad categorical non-waste listing could include processed C&D wood from facilities where the final product consistently contains high lead levels, amounts that would not be considered a normal part of clean wood or biomass. In this instance, one facility in Massachusetts provided a composite sample for each of seven days, and two out the seven samples exceeded the range of lead values found in clean wood and biomass. That could mean more than 28 percent of the processed C&D wood produced by that facility exceeds lead levels found in clean wood and biomass.

C&D processing facilities have options for eliminating lead in the processed C&D wood they produce, and information submitted with the contaminant dataset shows that the two facilities (one in Massachusetts, the other in Wisconsin) exhibiting the highest lead levels shared similar lead elimination strategies. Although both facilities accept painted wood, neither uses X-ray Fluorescence (XRF) analyzers to detect and remove lead-based painted wood. Nor do they require documentation of a building inspection that includes testing for lead-based paint. By comparison, the Washington facility included in the dataset requires documentation of XRF testing before accepting demolition debris from a particular building, and as evidenced by a maximum lead concentration of 26 ppm, lead concentrations in the processed C&D wood it burns tested lower than for any other facility in the dataset. The Minnesota facility included in the dataset does not accept painted wood, and as evidenced by a maximum lead concentration of 110 ppm, lead concentrations in the processed C&D wood it burns are also well within the range of clean wood and biomass materials.

Both the Massachusetts facility and the Wisconsin facility relied solely on removing “fines” to control lead levels. Fines are small-sized particles that may contain relatively high concentrations of contaminants, and facilities can remove them before and after shredding via screens or flotation. The Agency does not dispute that the removal of fine particles can reduce the levels of lead and other contaminants, particularly for C&D processing facilities using negative sorting. Without additional measures, however, this strategy does not remove sufficient lead to transform the C&D debris into a product fuel in all cases that would warrant processed C&D wood being categorically listed as a non-waste fuel. Thus, the Agency had proposed conditions related to lead elimination as part of the categorical non-waste listing for processed C&D wood. The proposed conditions were:

- Facilities using positive sorting must either: (1) Exclude painted wood via the sorting process by selecting only unpainted wood from incoming C&D debris for further processing, (2) use XRF to ensure that painted wood included in the final product fuel does not contain lead-based paint, or (3) require documentation that a building has been tested for and does not include lead-based paint before accepting demolition debris from that building.
- Facilities using negative sorting must remove fine particles, which may include asbestos fibers and other contaminants in addition to lead, and they must also either: (1) Remove painted wood via the sorting process, (2) use XRF to detect and remove lead-painted wood, or (3) require documentation that a building has been tested for and does not include lead-based paint before accepting demolition debris from that building.

No additional data were received in response to the proposed measures to eliminate lead that warrant removal of the conditions or their options for the final listing. However, as discussed earlier in section V.A.3. of this preamble, three changes have been made to the proposed regulatory language: 2 1) positive sorting has been revised to include processors that receive pre-sorted wood from positive sorting entities to clarify that these processors are not negative sorters for purposes of identifying which lead elimination requirements are applicable; 2) the word “all” has been added to clarify that both positive and negative sorters must exclude or remove all painted wood from incoming debris; and 3) the parenthetical language: “to the extent that only de minimis quantities inherent to processing limitations may remain” has been added to both 40 CFR 241.4(a)(5)(i)(A) and (ii)(A) to reflect the Agency’s position on de minimis amounts.

Based on all information regarding the presence of lead in processed C&D wood, the Agency has determined that the proposed conditions are necessary to ensure that lead levels in processed C&D wood are comparable to or lower than lead levels present in clean wood and biomass. Consistent with the proposal, the Agency has finalized conditions designed to eliminate lead, with the minor changes as noted above. See the final regulatory language at 40 CFR 241.4(a)(5)(i) and (ii).

- Pentachlorophenol: The following was first discussed in the proposal at 79 FR 21015. The presence of pentachlorophenol in some processed C&D wood results from processors either choosing to include industrial wood products treated with pentachlorophenol in their product fuel (in the case of positive sorting) or from processors not removing those same industrial wood products from C&D debris (in the case of negative sorting) prior to the final grinding step. The EPA restricted the use and

sale of pentachlorophenol in 1987, with no registered residential uses allowed for the past 26 years. As stated in the proposal, the Agency believed that the pentachlorophenol concentrations in processed C&D wood were a direct result of easily identified wood products, predominantly utility poles, that processing facilities can choose to exclude or remove prior to grinding recovered C&D wood.³⁷ Therefore, under the proposed regulatory conditions, processing facilities must exclude or remove these known sources of pentachlorophenol from their final product fuel to qualify for the categorical non-waste listing.

Information submitted in response to the proposed rule affirm that the pentachlorophenol concentrations in processed C&D wood are a direct result of easily identified wood products, predominantly utility poles, that processing facilities can choose to exclude or remove prior to grinding recovered C&D wood.³⁸ Because sources of pentachlorophenol can be readily identified by color and by shape of the treated wood, no additional conditions other than those specified by the best management practices are necessary. Thus, to ensure that pentachlorophenol levels in processed C&D wood are comparable to or lower than clean wood and biomass, the Agency is requiring that pentachlorophenol treated wood be excluded or removed from incoming C&D debris. See 40 CFR 241.4(a)(5). The Agency sees no reason to change the determination expressed in the proposed rule and adopts it for the final rule.

³⁷ Based on discussions with plant staff during an EPA tour of Industrial Disposal Services, Inc. Broad Run Recycling facility in Manassas, Virginia on May 23, 2013. The facility processes discarded C&D wood into a product fuel.

³⁸ See comments from AF&PA (0076.1), DTE Energy Services (0083.1), and NTH Consultants LTD for CMS Enterprises (0100) in docket ID: EPA-HQ-RCRA-2013-0110.

- Formaldehyde: The proposal first discussed this contaminant at 79 FR 21015, April 14, 2014. For C&D debris processed pursuant to best management practices, inclusive of the regulatory conditions presented in the proposal, formaldehyde (present in concentrations as high as 176.8 ppm versus 27 ppm in clean wood/biomass) is the only remaining contaminant that raised questions as to whether it meets the contaminant legitimacy criterion. Again, the Agency emphasizes that, although the situation appears similar to the categorical non-waste listing for resinated wood in 40 CFR 241.4(a)(2), details surrounding use of the two NHSMs as fuel are not the same. In the case of resinated wood, as defined in 40 CFR 241.2, the Agency determined that energy recovered from the combustion of manufacturing process residues and off-specification resinated wood is integrally tied to the industrial production process. The equivalent for C&D wood would be sawmills reliant on recovering energy from sawdust and off-specification lumber to power the construction lumber production process. Sawmills may do this, but that is not the scenario commenters have described in response to the December 23, 2011 (76 FR 80451) proposed rule and for which the Agency has evaluated.

While EPA disagreed with petitioners' claims that resinated wood components in C&D debris are categorical non-wastes and the corollary that formaldehyde concentrations are therefore irrelevant, the Agency agreed in the proposal that additional factors were worth considering in determining whether to list processed C&D wood categorically as a non-waste fuel. First, formaldehyde concentrations in processed C&D wood may reach 176.8 ppm, but are lower than in pure resinated wood, which may reach 200 ppm. National rules developed by the CARB Composite Wood ATCM, per Public Law 111-199, will ensure that newly produced resinated wood will contain even less formaldehyde in the

future by setting limits on how much formaldehyde may be released.³⁹ Second and more importantly, for many combustors, processed C&D wood scraps that include resinated wood components actually have added value and are either selected for (in the case of positive sorting) or specifically not removed (in the case of negative sorting) because the wood has been kiln-dried prior to use in construction. Kiln-dried wood has a greater heating value than virgin wood, almost double in some cases. Kiln-dried wood also has more consistent moisture content; an equally important benefit to combustors because a consistent fuel improves combustion efficiency and leads to reduced emissions of particulate matter, carbon monoxide, and other organic hazardous air pollutants.

The Agency has determined that the additional factors discussed in the proposal are appropriate for determining whether the resinated wood in certain limited circumstances is actually a product fuel. As a result, in the final rule the Agency allows resinated wood to remain in C&D wood prior to processing for this categorical non-waste listing. This determination is based partially on the fact that future rules will limit levels of formaldehyde in wood products and will, in effect, also reduce the levels of formaldehyde in processed C&D wood. Principally, the Agency's determination is based on information submitted to the Agency showing that some processors choose to include resinated wood in processed C&D wood based on combustor specifications for a higher Btu value fuel, which demonstrates that resinated wood is a valuable product fuel and is not burned for destruction. The Agency maintains that the benefits of burning kiln-dried

³⁹ On May 29, 2013, EPA proposed two rules to protect the public from the risks associated with exposure to formaldehyde. 78 FR 34796, 78 FR 34820. The proposals would implement the Formaldehyde Standards for Composite Wood Products Act (Title VI of the Toxic Substances Control Act): one will implement the Act's emission standards and the other will ensure products meet the TSCA formaldehyde emission standards. See <http://www.epa.gov/oppt/chemtest/formaldehyde/>

wood not only provides higher heating value, but also more consistent moisture content which lends to more efficient combustion and, thus, reduced emissions of certain contaminants. The final rule, therefore, allows processors to choose whether they will exclude or remove any resinated wood and still be permitted to be within the categorical non-waste listing for C&D debris.

This does not mean, however, that all resinated wood is considered a non-waste fuel. The Agency has found that resinated wood is a non-waste fuel in the furniture industry because of particular circumstances in that industry, and in this case for C&D wood due to the extraction of fuel value as a result of the kiln-dried properties of that wood. In other circumstances, a case-by-case determination would need to be made.

5. Summary of Comments Requested

The proposed rule identified several issues pertaining to the listing of C&D wood as categorical non-wastes and requested comment on those issues as follows.

Processing Techniques for lead and pentachlorophenol. The Agency requested comment on the efficacy of specific processing techniques related to lead, as well as the feasibility of reducing pentachlorophenol concentrations in processed C&D wood by excluding or removing utility poles and other industrial wood products known to be treated with the chemical. See 79 FR 21015, April 14, 2014. Please refer to section V.A.4.b.iii of this preamble for the Agency's final determination and supporting rationale.

Formaldehyde levels. The Agency sought comment on the decision to balance elevated formaldehyde levels with the greater heating value and more consistent moisture content that resinated wood components lend to processed C&D wood, rather than specifically requiring that resinated wood be excluded or removed from C&D debris as part of the best management

practices. See 79 FR 21015-16. Please refer to section V.A.4.b.iii of this preamble for the Agency's final determination and supporting rationale.

CCA-treated wood. As proposed at 79 FR 21016, CCA-treated wood was to be excluded or removed from C&D debris. Although the data submitted to the Agency indicated that arsenic and chromium concentrations in processed C&D wood are comparable to levels found in traditional fuels, there was concern that because a majority of CCA-treated wood is still in use, an increase in the amount of CCA-treated wood in C&D debris can be expected in the future. Currently, CCA-treated wood can represent up to 30 percent of the C&D wood waste stream.⁴⁰ The concern was further compounded by the reality that visual identification of CCA-treated wood is at times very difficult, especially when the wood is weathered, dirty, painted, or if the wood is characterized by low retention levels.⁴¹

One pilot study conducted in the state of Florida showed that visual sorting of CCA-treated wood at three different facilities produced differing results of success. The two facilities with the greatest success, which correctly identified 89 percent and 90 percent of the pre-sorted wood as untreated wood, had provided extensive training to its employees. The third facility correctly identified 60 percent as untreated wood, as evidenced by little or no training.

Given the variability in visually identifying untreated versus treated wood, augmenting technologies have been developed to detect the presence of arsenic, copper, and chromium, as well as other contaminants. Studies have concluded that the use of stains (e.g., PAN Indicator

⁴⁰ Fattah, Hassan Abdel, et al. "Online Sorting of Recovered Wood Waste Using Automated X-Ray Technology" Final Report; November 30, 2009. See p. 2. Available in EPA-HQ-RCRA-2013-0110.

⁴¹ Blassino, Monika, et, al. "Methods to control Fuel Quality at Wood Burning Facilities." Available in EPA-HQ-RCRA-2013-0110-0033.

Stain⁴²) and X-ray Florescence (XRF) technology are the most promising technologies, with chemical stains being suitable for sorting small quantities of wood and XRF technology being better suited for sorting large quantities of wood.

Again, the Agency's concern was based on anticipated increases of CCA-treated wood in C&D debris, as well as the accuracy of visual sorting among C&D processors. Therefore, the Agency had requested comment on the viability of either requiring, as best management practices, C&D processors to implement formal training programs that emphasize sorting treated wood from untreated wood or the use of XRF technology or PAN indicator stains to provide greater certainty that CCA-treated wood is removed from the processed C&D wood.

After considering the information in the record, including comments received, the Agency has determined that CCA-treated wood must be excluded or removed from C&D debris, by trained operators, to ensure that levels of arsenic and chromium in processed C&D wood remain comparable to or lower than levels in clean wood and biomass. Unlike formaldehyde levels which are expected to decrease over time, levels of arsenic and chromium are expected to increase with continued use of CCA-treated lumber or other copper, chromium, or arsenical preservatives.

The Agency's decision to require that operators be trained to exclude or remove treated wood (with the exception of resinated wood) as part of the best management practices, is based in part on the results from the Florida pilot study which showed a high rate of success when extensive training was provided for visual identification of treated wood; and in part because both XRF technology and PAN indicator stains are limited in application when processing large

⁴² PAN stands for the chemical name of 1-(2-pyridylazo)-2-naphthol, an orange-red solid with a molecular formula $C_{15}H_{11}N_3O$. It is used to determine the presence of almost all metals excluding alkali metals. The stain is not specific to arsenic within CCA. It reacts with the copper, so that wood treated with any copper-based preservative will also test positive using this stain.

amounts of C&D debris. The evidence demonstrates that processors who train their employees to visually recognize treated wood are successful in excluding or removing CCA-treated wood.⁴³ Therefore, by requiring processors to train their operators as part of this categorical non-waste listing, it will further ensure that levels of arsenic and chromium in processed C&D wood remain comparable to or lower than levels in clean wood and biomass as more CCA-treated wood is introduced into C&D debris.

Disaster Debris. The definition for C&D wood as proposed did not include disaster debris. The Agency had defined “clean cellulosic biomass” to include clean wood found in disaster debris.⁴⁴ However, disaster debris wood that is mixed with contaminated materials (e.g., lead-based painted wood, asbestos containing materials, etc.) had not been specifically addressed. The Agency noted in the proposal that management of disaster debris is more expedited and less controlled and thus, prone to include contaminants that might otherwise be sorted out prior to processing.⁴⁵ In light of these concerns, the Agency requested comment on the appropriateness of including wood that is recovered from disaster debris, but that is mixed with other contaminated materials prior to arrival at the processing facility, as processed C&D wood. Thus, the Agency requested that commenters provide any data or information to demonstrate that mixed disaster debris wood, once processed, produces wood that contains contaminants comparable to or lower than biomass and virgin wood. Further, the EPA also requested comment on whether other conditions imposed by contingency plans, for example, can facilitate the removal of contaminated material found in disaster debris.

⁴³ Blassino, Monika, et al. “Methods to Control Fuel Quality at Wood Burning Facilities.” EPA-HQ-RCRA-2013-0110-0033.

⁴⁴ 76 FR 15478 (March 21, 2011); codified at 40 CFR 241.2.

⁴⁵ Management of disaster debris can involve significantly greater volumes. For example, prior to the 1994 Northridge earthquake in Los Angeles, one local company processed 150 tons of C&D debris per day. After the earthquake, the city picked up as much as 10,000 tons of C&D debris per day.

The Agency finds that the concerns as expressed in the proposal would only be relevant if the best management practices, as finalized in this rule, are not followed. As discussed previously in the section on processing (See section V.A.4.a.i. of this preamble), the best management practices ensure that the contaminants in the fuel that is burned will not be unpredictable regardless of the source of the wood, or even the quantity of wood to be processed. In other words, processors that comply with the best management practices for this listing would not be altering the way in which they process the debris. Should a processor choose to hire and train additional sorters or extend operational hours to process higher volumes, the limiting factors that will continue to ensure the quality of the processed material are the best management practices and training and certification requirements. (For additional discussion on handling practices, refer to section V.A.3. of this preamble.) Thus, clean wood from natural disaster debris that is mixed with other materials and is delivered to a processing facility has been added to the definition of C&D wood. However, the disaster debris must be processed in the same manner as C&D wood recovered from demolition activities to qualify for the categorical non-waste listing.

Trained operators. As presented in the proposal at 79 FR 21016, best management practices require sorting by “trained operators” to remove or exclude all non-wood debris, certain treated wood, and lead-based painted wood from the final product fuel. The Agency noted that operators who are trained to sort C&D debris, especially to recognize treated wood, play an important role in reducing contaminant levels in the final product fuel. Therefore, comment was requested on whether the Agency should require C&D processors to have formal training programs in place as part of the best management practices, as well as whether processors should be required to keep records as a condition of the categorical listing to demonstrate that such operators have been formally trained.

In the proposal, the Agency did not prescribe what a training program could include due to several factors that contribute to variability within the C&D processing industry. Certain factors such as where the C&D debris originates from and the amount of sorting prior to arrival at the processing facility can influence the extent and type of contaminated material arriving at the processing facility. Also, whether positive or negative sorting is used and the scale of the processing facility (i.e., the degree of sorting and screening devices) are variable within the industry. Thus, the Agency sought comment on whether to require processors to have formal training programs, and if so, requirements that would be flexible enough to address the variability of the incoming C&D debris, but also provide additional assurance that C&D processing facilities would produce a non-waste product fuel with contaminants that are comparable to or lower than clean wood/biomass.

For this final listing, the Agency is not prescribing the elements of a training program and maintains that flexibility is necessary to address the variability within the industry. However, the Agency is finalizing a requirement for processors to train their operators in accordance with the best management practices. The Agency did not include a specific training requirement for processors because it had intended to rely on a written certification as a means for processors to show that they had used “trained” operators. After further consideration, the Agency finds that this approach does not provide any assurance that the processor is conducting the necessary training in order to ensure that the resultant material is not discarded when combusted and is, therefore, not a waste. Although the written certification, as proposed and finalized in this rule, is intended to confirm that the processed C&D wood has been sorted by “trained” operators in accordance with best management practices, it does not require any evidence that training has taken place, nor does it hold the processor accountable. Thus, a mechanism is necessary to

document when the training has been conducted so that processors are accountable to their customers when certifying that they have used trained operators. This mechanism is implemented via new regulatory language at 40 CFR 241.4(a)(5)(iii) which states that “[p]rocessors must train operators to exclude or remove the materials as listed in paragraph (a)(5) of this section from the final product fuel. Records of training must include dates of training held and must be maintained for a period of three years.” The training requirement serves as an additional condition of this categorical non-waste listing. This condition is applicable only to the final processor, because it is ensuring that processing has transformed the processed C&D wood into a non-waste product fuel according to best management practices before providing it to the combustor, and the final processor is responsible for meeting individual combustor specifications. However, it is important to note that the C&D materials at the intermediate processor facilities would still be solid wastes.

Written Certification. As proposed at 79 FR 21016, the combustor would need to obtain a written certification from the C&D processor that the C&D wood has been processed by trained operators in accordance with best management practices. The Agency proposed that the written certification could take the form of a contract, purchase agreement, or other document that requires the supplier to process the C&D wood according to combustor specifications and best management practices. It was the Agency’s understanding that purchase agreements and contracts are common between a processor/supplier and combustor. Thus, comment was requested on whether such agreements and contracts are sufficient documentation (i.e., can serve as the written certification) or if a written certification statement developed specifically to address the requirements in the proposal would be clearer and more effective. The Agency noted that the existing record keeping requirements for combustors that combust NHSMs as fuels listed

under 40 CFR 241.4,⁴⁶ would be appropriate for maintaining the certification. The purchase agreement, contract, or other document, would be considered a “record” which satisfies the record keeping requirements of 40 CFR 60.2740(u) (Emissions Guidelines) and 40 CFR 60.2175(w) (New Source Performance Standards) for CISWI units and 40 CFR 63.11225(c)(2)(ii) for area source boilers and 40 CFR 63.7555(d)(2) for major source boilers.⁴⁷

The Agency has determined that a written certification statement developed specifically to address requirements of the categorical non-waste listing will provide independent assurance that processors are providing a legitimate product fuel to their customers. Although contracts and purchase agreements indicate a commitment to quality, specifications can vary according to the needs of one combustor versus another with respect to the extent and type of contaminant removal required. The contracts and purchase agreements that the EPA has seen do not show that C&D wood has been processed according to any particular best management practices, and consequently, cannot ensure that the resulting material is not a waste when combusted. The written certification statement is required only for the final processor, since it is responsible for ensuring that the final product fuel has been processed according to best management practices. Note that the materials at intermediate processor facilities would still be solid wastes. Therefore, this final rule requires combustors to obtain a written certification from the final processor for every new or modified contract, purchase agreement, or other legally binding document. This written certification statement must state that the processed C&D wood has been sorted by trained operators in accordance with best management practices. See the new requirements at 40 CFR 241.4(a)(5)(iv).

⁴⁶ 40 CFR 241.4 lists the categorical or “Non-waste determinations for specific non-hazardous secondary materials when used as a fuel.”

⁴⁷ These sections state that “for operating units that combust non-hazardous secondary materials as fuel per 40 CFR 241.4 , you must keep records documenting that the material is listed as a non-waste under 40 CFR 241.4(a).”

6. Response to Comments

a. Definition of Construction and Demolition (C&D) Wood

Comment: Commenters supported the inclusion of disaster debris in the definition of C&D wood, generally arguing that the definition already includes disaster debris because it does not distinguish between the demolition and dismantling of buildings by nature or man. Man-made demolition debris will not necessarily be distinguishable from debris created by nature. Managing wood from natural disasters requires the same processes used for [man-made] C&D debris. Although a natural disaster may increase the quantity of C&D wood available for processing, processors will follow the same practices in terms of material acceptance and processing. Where incoming material exceeds processing capacity and cannot be stored, the material will typically be landfilled. In addition, purchasers of processed C&D wood will continue to require material that meets or exceeds their specifications, so processors must continue to exert tight controls to avoid risking rejected materials. The [proposed] regulatory requirements for training and processing would still prevail. Accordingly, the EPA should amend the last sentence of the definition that addresses C&D wood from demolition activities to include “natural disasters.”

Response: We agree that the definition of C&D wood should include the term “natural disaster” to represent activities resulting from natural disaster events. Accordingly, the Agency has revised the definition from the proposal so that the last sentence now reads “C&D wood from demolition activities results from dismantling buildings and other structures, removing materials during renovation, *or from natural disasters.*”

Clean wood in disaster debris had been included in the definition for “clean cellulosic biomass” in a prior rulemaking. When clean wood is picked/sorted (i.e., via positive sorting)

from the disaster debris site and sent to a processor for chipping and grinding, it is considered clean cellulosic biomass, which is a traditional fuel. However, the Agency had not addressed clean wood from disaster debris that is mixed with contaminated materials which could include other types of treated wood, drywall, plastics, concrete and so forth, that is delivered to a processing facility. When clean wood from disaster debris is not picked/sorted prior to arrival at a processing facility, it is no different than C&D debris and thus, must be processed in the same manner to qualify for this categorical non-waste listing.

The proposal expressed concern regarding the management of disaster debris prior to processing, such that due to the circumstances, large quantities of debris would need to be managed expeditiously, and consequently may contain more contaminated materials that would have been typically sorted out prior to arrival at a processing facility. However, after considering the comments and evidence in the record, the Agency finds that these concerns regarding the management of large volumes of material in an expeditious nature, would only be relevant if the best management practices as finalized in this rule, are not used to process wood from natural disaster debris. The best management practices set forth in this rule are sufficient to ensure that natural disaster debris is handled and processed in the same manner as other C&D debris, regardless of the source or quantity of material to be processed. In other words, processors that comply with the best management practices for this listing would not be altering the way in which they process the debris. Should a processor choose to hire and train additional sorters or extend operational hours to process higher volumes, the limiting factors in this rule that will continue to ensure the quality of the processed material are the best management practices and training and certification requirements. Further, the information provided to the Agency shows that when the incoming material exceeds processing capacity, the excess material is stored or

sent to a landfill. Given the best management practices and information indicating the typical handling of excess material, the Agency has determined that it is appropriate to include disaster debris in the definition of C&D wood. Thus, clean wood from natural disaster debris that is mixed with other materials and is delivered to a processing facility has been added to the definition of C&D wood. However, the natural disaster debris must be processed in the same manner as C&D wood recovered from C&D activities to qualify for this categorical non-waste listing.

Comment: The definition of C&D wood should be expanded with respect to the sources of wood generated from construction activities. As proposed, the second sentence of the definition states “C&D wood from construction activities results from *cutting wood down to size during installation* or from purchasing more wood than a project ultimately requires.” This sentence may be too prescriptive, since wood can also be generated from incorrectly cut wood, wood used for concrete forms, wood used for support braces, and other uses which render the wood unsuitable for installation.

Response: The definition of C&D wood as applied to construction activities was not intended to be limited to a specific installation activity (i.e., cutting wood down to size). The Agency, however, understands that it may be read to be prescriptive. To address any ambiguity, the Agency has revised the second sentence for construction and demolition (C&D) wood at 40 CFR 241.2 with the following, “C&D wood from construction activities results from wood generated *during any installation activities* or from purchasing more wood than a project ultimately requires.” Thus the definition is not limited to “cutting wood down to size” but allows any waste wood generated at any time during installation to be considered construction debris. Although the revision does not specifically list the specific installation activities as suggested, it

now acknowledges that there are a number of different ways that construction activities can generate wood without limiting applicable activities by specifically listing them in the definition.

b. Contaminant Comparison Criterion

Comment: Changes should be made to the method for comparing contaminant levels in processed C&D wood. Rather than comparing the constituents of concern to virgin wood or biomass, the Agency should consider establishing a standard based on analytical surveys of well-sorted C&D debris and use the test results as the standard. Also, specific contaminant levels need to be developed by the Agency to clearly define what a legitimate fuel product is that can be burned as a non-waste. Without a clearly defined set of contaminant levels, the rule will be very difficult to enforce.

Response: We disagree that any modifications to the contaminant comparison legitimacy criterion should be made, particularly with respect to establishing what the Agency considers a “bright line” or even a numerical approach to setting levels for C&D wood. The issue is not that analytical surveys of well-sorted C&D debris establish a standard. Rather, the levels in the processed C&D wood must compare favorably to the traditional fuels that it replaces. The rationale for comparison of a NHSM’s contaminant concentrations to the traditional fuels which the combustion unit is designed to burn is explained in several related rulemakings.⁴⁸

The Agency disagrees with the suggestion to develop specific contaminant levels. We previously said that if we were to consider such an approach, the Agency would have to establish a line for what is acceptable and the line may either be somewhat arbitrary or it may exclude materials that, if carefully considered, should be considered legitimate. On the other hand, case-by-case comparisons by each person evaluating this legitimacy criterion can take into account

⁴⁸ 74 FR 54 (January 2, 2009), 75 FR 31883 (June 4, 2010), and 76 FR 15526 (March 21, 2011).

the wide variety of NHSMs, as well as the appropriate traditional fuel to which it is being compared. Because this factor must apply to various different recycling activities and industries, the case-by-case approach is most appropriate.⁴⁹ Thus, an NHSM must contain contaminants at levels that are comparable to or lower than the range provided for the traditional fuel on a case-by case basis to qualify as a product fuel.

In the case of a categorical non-waste listing, the Agency may list a specific NHSM when it has determined that the NHSM has not been previously discarded, or if discarded, has been sufficiently processed, and is legitimately used as a product fuel. When an NHSM is listed as a categorical non-waste, persons that generate or burn processed C&D wood will not need to make individual (i.e., case-by-case) determinations that it meets the legitimacy criteria (see 79 FR 21009). Specifically for C&D wood, the Agency has evaluated all data and information and has determined that C&D wood processed according to best management practices is transformed into a legitimate product fuel and is appropriately listed as a categorical non-waste. Thus, a case-by-case comparison of contaminant levels in processed C&D wood to clean wood/biomass is not required for C&D wood processed according to best management practices. However, if the processing of C&D wood is found to be in non-compliance with conditions of this listing, the combustor may face enforcement action.

c. Construction and Demolition (C&D) Wood Processed from C&D Debris According to Best Management Practices

Comment: C&D wood should be regulated as a solid waste because it is discarded similar to scrap tires.

⁴⁹ 76 FR 15525-26.

Response: The Agency agrees that a discarded NHSM is a solid waste first. However, the commenters make an incorrect comparison between C&D wood and scrap tires. In the March 21, 2011 final rule, the Agency stated that "...a system where scrap tires are removed from vehicles and are collected and managed under the oversight of established tire collection programs are not discarded in the first instance...[t]hese programs ensure that the tires are not discarded en route to the combustor for use as a fuel and are handled as a valuable commodity..."⁵⁰ In this case, the commenters did not acknowledge the Agency's previous determination that not all scrap tires are discarded. Moreover, the Agency later finalized a categorical non-waste listing for scrap tires that are not discarded. See the final rule in the Federal Register at 78 FR 9154, February 7, 2013, and 40 CFR 241.4.

Contrary to scrap tires, mixed C&D debris (i.e., it is not composed of only clean cellulosic biomass) is discarded in all instances and must be processed sufficiently to transform the resulting C&D wood into a legitimate non-waste fuel. This is unlike scrap tires, where only the scrap tires that have been discarded must be processed to become a non-waste fuel.

The Agency has discussed its position on processing of discarded secondary materials at length in the March 21, 2011 final rule. For discarded secondary materials, when sufficient processing has been performed and if the resulting material meets the legitimacy criteria, the fuel or ingredient product would be considered a non-waste material (76 FR 15475-76, March 21, 2011). The Agency has determined previously that C&D debris can be processed to transform the C&D wood into a product fuel that meets the legitimacy criteria (76 FR 15485, March 21, 2011 and 78 FR 9138, February 7, 2013). Further, the Agency has determined that processed C&D wood is appropriately listed as a categorical non-waste when specific conditions are met

⁵⁰ See 76 FR 15491-92.

which are: conducting processing according to best management practices, conducting training, and providing a written certification. These conditions are designed to ensure that the resulting C&D wood is a non-waste product fuel.

Comment: The EPA's March 21, 2011 document "Identification of non-hazardous secondary materials that are solid waste" states that when C&D is sorted, painted wood is removed. This is misleading and is not the case. Painted and contaminated wood is routinely burned as evidenced by an interview at a processing facility where the plant manager stated that the "positive pick" process did not remove painted wood from the line and by a photograph of the same facility's processed C&D wood containing painted wood. In addition, another processing facility whose product fuel is reported to consist of forest industry waste, shredded construction wood waste, and demolition debris also contains significant amounts of paper, plastic, and foreign debris.

Response: The commenter misconstrues the Agency's discussion of processed C&D wood in the final rule at 76 FR 15485, March 21, 2011. When describing how contaminated C&D wood can become a non-waste product fuel, the Agency stated that "C&D-derived wood is typically sorted to remove contaminants (e.g., lead-painted wood, treated wood, non-wood materials), and size reduced prior to burning, producing material that likely meets the processing and legitimacy criteria for contaminants." Nothing in this statement specifically says that painted wood is removed through the sorting process. Furthermore, the Agency notes that not all painted wood is lead-based and thus, does not present the same contaminant concerns.

The Agency is concerned however, that lead painted wood and fines containing lead can contribute to elevated levels of lead in processed C&D wood. Thus, the Agency proposed and has finalized in this rule certain best management practices designed to eliminate sources of lead

in processed C&D wood. C&D processors have options for excluding (positive sorting) or removing (negative sorting) sources of lead: excluding or removing all painted wood from the incoming material, using X-ray Fluorescence to detect and exclude or remove lead-painted wood from the product fuel, or requiring documentation that a building has been tested for and does not include lead-based paint before accepting the demolition debris. In addition, negative sorting facilities must also remove fines during processing.

The Agency also agrees that other types of treated wood are often present in C&D debris. To address potentially elevated levels of other contaminants in treated wood, the Agency had proposed and has finalized in this rule best management practices to designed to eliminate specific types of treated wood from processed C&D wood. The best management practices require exclusion or removal of wood treated with creosote, pentachlorophenol, chromated copper arsenate, or other copper, chromium, or arsenical preservatives. In addition, the best management practices require exclusion or removal of non-wood materials such as plastics, drywall, concrete, aggregates, dirt and asbestos. See 40 CFR 241.4(a)(5). For a detailed discussion of the final best management practices, please refer to section V.A.3. of this preamble.

Comment: The EPA must require testing for contamination. C&D as a waste fuel is extremely variable. “Slugs” of contaminated wood move through sorting facilities at various times.

Response: The Agency agrees that C&D debris is extremely variable as a waste. Certain factors such as where the C&D debris originates from and the amount of sorting prior to arrival at the processing facility can influence the extent and type of contaminated material arriving at the processing facility. Also, whether positive or negative sorting is used and the scale of the

processing facility (i.e., the degree of sorting and screening devices) further contributes to variability within the industry. To address this variability, the Agency has finalized best management practices (see 40 CFR 241.4(a)(5)) for this categorical non-waste listing that require specific materials to be excluded or removed during processing. Also, as part of the best management practice requirements, C&D processors must certify that their processed C&D wood has been sorted by trained operators.⁵¹

The best management practices ensure that the contaminants in the fuel that is burned will be predictable, regardless of the type or number of processing techniques used or the source of the C&D debris. Thus, the Agency does not agree that it is necessary to require contaminant testing for this categorical non-waste listing. However, if a person chooses not to take advantage of this categorical non-waste listing, then a case-by-case determination would need to be made that the C&D wood has been sufficiently processed according to 40 CFR 241.2 and meets the legitimacy criteria according to 40 CFR 241.3(d)(1).

Comment: Copper should be deleted from the best management practice list of materials that are to be excluded or removed from the final product fuel. While the list includes materials that may not qualify as non-hazardous and materials that are addressed separately in the proposal, it overreaches by including copper, which is neither hazardous nor a listed Hazardous Air Pollutant (HAP). The proposed rule's preamble provides no basis for requiring exclusion or removal of wood that contains copper, and it is not necessary to include this restriction in order to avoid concerns about CCA or other arsenic or chromium-based preservatives, since they are covered by provisions in the proposed rule.

⁵¹ For a complete discussion of the certification and training requirements, see section V.A.3. of this preamble. These requirements are codified at 40 CFR 241.4(a)(5)(iii) and (iv).

Response: The Agency disagrees that copper should be deleted from the list of materials to be excluded or removed. The Agency had previously found, based on information in the June 2010 proposed rule and the March 21, 2011 final rule that wood treated with copper naphthenate is considered a solid waste because of concerns of elevated contaminants. At the time of these rules, the Agency indicated that it did not have sufficient information on contaminant levels in wood treated with copper naphthenate.^{52, 53} As a result, we have determined that copper should remain on the list.

Comment: In the third sentence of the proposed regulatory language for the best management practices, specific materials are required to be excluded or removed. This is much too restrictive because it can be interpreted as meaning all listed materials must be completely removed from the C&D debris. The requirement as proposed would render the requirement unworkable and impossible to meet. It would be more appropriate to require that the BMPs “substantially exclude or substantially remove” unwanted materials in order to recognize that some small amount of unwanted materials, although insignificant, may pass through the C&D stream even when using BMPs. Similarly, the proposed regulatory paragraph at 40 CFR 241.4(a)(5)(ii) contains the terms “remove” and “must remove.” Again, these terms are believed to be overly prescriptive, and should be modified to recognize that small, insignificant amounts of undesirable materials may be present in the final fuel product.

Another comment suggested that the words “to the extent practical” be added to the current language for clarification that 100 percent exclusion or removal is not required. The EPA

⁵² 75 FR 31863 and 76 FR 15484.

⁵³ Since publication of these rules and the April 2014 proposal (79 FR 21005), the Agency has received a petition for a categorical non-waste listing for other treated wood types (included in the docket for this rule), one of which is wood treated with copper naphthenate. The petition included contaminant data for wood treated with copper naphthenate and is under evaluation.

should revise the description of best management practices to remove the implication that 100 percent of the listed materials are to be removed or excluded.

Response: The Agency did not intend that the terms “excludes” and “removes” to mean that 100 percent of the listed materials be excluded or removed, or that the listed materials must be completely removed from the C&D debris during processing. While it is essential to exclude or remove the listed materials, the Agency also recognizes that a material would still be a non-waste even if there are some negligible or de minimis amounts of contaminants in the final combusted material. This is supported by the rulemaking record, specifically the discussion in the March 21, 2011 final rule where commenters argued that there should be a de minimis exemption for processed C&D wood to address small or de minimis amounts of material remaining on the wood. In response, the EPA acknowledged that “C&D-derived wood can contain de minimis amounts of contaminants and other materials provided it meets the legitimacy criterion for contaminant levels” and thus, did not find it necessary to finalize a de minimis exemption.⁵⁴ That discussion supports the application of a de minimis principle for this rule for exclusion and removal of contaminants.

The concept of de minimis amounts of material in processed C&D wood is also supported throughout the proposed rule. The Agency noted that C&D wood processing facilities can use a variety of techniques to exclude or remove debris unsuitable for a product fuel and that the processing techniques used may be based on several factors such as: the nature of incoming C&D debris, the extent of material segregation prior to arrival at the processing facility, whether positive or negative sorting is employed, and the scale of the processing facility.⁵⁵ In addition,

⁵⁴ See 76 FR 15486 (March 21, 2011).

⁵⁵ See 71 FR 21011 (April 14, 2014).

C&D processors who provide extensive training for their workers to recognize treated wood tend to be more successful than those processors who do not provide extensive training in excluding or removing treated wood, as evidenced by the Florida study.⁵⁶ When considering the data submitted for C&D wood, it demonstrates that there is variability regarding levels of contaminants present in processed C&D wood, but that the contaminant levels are well within the range of clean wood and biomass materials for most every contaminant.⁵⁷ Thus, all of these factors taken together recognize that there invariably will be some amount of unwanted materials that contribute to contaminant concentrations even when using best management practices and trained operators, but that a legitimate product fuel is still produced.

To include language as the comments suggested, such as to “substantially exclude or substantially remove” or “to the extent practical,” gives the perception that the best management practice standard is not a stringent requirement, but akin to a “best efforts” standard. This would not be an acceptable standard to ensure that processed C&D wood is a legitimate product fuel. Thus, the Agency has determined that it is not necessary or accurate to modify or add terms to the regulatory language to state that 100 percent exclusion or removal is not required.

Comment: Management practices for positive sorting are intended to address lead. Data provided to the EPA demonstrates that industry practices appropriately manage lead to ensure that specifications are met and that combustors will meet the limits in their Clean Air Act permits. Nonetheless, the management practices that address lead proposed by the EPA are not

⁵⁶ See Blassino, Monika, et al. “Methods to Control Fuel Quality at Wood Burning Facilities,” EPA-HQ-RCRA-2013-0110-0033.

⁵⁷Please see the discussion at 71 FR 21014-015 for a detailed explanation of how the Agency initially addressed the specific contaminants: fluorine, lead, pentachlorophenol, and formaldehyde. See also section V.A.4 of this preamble for final Agency determinations.

opposed when specific clarifications are made to address concerns as requested. The following concerns also apply to the management practices for negative sorting:

First, 100 percent removal of unwanted material is not technically feasible, practicable, nor necessary to produce a legitimate fuel product.

Second, one option for removal of lead painted wood is the use of XRF “to ensure that painted wood included in the final product fuel does not contain lead-based paint.” The EPA cites the University of Florida pilot study of a conveyor system that was funded by the manufacturer of XFR equipment. This is a pilot study that has not been demonstrated for an industrial setting. In fact, it has a throughput of only 20 tons per hour while most C&D processing facilities are permitted to manage 500 tons a day or more and operate on only one shift a day. It is neither feasible nor practicable to “ensure” all wood painted with lead-based paint is removed using XRF technology. The C&D processors that currently use XRF use a hand held gun to test a sample of an incoming load. None use the conveyor system described in the University of Florida study.

The lead paint testing option raises similar concerns. It is assumed that the EPA is not suggesting that every square foot of painted wood be tested.

It is requested that the EPA modify the description of these management practices to remove the implication that 100 percent removal is technically feasible and practicable and allow C&D processors to screen samples, not every piece of painted wood. To clarify these issues, the EPA could modify the regulatory language for both positive and negative sorting such that the second option would read, “use X-ray Fluorescence to test a sample of painted wood from each source or supplier of demolition debris received by the C&D wood processor to identify and

reject wood with lead-based paint.” For the third option, it would read “require documentation that a sample of painted wood from a building has been tested for and does not include...”

Response: First, the Agency disagrees that it is valid to say that industry practices appropriately manage lead. The data submitted to the Agency demonstrate otherwise. As noted in the proposal, there were instances in which isolated samples from Massachusetts (at 407 and 437 ppm) and Wisconsin (at 482 ppm) exceeded the lead levels found in clean wood and biomass (ND—340 ppm). While most of the 224 samples detected lead within the range found in clean wood and biomass, it is important to recognize that each high sample could represent a large amount of processed C&D wood produced by an outlier facility. Accordingly, an overly broad categorical non-waste listing could include processed C&D wood from facilities where the final product consistently contains high lead levels. Facilities that had lower levels of lead either did not accept painted wood or required documentation of XRF testing before accepting demolition debris. (See 79 FR 21014, April 14, 2014.) Accordingly, the Agency includes in the regulation the requirement that at least one practice must be used for positive sorting facilities and negative sorting facilities; however negative sorting facilities must also remove fines.

Moreover, it is important to understand that the limits imposed in a Clean Air Act permit have no bearing on what is determined to be a waste or non-waste under RCRA when the material goes to a combustion facility. The point is that Clean Air Act permits must apply to the input material – whether they are wastes or not, and control of the associated emissions. The input material determines which Clean Air Act standards (i.e., CAA section 112 or CAA section 129) are applicable.

Second, the Agency does not agree with the suggested language that would specify testing for a representative sample or “sample of painted wood from each source or supplier” be

performed for purposes of meeting the XRF lead elimination option. The term “sample” can vary in interpretation from one processor to another, with some analyzing more samples than others which could result in significant amounts of lead. This would indicate disposal rather than use as a product fuel. The proposed language at 40 CFR 241.4(a)(5)(i)(B) and (ii)(B) which states, “[u]se X-ray Fluorescence to ensure that painted wood included in the final product does not contain lead-based paint,…” is intended to be a stringent standard, which the Agency adopts for the final rule. The expectation is that if a processor accepts painted wood, then it must determine if the paint is lead-based. If it is positive for lead, then that piece of wood must be excluded or removed. The same applies to the language at 40 CFR 241.4(a)(5)(i)(C) and (ii)(C) that requires documentation that a building has been tested for and does not include lead-based paint prior to accepting demolition debris from that building. The Agency is not including regulatory language in regard to sampling. Rather, the frequency of sampling should be determined by the processor such that the processor can ensure that the accepted painted wood is not lead-based.

The Agency is convinced by the data that when XRF technology is used, the lead levels in processed C&D wood are comparable to or below the lead levels found in clean wood and biomass. Specifically, a facility located in Washington State receives co-mingled C&D debris. Prior to materials being accepted for processing, a rigorous inspection process is carried out, including documentation showing that the building was inspected for asbestos containing materials if it was from a demolition or renovation project, and visual inspections and lead-based paint testing through XRF. As a result, the ten samples analyzed show an average lead

concentration of 10.6 ppm, with a maximum of 26 ppm.⁵⁸ This shows that the lead elimination options as proposed are in fact achievable.

If a processor chooses to accept and include painted wood for processing, then the painted wood either must be analyzed via XRF or documentation must be provided from a demolition or renovation project indicating that painted wood has been analyzed and does not contain lead. As noted above, the frequency of sampling should be determined by the processor such that the processor can ensure that the accepted painted wood is not lead-based. The Agency finds that the lead elimination options for both XRF and documentation that a building has been tested for and does not include lead-based paint prior to accepting demolition debris from that building, are appropriate and finalized as proposed.

To respond to the comment about the Agency's citation of the XRF conveyor system in the University of Florida pilot-study, we understand that processors would be hesitant to make a significant investment in a XRF conveyor system that has not yet been proven in a large industrial setting. The aspect of the study that the Agency found relevant was the discussion of the benefit of providing extensive training to operators for visual recognition of treated wood. The Agency does not promote one XRF technology over another. The Agency recognizes that not all processors use XRF technology (i.e., handheld gun), thus it is an option for both positive and negative sorters--so that processors can choose to invest in XRF or comply with one of the other lead elimination options. Nevertheless, a determination to finalize the option to use XRF is appropriate regardless of the volume of the input. The point is that, even with high volume input, the lead must be removed.

⁵⁸ See revised Appendix A (Revision Submission: April 25, 2013) to letter from Susan Bodine to Suzanne Rudzinski in Docket ID: EPA-HQ-RCRA-2013-0110-0022.

Finally, similar to other comments that identified terms in regulatory language that appear too restrictive (see preceding comment and response), the Agency does recognize that a material can still be a non-waste even if there are some negligible or de minimis amounts of contaminants in the final combusted material. The Agency acknowledges that C&D-derived wood can contain de minimis amounts of contaminants and other materials provided it meets the legitimacy criterion for contaminant levels. Again, to include terms such as “sample” or even “representative sample” in regulatory language gives the perception that the best management practice standard for eliminating lead is not a stringent requirement, but akin to a “best efforts” standard. This would not be an acceptable standard to ensure that processed C&D wood is a legitimate product fuel.

Comment: A commenter stated that facilities [called “chipping and grinding” facilities] which process only clean segregated wood, but that may have to remove de minimis amounts of unwanted material, should not be required to remove fines because the C&D debris fines which may contain contaminants are left behind as a result of the segregation. These chip and grind facilities are permitted to receive and grind “Green Material”, which under California regulations includes acceptable C&D-derived wood as well as other clean cellulosic biomass materials.⁵⁹

The acceptable C&D wood is sourced from contractors, homeowners, community collections, and other typically small generators who segregate and/or collect clean wood from C&D sites. Chip and grind facilities do not process comingled C&D, but they may need to remove de minimis amounts of visible residual physical contaminants such as metal, plastics, and pieces of non-compliant wood that may be present in the green material, typically by hand,

⁵⁹ “Green Material” under California law means any plant material that is separate at the point of generation, contain no greater than 1.0 percent of physical contaminant by weight, and meets the requirements of Title 14 CCR, Division 7, Chapter 3.1, Article 7, section 17868.5. Green material includes, but is not limited to yard trimmings, untreated wood wastes, natural fiber products, and C&D wood waste.

in order to meet customers' fuel quality specifications. This quality control measure should not be deemed processing by negative sorting which triggers the requirement to remove fines. Fines removal would be an expensive step at chipping and grinding facilities and is unnecessary because the C&D wood received has already been separated from the mixed C&D materials and contaminants, including fines, are not present in meaningful amounts. An attachment for five different California chipping and grinding facilities that receive and grind green material, but do not remove fines, show that each facility's fuel meets the NHSM rule's contaminant criterion.⁶⁰

Another commenter states that they use fuel from a "chip and grind" operation that receives and then resizes clean cellulosic biomass, and material from contractors, small operators, and generators of source-separated wood. These materials are sorted prior to receipt at the chip and grind processor, and therefore there are no fines that require screening or further separation. The EPA should not require fines removal at chip and grind facilities that receive and process only source separated C&D wood, since the fines have been left behind with the non-wood C&D debris during the positive pick process.

Response: Chip and grind facilities would not be considered negative sorters for purposes of the best management practices for lead under this rule if in fact their sorting operations only involve removal of small or de minimus amounts of unwanted material (as described above) they have received from a source that has segregated/pre-sorted the C&D material through positive sorting. This would be different from the situation in which C&D processors accept and process co-mingled C&D material in a large centralized facility which we discussed in the proposal.

According to the data submitted by one commenter for five chip and grind facilities that do not remove fines, lead concentrations for its biomass fuel loads were all significantly lower

⁶⁰ See Attachment 1 of comment submitted by Covanta Energy Corporation in Docket: EPA-HQ-RCRA-2013-0110-0084.

(with the highest concentration at 104 ppm, followed by 77 ppm, 48 ppm, 29 ppm, and 32 ppm) than the upper end for wood and biomass (340 ppm). Based on the sampling data and the fact that the C&D wood has been pre-sorted via positive sorting before reaching the chip and grind processing facility, we agree with the commenters that chip and grind processors should not be considered negative sorting facilities when they conduct further sorting to remove small amounts of unwanted materials. Therefore, we have revised the best management practice description with respect to lead elimination requirement for positive sorters to include facilities "...that receive and process positive sorted C&D wood". See revised 40 CFR 241.4(a)(5)(i).

d. Specific Requests for Comments

i. Pentachlorophenol.

Comment: The proposed requirements for operators to exclude or remove utility poles treated with pentachlorophenol are consistent with industry practices and combustor specifications and thus, no additional requirements are necessary beyond training. Pentachlorophenol treated wood is easily recognizable with visual inspection based on its dark brown color.

Response: The Agency agrees that the requirement for processors to train operators to identify pentachlorophenol treated lumber (as well as any other treated lumber) as part of the best management practices is sufficient to ensure that these products are excluded or removed from incoming C&D debris. Because sources of pentachlorophenol can be readily identified by color and by shape of the treated wood, no additional conditions other than those specified by the best management practices are necessary.

Comment: The EPA should allow testing of older, weathered poles for the presence of pentachlorophenol above some preset level, since poles exposed to deterioration from ultraviolet

light and precipitation frequently have lower levels of pentachlorophenol and can be burned safely with controls. Levels must be low enough to prevent the formation of dioxin/furans in combustors. The summary for the EPA study “Products of Incomplete Combustion from Direct Burning of Pentachlorophenol-treated Wood Wastes,” (EPA/600/SR-98/013) states that “[t]he tests showed that combustion is an effective method of destroying the pentachlorophenol in the treated wood, with destruction efficiencies higher than 99.99 percent.” Additional processing to meet boiler specifications should be included.

Response: The Agency disagrees that it should allow testing of older, weathered poles for the presence of pentachlorophenol. The very argument that appropriate controls should be used to allow burning of pentachlorophenol supports the point that the pentachlorophenol is, indeed, a waste and should be burned under CAA section 129 standards. Thus, the comments that pentachlorophenol can be effectively and safely destroyed [emphasis added] (i.e., 99.99 percent destruction and removal efficiency) and dioxin formation can be prevented [emphasis added] when levels are low enough are concessions that pentachlorophenol in the poles is a waste. Combustion for the purpose of destruction is a function of waste combustion units (e.g., boilers burning hazardous waste and incinerators burning hazardous, municipal, or medical wastes), where pentachlorophenol would not be burned as a fuel, but primarily for destruction.

Development of a preset level of contaminant concentrations is an activity to determine appropriate standards under the CAA. Under the NHSM framework, the material’s contaminant concentration must be comparable to, or less than, the traditional fuel it is replacing which is one part of the process for determining whether the material has been discarded before or during its combustion. In this case, clean wood and biomass are the traditional fuels that are being replaced by processed C&D wood. Clean wood and biomass do not contain pentachlorophenol (non-

detect levels) and, therefore, processed C&D wood may not contain measureable levels of pentachlorophenol. Otherwise, any processed C&D wood containing pentachlorophenol would be considered to be burned for destruction, which is indicative of discard. For further discussion on the Agency's approach to contaminant comparisons, see the response to comment in section V.6.b.

ii. Formaldehyde levels.

Comment: We strongly support the EPA's decision to balance formaldehyde levels with the fuel value of the resinated wood component of C&D wood to allow formaldehyde levels in C&D wood fuel that are somewhat higher than found in coal or biomass. First, when formaldehyde is grouped with other VOCs and SVOCs and compared to the levels of this contaminant grouping in C&D wood, the levels are comparable to coal.⁶¹ Second, the only source that we are aware of formaldehyde in C&D wood is resinated wood. The EPA has already recognized that resinated wood is a valuable fuel commodity and has identified it as a non-waste fuel. 40 CFR 241.4(a)(2). The basis for this determination includes the recognition that resinated wood is a valuable fuel source due to its high fuel value relative to other wood. 76 FR 80483.

The EPA also recognized that including resinated wood in a fuel mix actually decreases hazardous air pollutant emissions. 76 FR 15502. While not relevant to a determination of whether the contaminant legitimacy criterion is met, this impact on emissions is a relevant factor to be balanced when making a non-waste determination under 40 CFR 241.4. 78 FR 9112, 9157 (February 7, 2013).

⁶¹ See revised Appendix A p. 2. (Revision Submission: April 25, 2013) to letter from Susan Bodine to Suzanne Rudzinski available in Docket ID: EPA-HQ-RCRA-2013-0110-0022.

As a component of a processed fuel, resinated wood is not being combusted to discard it. On the contrary, as discussed above, it is a component of a product that is a commodity fuel.⁶²

Response: The Agency agrees with the overall argument that resinated wood can be burned as a product fuel along with other processed C&D wood. The Agency described two relevant factors in the proposal believed to be appropriate for balancing the higher formaldehyde levels found in processed C&D wood as a result of the inclusion of resinated wood components. First, although formaldehyde levels in processed C&D wood may reach 176.8 ppm, national rules developed by the CARB Composite Wood ATCM, per Public Law 111-199, will ensure that newly produced resinated wood will contain even less formaldehyde in the future by setting limits on how much formaldehyde may be released. Second and more importantly, for many combustors, processed C&D wood scraps that include resinated wood components, actually have added value and are either selected for (in the case of positive sorting) or specifically not removed (in the case of negative sorting) because the wood has been kiln-dried prior to use in construction. Kiln-dried wood has a greater heating value than virgin wood, almost double in some cases. Kiln-dried wood also has more consistent moisture content; an equally important benefit to combustors because a consistent fuel improves combustion efficiency and leads to reduced emissions of particulate matter, carbon monoxide, and other organic hazardous air pollutants.

The Agency has determined that the additional factors discussed in the proposal are appropriate and has adopted that rationale for the final rule. Thus, resinated wood may remain in C&D wood prior to processing for this categorical non-waste listing. This determination is based in part on the fact that future rules will limit levels of formaldehyde in wood products, and will

⁶² Comments can be found in the rulemaking docket: EPA-HQ-RCRA-2013-0110-0076.1; EPA-HQ-RCRA-2013-0110-0088; and EPA-HQ-RCRA-2013-0110-0083.1.

in effect, also reduce the levels of formaldehyde in processed C&D wood. Also and more importantly, information submitted to the Agency states that some processors choose to include resinated wood in processed C&D based on combustor specifications for a higher Btu value fuel. This demonstrates that resinated wood is a valuable fuel and is not burned for destruction. Thus, the final rule allows flexibility for processors to choose whether they will exclude or remove any resinated wood prior to processing the C&D debris.

Regarding the citations provided in support of commenters' rationale for not requiring exclusion or removal of formaldehyde, clarification is needed. The citation at 76 FR 80483, December 23, 2011, discussed the Agency's proposed rationale for listing resinated wood as a categorical non-waste. However, the fact that the Agency finalized a listing for resinated wood as a categorical non-waste at 40 CFR 241.4(a)(2) (see also final rule at 78 FR 9155, February 7, 2013), has no relevance to a determination of whether it is appropriate to allow elevated levels of formaldehyde from resinated wood in an entirely different industrial process. In the proposal at 79 FR 21015, April 14, 2014, the Agency reviewed the rationale behind the categorical non-waste listing for resinated wood, which discussed that, although the situation appears similar to the categorical non-waste listing for resinated wood in 40 CFR 241.4(a)(2), details surrounding use of the two NHSMs as fuel are not the same. In the case of resinated wood, as defined in 40 CFR 241.2, the Agency determined that energy recovered from the combustion of manufacturing process residues and off-specification resinated wood is integrally tied to the industrial production process in the furniture manufacturing industry. The Agency is not aware of an industrial process that is reliant upon C&D wood for its energy needs.

The Agency also disagrees with the suggested grouping approach included as reasoning for allowing resinated wood to be present in C&D wood. The commenter suggested that when

formaldehyde is grouped with other VOCs and SVOCs and then compared to levels of this contaminant grouping in C&D wood, the levels are comparable to coal.⁶³ The commenter also argued that this is an acceptable approach because the Agency had previously determined that it is technically correct to group VOCs and SVOCs because they behave similarly in combustion units. The rationale behind this grouping approach, however, was to establish emission standards where carbon monoxide serves as a surrogate for measuring total VOC and SVOC emissions.⁶⁴ Under NHSM, the Agency has previously permitted grouping of total VOCs as well as grouping of total SVOCs, but not for both groups combined for purposes of comparison to a traditional fuel. More relevant however, is that the Agency does not have any information or data indicating that units combusting processed C&D wood also are designed to burn coal or do burn coal. Thus, coal is not an appropriate traditional fuel for comparison under this categorical non-waste listing.

Finally, while it is true that the Agency has recognized that including resinated wood in a fuel mix actually decreases some hazardous air pollutant emissions, the purpose of the discussion at 76 FR 15502, March 21, 2011, was to reiterate that the legitimacy criterion is based on the level of contaminants in the secondary material itself, and not based on comparing the differences in emissions. That said, the Agency agrees with the comment that, although not relevant to a determination of whether the contaminant legitimacy criterion is met, the impact on emissions is a relevant factor to be balanced when making a non-waste determination under 40 CFR 241.4. The Agency maintains that the benefits of burning kiln-dried wood not only provides

⁶³ Because there are no data available on formaldehyde levels in coal, the commenters' approach grouped the PAH levels (which are SVOCs) and VOC levels in coal and then compared them to the levels of the same contaminant groupings in C&D wood. See revised Appendix A, p. 2. (Revision Submission: April 25, 2013) to letter from Susan Bodine to Suzanne Rudzinski available in Docket ID: EPA-HQ-RCRA-2013-0110-0022.

⁶⁴ See 76 FR 80477 (December 23, 2011) for a broader discussion.

higher heating value, but also more consistent moisture content which lends to more efficient combustion and thus reduced emissions of certain contaminants.

iii. CCA-treated wood.

Comment: The requirement to train operators to exclude or remove treated wood is adequate, since visual identification via the color, grain, and shape (such as decking or fencing) of pieces works well to remove CCA-treated wood as demonstrated by the data in the record showing that arsenic and chromium levels in C&D wood are comparable to virgin wood.⁶⁵

Response: The Agency agrees that the requirement to train operators to exclude or remove CCA-treated wood is the most appropriate option and has finalized this as part of the best management practices and as a separate training requirement at 40 CFR 241.4(a)(5)(iii). The Agency also agrees that current data shows that arsenic and chromium levels in processed C&D wood are comparable to levels in clean wood and biomass (see Table 1. Comparison of Contaminants in Clean Wood/Biomass and Processed C&D Wood to section V.A.4 of this preamble), which results from those processors who choose to exclude or remove CCA-treated wood prior to processing. Thus, CCA wood can, and must, be removed efficiently to allow for a determination that the resultant wood is more like a product than like a waste.

Because CCA-treated wood can represent up to 30 percent of the C&D waste stream and, unlike formaldehyde levels which are expected to decrease over time due to future rules to limit formaldehyde levels in resinated wood, levels of arsenic and chromium are expected to increase with continued use of CCA-treated lumber or other copper, chromium, or arsenical preservatives. As a result, the Agency has determined that CCA-treated wood must be excluded or removed

⁶⁵ April 26, 2013 letter from Susan Bodine to Suzanne Rudzinski, available at Docket ID: EPA-HQ-RCRA-2013-0110-0025.

from C&D debris to ensure that levels of arsenic and chromium in processed C&D wood remain comparable to or lower than levels in clean wood and biomass.

Comment: The use of additional technology to identify CCA-treated wood, such as XRF guns or PAN indicator stains, would add unnecessary cost and time to the processing of C&D wood. Further, C&D processors that have tried PAN indicator stains have determined that the stains produce false positives and do not truly identify or measure arsenic.

Response: The decision to require that operators be trained to exclude or remove treated wood (with the exception of resinated wood) as included in the best management practices, is based in part on the results from the Florida study for evaluating sorting technologies which showed a high rate of success when extensive training was provided for visual identification of treated wood; and in part because both XRF technology and PAN indicator stains are limited in application when processing large amounts of C&D debris.

The Florida evidence demonstrates that processors who train their employees to visually recognize treated wood are successful in excluding or removing CCA-treated wood.⁶⁶ Therefore, by requiring processors to train their operators as a condition of this categorical non-waste listing, it will ensure that levels of arsenic and chromium in processed C&D wood remain comparable to or lower than levels in clean wood and biomass as more CCA-treated wood is introduced into C&D debris.

The proposition that XRF technology and PAN indicator stains would increase the cost and time associated with processing C&D wood is not relevant in the Agency's determination to not require their use, although processors may use such tools. The main point is that these

⁶⁶ Blassino, Monika, et al. "Methods to Control Fuel Quality at Wood Burning Facilities." Docket ID EPA-HQ-RCRA-2013-0110-0033.

technologies are not necessary to remove excessive contaminants from the processed material when visual identification is sufficient.

iv. Trained operators.

Comment: The only elements of training that are appropriate for regulation are identification of the best management practices, not the details of how or by whom the training is provided. Processors should be free to design training programs that work for the individual processors.

Response: The Agency agrees that the elements of a training program for processors should not be prescribed by the Agency for the C&D processing industry. The Agency's decision to not prescribe specific elements of a training program is based on information in the record that discusses the variability within the C&D processing industry and the ability of trained operators to remove the waste materials from the incoming C&D debris (79 FR 21013, April 14, 2014). Variability refers to the origin of the material, the amount of material segregation prior to arrival at a processing facility, whether positive or negative sorting is used, and the scale of the processing facility.

Rather than prescribing training requirements that may not be applicable to all C&D processing facilities (i.e., a "one size fits all" approach), the better option is to provide flexibility for processors to choose how to train their operators. The Agency has determined that the regulatory language finalized at 40 CFR 241.4(a)(5)(iii) provides the flexibility needed, but also ensures that C&D processing facilities have trained their operators in accordance with the best management practice requirements such that the resultant material is not discarded when combusted and is, therefore, not a waste.

Comment: The EPA should specify minimum training requirements and develop requirements similar to those found in the waste combustor rules (New Source Performance Standards for small municipal waste combustion units at 40 CFR 60.1155). These provisions address who is to be trained, when the training must occur by, and what information must be included in the facility-specific training material. It would be difficult for C&D processing facilities to implement a training program without at least minimum requirements set forth in the rule. Further, combustors and state air agencies must have some way to determine if the “trained operator” requirement has been met.

Response: The Agency does not agree that prescriptive requirements should be developed for C&D processors that are similar to the training standards for small municipal waste combustors. The standards identified in Part 60 for small municipal waste combustors are specific to the operation of a combustion unit, which is a very technical operation with regard to combustion engineering, equipment, and environmental compliance (e.g., air pollution control requirements) obligations, and thus are appropriate for that industry. Such specificity and degree of training is not necessary for the C&D processing industry because its operations are not technologically comparable. Thus, processors can develop a training program that meets their specific needs, but that also ensures, through required training (and best management practices), that the processed C&D wood material is not discarded when combusted and is, therefore, not a waste.

The mechanism for determining if C&D processors have trained their operators as required is when the processor certifies, in the written certification statement that it has used trained operators in its sorting operations, as well as through the processor’s records of training. For example, should the processed C&D wood be found to contain contaminants that are not

comparable to clean wood and biomass, then it may be an indication that the processor has not trained its operators as confirmed by the certification statement. See regulatory language located at 40 CFR 241.4(a)(5)(iii), which states that “[p]rocessors must train operators to exclude or remove the materials as listed in paragraph (a)(5) of this section from the final product fuel. Records of training must include dates of training held and must be maintained for a period of three years.”

Comment: In response to solicitation for comment on whether processors would be required to keep records as a condition of the categorical listing to demonstrate that such operators have been formally trained, one comment requested that C&D processors be required to maintain records of the training they have received, similar to the requirements found in waste combustor rules (New Source Performance Standards for small municipal waste combustion units at 40 CFR 60.1355). These provisions require records showing dates of completion of the training course, documentation showing completion of the training course, and records of review of the training materials.

Response: The Agency agrees that a condition is necessary to document that operators have been formally trained so that processors are accountable to their customers when certifying that they have used trained operators. Thus, separate requirements for processors to conduct training and maintain records of the training are finalized at 40 CFR 241.4(a)(5)(iii). This requires that processors train their operators to exclude or remove the materials as listed in paragraph (a)(5) from the final product fuel. Although not as prescriptive as the waste combustor rules for similar reasons as discussed above, the Agency has determined that the following is adequate for demonstrating compliance with the trained operator requirement: records of training must include date of training held and must be maintained on-site for a period of three years.

Comment: Training requirements should only apply to the final processing facility, which is responsible for the quality of the final product fuel and with whom the combustor has a contract or purchasing relationship. C&D wood may be partially sorted at various C&D sites, then sent to centralized site for final processing and thus, the upstream facilities should not be subject to training requirements.

Response: The Agency agrees that only those processors who conduct the final processing steps and are responsible for the quality of the final product fuel, should be required to train their operators. Any processor who pre-sorts in preparation for further processing at another facility would not need to implement a training program for its operators. It is the final processor who must ensure and certify that processing has transformed the processed C&D wood into a non-waste product fuel according to best management practices.

v. Written certification.

Comment: Purchase agreements between the provider of the C&D wood product and combustor provide sufficient records related to the quality of the product fuels being combusted at a facility. There is no need to increase the burden on regulated sources by requiring additional paperwork in the form of a written certification and personnel resources for a duplicative task. In addition, the EPA does not need to prescribe the form of the written certification because purchase agreements and contracts are common and provide sufficient documentation.

Response: The Agency agrees that purchase agreements (or contracts) can provide records related to quality of the fuels being combusted at a facility. These documents indicate the commitments of the processor to meet the specifications and to provide quality processed C&D wood. The proposed rule suggested that such agreements can serve as the written certification document, but requested comment on whether a written certification statement, in addition to the

contract/purchase agreement, would be clearer and more effective (79 FR 21016, April 14, 2014).

Although contracts and purchase agreements indicate a commitment to quality, specifications can vary according to the needs of one combustor versus another with respect to the extent and type of contaminant removal required. More importantly, the contracts and purchase agreements that the Agency has seen do not show that C&D wood has been processed according to any particular best management practices and, consequently, cannot ensure that the resulting material is not a waste when combusted. As one commenter had noted, a mechanism must be in place which provides assurance that C&D wood is processed consistently and according to best management practices such that the final product meets the legitimacy criteria. The Agency concurs with that comment and is requiring combustors to obtain a written certification statement from the final processor as part of every new or modified contract, purchase agreement, or other legally binding document. This written certification statement must state that the processed C&D wood has been sorted by trained operators in accordance with best management practices. See new requirement at 40 CFR 241.4(a)(5)(iv).

The Agency disagrees that a requirement for a combustor to maintain a contract or purchase agreement in its records poses any additional burden on the regulated combustion source, since these documents are typically retained for other business purposes. The combustor would need only to ensure that the contract or purchase agreement contains the written certification statement as required by the regulations at 40 CFR 241.4(a)(5)(iv) and maintain in its records according to its existing regulatory obligations under 40 CFR parts 60 and 63.

Comment: The EPA should prescribe what suffices for the “written certification.” At a minimum, it is recommended that the written certification include the specific management

practices that the processor has undertaken. The written certification requirement should also specify how often the combustor must obtain the certification, whether it is once per load, one certification for each supplier, or in some other manner or frequency. Specific criteria for the certification should also include a requirement for an independent third party to routinely sample the processed C&D wood as part of an ongoing sampling program, and made it a requisite for the written certification.

Response: The Agency disagrees that the processor should be required to include the specific best management practices undertaken in its certification, since the best management practices in 40 CFR 241.4(a)(5) are applicable to all processors. The only distinction is between the lead exclusion/removal options for positive and negative sorters, which provide equivalent assurance that lead levels in processed C&D wood are comparable to or less than clean wood and biomass.

The Agency does agree, however, with the suggestion to specify how often and who must submit the certification. This allows the combustor and regulatory personnel to determine where a shipment of inadequately processed C&D wood came from. For instance, upon sampling the processed C&D wood, results indicate that it contains high levels of one or more contaminants which can be traced back to a specific processor for investigation of compliance with best management practices. Thus, every new or modified contract, purchase agreement, or other legally binding document must include a statement by the final processor that the processed C&D wood has been sorted by trained operators in accordance with best management practices. See new regulatory language at 40 CFR 241.4(a)(5)(iv).

Although a third party sampling program could provide further assurance that contaminated material has been removed from the fuel stream, the Agency cannot promote such

a requirement for combustors given the data which supports this categorical non-waste listing for processed C&D wood.⁶⁷ The data demonstrate that processors using best management practices are meeting the legitimacy criteria absent a regulatory requirement. The extent to which some processors may not be meeting the legitimacy criteria is remedied by imposing the conditions for certification and training to identify contaminated materials in the rule. The Agency has determined that application of the best management practices at 40 CFR 241.4(a)(5), the written certification, and training record provides sufficient assurance.

Comment: A number of state air permits already prohibit the use of C&D debris as a fuel type. Under the proposed amendments, these permits would need to be reopened, public noticed, and be made practically enforceable.

Response: The Agency agrees that if a combustion facility would choose to burn C&D wood as a product fuel under this categorical non-waste listing, the facility's permit would need to be reopened to include the processed C&D wood as a fuel type. The combustor would be responsible for documenting the C&D wood's non-waste status according to 40 CFR 60.2740(u) (Emissions Guidelines) and 40 CFR 60.2175(w) (New Source Performance Standards) for CISWI units and 40 CFR 63.11225(c)(2)(ii) for area source boilers and 40 CFR 63.7555(d)(2) for major source boilers.

Comment: The presumption is that air permits will need practically enforceable requirements addressing the proposed written certification provisions. The EPA should consider how the written certification would be enforceable for a small combustion unit that does not qualify for an air permit.

⁶⁷ A state may choose, however, to require a third party sampling program as an additional condition of this categorical non-waste listing.

Response: We are adopting in this final action the approach discussed in the proposal at 79 FR 21016, under which the written certification must be included as part of the contract, purchase agreement, or other legally binding document between the processor and the combustor. This documentation will also be considered a "record" which satisfies the record keeping requirements of section 60.2740(u) (Emissions Guidelines) and section 60.2175(w) (New Source Performance Standards) for CISWI units and section 63.11225(c)(2)(ii) for area source boilers and section 63.7555(d)(2) for major source boilers. Each of these provisions contains a reference specific to categorical non-waste determinations under section 241.4 which read: “[f]or operating units that combust non-hazardous secondary materials as fuel per section 241.4 of this chapter, you must keep records documenting that the material is listed as a non-waste under section 241.4(a) of this chapter.” The requirement to document and keep a record exists within the Federal air regulations and in this case, the record is the written certification included within the contract, purchase agreement, or other legally binding document. The air regulations referenced in this paragraph are enforceable either through air permits when incorporated or are separately enforceable under the CAA. Thus, an air permit is not necessary to make a requirement enforceable.

This is consistent with how any major source or area source combustion unit would document that the NHSM they are burning satisfies the 40 CFR part 241 requirements for non-wastes. For example, if a combustor chooses not to comply with the conditions of the categorical non-waste listing for C&D wood under section 241.4(a)(5), then it could burn C&D wood on a case-by-case basis provided the combustor documents in its records that the processed C&D wood has been sufficiently processed per section 241.2 and that the legitimacy criteria have been met according to section 241.3(d). The combustor would still be required to maintain such

documentation according to its applicable Federal recordkeeping requirements (i.e., sections: 60.2740(u), 60.2175(w), 63.11225(c)(2)(ii), or 63.7555(d)(2)).

Comment: Combustors who process C&D wood for their own combustion should be allowed to self-certify that they have complied with the best management practices.

Response: The Agency agrees that the ability to self-certify when the combustor is also the processor is appropriate. However, in the absence of a contract or purchase agreement, the combustor still must certify that the processed C&D wood has been sorted by trained operators in accordance with best management practices. A combustor who is also the processor is still subject to the requirements and conditions of this categorical non-waste listing. As the processor, the requirement to certify that the processed C&D wood has been sorted by trained operators in accordance with best management practices is applicable per 40 CFR 241.4(a)(5)(iv). The training requirement is applicable per 40 CFR 241.4(a)(5)(iii). As the combustor, the requirement to maintain the written certification statement as part of its records is applicable regardless of whether or not there is a contract or purchase agreement. If an inspection by a regulatory authority reveals that these requirements have not been met, then the combustor could face enforcement action.

Comment: The EPA should consider that those who pre-sort C&D wood should not be required to provide certifications, as long as they are providing wood to C&D processors that meet the requirements of 40 CFR 241.4(a)(5). Similarly, in cases where C&D wood is processed by more than one processing facility, the certification requirements should only apply to the final processing facility.

Response: The Agency agrees that the written certification requirement should only apply to the final processor, as is the case for only the final processors to use trained operators. The

processors conducting the final processing steps are responsible for the quality of the final product fuel and for ensuring that processing has transformed the processed C&D wood into a non-waste product fuel according to best management practices under 40 CFR 241.4(a)(5). Thus, any processor who pre-sorts in preparation for further processing at another facility would not need to provide a written certification to the combustor. However, the materials at the intermediate processor facilities would still be solid wastes.

e. Cement Kilns Using Processed C&D Wood

A trade organization, Portland Cement Association (PCA), submitted comments and information related to how cement kilns use C&D wood. Their comments are unique in that they base their responses to the proposal on the operation and capabilities of cement kilns instead of the criteria that must be met for listing an NHSM as a categorical non-waste. For example, instead of presenting information on whether the conditions of the categorical listing are appropriate, PCA comments that cement kilns have continually shown through decades of testing that the inherent manufacturing process design is conducive to fully utilizing the energy value in the alternative fuel, as the process is based on the high-efficiency combustion in the kiln. Alternative fuels that are useable in the cement industry may also contain other raw material constituents, which increase the effectiveness of being able to use a wider range of heating values that may not be useable in other combustion processes. Specific comments from the trade organization are discussed below followed by Agency responses.

Comment: Cement kilns, in particular, are capable of handling a wide variety of fuels without the need for the extensive processing that some other types of combustion facilities require. Processing of C&D wood need only be to the extent necessary to meet the requirements of the receiving combustion unit. PCA accepts that removing certain material is necessary to

render the non-waste fuel “legitimate,” but for cement kilns several of the listed items, such as plastics and paper, are beneficially used in the process. Therefore, it is not necessary to remove all listed materials due to the unique and inherent characteristics of the cement production process. Defining which materials must be removed and the extent to which they need to be removed should be a function of the unit receiving and combusting the processed fuels.

Response: The Agency disagrees with this comment. Although cement kilns can burn a wide variety of materials as fuel regardless of Btu value and contaminants present, it also lends support for regulating such cement kilns under the CAA section 129 standards so that they can appropriately control emissions from these waste-like fuels. This is not an argument for rendering the materials to be product fuels. Rather, when evaluating whether an NHSM can be a legitimate product fuel, discard (i.e., if the material has been discarded in the first instance, then it must be sufficiently processed) and the legitimacy criteria are the determinants, not the capabilities of the unit burning the NHSM.

This final rule applies to cement kilns, as well as all other facilities that wish to burn processed C&D wood for reasons discussed in the rule. Thus, cement kilns that wish to take advantage of the categorical non-waste listing for C&D wood under 40 CFR 241.4(a)(5), must meet all of the conditions in the rule regardless of the unit’s capabilities. Cement kilns may also proceed on a case-by-case basis, but would need to determine whether the processed C&D wood has been sufficiently processed per 40 CFR 241.2 and whether the legitimacy criteria have been met per 40 CFR 241.3(d).

Comment: With respect specifically to lead in C&D wastes, PCA encourages the EPA to establish processing criteria (in-lieu of the case-by-case legitimacy test) that allow lead to be present at levels that are comparable to the traditional fuels for the receiving combustion unit.

There is variation in the capabilities and other environmental restrictions of facilities using C&D categorical non-waste fuel, and cement kilns in particular have the ability to use a wider variety of fuels. Also, when metals contaminants are grouped, the lead levels indicated in the variety of C&D in the proposed rule are not significantly higher than traditional fuel groupings. See (attached) Table 1 of EPA-HQ-RCRA-2013-0110-0081.⁶⁸ As a demonstration of the balancing factors specific to cement kilns, there is a significant body of data and knowledge on the fate of metals in a cement kiln system that documents the fate of semi-volatile metals (SVM) and low volatile metals (LVM) that enter the kiln system through minor concentrations in the raw feed and fuels. The LVMs and other pollutants with similar properties are directly incorporated into the clinker being produced.

Response: Again, when evaluating whether an NHSM can be a legitimate product fuel, it is discard and the legitimacy criteria that are the determinants, not the capabilities of the unit burning the NHSM. In this categorical listing, the pertinent criterion is whether the lead concentration, or any other contaminant concentration, in processed C&D wood is comparable to or lower than the contaminant concentrations in clean wood and biomass. The fact that cement kilns can burn contaminated, low value fuel does not automatically qualify them for this categorical non-waste listing.

PCA did provide contaminant data for solid traditional fuels that are used by cement kilns, by grouping coke, coal, clean wood, and biomass together and then compared contaminant concentrations to processed C&D wood. The grouped data show that even when metals are grouped based upon their behavior in a cement kiln, the SVM group, which includes lead, still has a higher concentration in processed C&D wood than in the solid traditional fuel SVM group.

⁶⁸ See Table 1 attached to PCA's comments on the proposed rule, Docket ID: EPA-HQ-RCRA-2013-0110-0081.

The same is also true for the volatile organic compound group. Although the concentrations presented may be considered to be within a small acceptable range,⁶⁹ it is evidence that contaminants are not comparable even when grouped, and therefore processing according to best management practices must occur to exclude or remove specific contaminants (i.e., lead) so that the concentrations in processed C&D wood would be comparable to solid traditional fuels, assuming that this was the appropriate traditional fuel comparison for this listing. All C&D processors must, however, conduct processing according to the best management practices to ensure a legitimate product fuel is consistently produced, regardless of the type of combustion unit that will burn the processed C&D wood.

Comment: Removal of utility poles from the C&D fuel stream is not necessary for cement kilns when considering balancing factors, and especially an organic constituent grouping comparison. Cement kilns are designed and operated to effectively use a variety of fuel streams under well-controlled conditions and the APCD temperature control used in kiln operations ensures that dioxin (the contaminant of concern which can be generated during combustion of pentachlorophenol) emissions are controlled.

Response: The Agency disagrees with this comment for the reasons discussed in previous responses. It is a basis for saying that the cement kilns burning this material or other contaminated materials as fuel(s) should have permits under section 129 of the CAA so that they can appropriately control emissions under the CISWI standards. This is not an argument for rendering the materials to be product fuels. Again, the information provided to illustrate that cement kilns are highly-efficient combustors and that the resulting contaminants are either completely combusted, chemically incorporated into the clinker being produced, or captured in

⁶⁹ For a discussion of “small acceptable range” with regard to contaminant comparisons, see 76 FR 15523-24, (March 21, 2011).

the kiln system air pollution control device are not relevant considerations for this categorical non-waste listing. In order to comply with this categorical listing, all C&D processors must conduct processing according to the best management practices to ensure a legitimate product fuel is consistently produced, regardless of the type of combustion unit that will burn the processed C&D wood.

B. Paper Recycling Residuals Used as Fuel at Paper Recycling Mills

The April 14, 2014 proposed rule described paper recycling residuals (PRRs) in detail (79 FR 21010-17), explained the status of PRRs under current rules, discussed comments received during previous proceedings, as well as the scope of the proposed non-waste listing (79 FR 21017-18). The proposed rationale for the listing is found in the proposal at 79 FR 21018-20 and is summarized and incorporated into this final rule, along with all sources referenced in that discussion and cited therein. The final decision in this rule is based on the information in the proposal and supporting materials in the rulemaking record. Any changes made to the final rule are based on the rationale, as described below.

1. Detailed Description of Paper Recycling Residuals

PRRs are recovered from the paper recycling manufacturing process at paper recycling mills. The feedstock used in paper recycling manufacturing process is post-consumer paper, such as magazines, newspaper, office paper, and old corrugated containers obtained through various commercial and residential recycling programs or purchased from retail establishments.⁷⁰ Some paper recycling mills' feedstock is limited solely to old corrugated containers. The primary purpose of the paper recycling manufacturing process is to generate recovered fibers used to make new paper and paperboard products. The process also generates PRRs that are secondary

⁷⁰ See Attachment 4, page 1, footnote 2 of AF&PA's Comments to Docket: EPA-HQ-RCRA-2008-0329-0871.

materials not suitable for making new paper products, but are landfilled, sent for metals recycling, or used as a fuel.⁷¹

This final rule addresses only the PRR material that may be used as a non-waste fuel and be burned under CAA section 112. These PRRs consist of wet strength short fibers that are not suitable to be recycled into paper products but are essentially the same as the bark, biomass and/or coal that are burned, or may be burned, by paper recycling mills. The short fiber material is combusted as a product because it is not discarded by the paper recycling mills and meets the legitimacy criteria, i.e., the material is handled as a valuable commodity (whether used on-site or shipped off-site to other paper recycling mills); the material has meaningful heating value; and the material contains contaminants that are comparable to or lower than the traditional fuels the units were designed to burn.

In addition to the wet strength short fibers that are recovered from the paper recycling process and used as fuel, fine screens remove other non-fiber packaging material that cannot be used for making paper products, including polystyrene foam, polyethylene film, other plastics, waxes and adhesives, dyes and ink, clays, starches, and other filler and coating additives (generally associated with corrugated paper products). Small amounts of these non-fiber materials may remain in the product fuel even though the fuel still contains contaminants comparable to the fuel burned by the recycling plants.

To ensure that excess contaminants are removed and that the material meets the legitimacy criteria when combusted, the EPA is issuing a final rule that provides that the material covered by the categorical listing consists primarily of wet strength short fibers that contain only small amounts of non-fiber materials including polystyrene foam, polyethylene film, other

⁷¹ Because the incoming feedstock may contain a number of other materials, including metals, metals may also be recovered and sent for recycling.

plastics, waxes, dyes and inks, clays, starches, and other filler and coating additives. PRRs that are not composed primarily of unsuitable wood fibers and contain more than small amounts of these non-fiber materials would be considered waste fuels and would not be eligible for this categorical listing. Thus, not all residuals may be properly burned as a product fuel.

Paper recycling mills generate between 450,000 and 600,000 tons of PRRs per year. Approximately 30 percent of the PRRs (135,000 to 180,000 tons) generated are burned for their fuel value at 15 to 20 different paper recycling mills.⁷² Although there are over 100 paper recycling mills across the U.S., the majority of mills' boilers use natural gas and cannot burn solid fuels. As a result, PRRs generated in their processes generally are landfilled. At any particular paper recycling mill capable of burning PRRs (i.e., their boilers burn solid fuel), between 55 to 100 percent of the PRRs generated on-site are burned and may represent between 20 to 25 percent of the total solid fuel burned in their solid fuel boilers. Of the 30 percent of PRRs burned as fuel, no more than 5 percent is burned off-site.⁷³ For the PRRs burned off-site, the proposal stated that in two cases they have been used to supplement other fuels burned at a commercial cogeneration plant⁷⁴ and a commercial biomass gasification plant.⁷⁵ However, the information regarding off-site use is based on only these two cases and the Agency lacks sufficient detail to determine that PRRs, when sent off-site for energy recovery, other than to

⁷² Generation, Management, and Processing of Paper Processing Residuals. Industrial Economics Corporation, October 26, 2012. This is posted within the docket for the final rulemaking (Docket: EPA-HQ-RCRA-2013-0110).

⁷³ Generation, Management, and Processing of Paper Processing Residuals. Industrial Economics Corporation, October 26, 2012. This is posted within the docket for the final rulemaking (Docket: EPA-HQ-RCRA-2013-0110).

⁷⁴ A cogeneration plant is one that generates electricity and useful heat (instead of releasing it into the environment via cooling towers, for example) for heating purposes either on-site or for use nearby.

⁷⁵ National Council for Air and Stream Improvement, Inc. Technical Bulletin (TB) No. 806, "Beneficial Use of Secondary Fiber Rejects," pp. 10-11. See attachment to AF&PA Comments to Docket, August 3, 2010 (docket document ID number: EPA-HQ-RCRA-2008-0329-0871).

those paper recycling mills within the industry that burn solid fuels (as discussed below), continue to meet the legitimacy criteria and are not discarded.

The Agency previously understood PRRs to be a term industry commonly used to refer to Old Corrugated Container (OCC) rejects.⁷⁶ Since publication of the March 21, 2011 NHSM final rule and the December 23, 2011 proposal, however, the Agency has received comments more appropriately identifying OCC rejects as a subset of the PRR universe. Specifically, the term “OCC rejects” refers to only one grade of recovered fiber, whereas PRRs used as fuel encompass residuals from all types of fiber grades. Therefore, in the proposal as well as in the final rule, the Agency is including OCC rejects within the broader PRR universe in a categorical non-waste determination.

In the final regulation, the EPA has determined that not all types of PRRs may be burned as a non-waste (product) fuel, as further explained below. The PRRs that are eligible to be burned as product fuels are limited to the wet strength short wood fibers that are essentially the same as the wood and biomass products burned by the paper recycling industry and contain only small amounts of certain non-wood fibers. Thus, based on the rulemaking record, this final rule represents a further refinement of PRRs that may be burned as a product fuel.

2. PRRs under Previous NHSM Rules

a. March 21, 2011 NHSM Final Rule

In the March 21, 2011 NHSM final rule, the EPA stated that OCC rejects are not discarded when used within the control of the generator, such as at pulp and paper mills, since these NHSMs are part of the industrial process. In addition, we stated that the data submitted during the comment period would seem to suggest that these materials would or could meet the

⁷⁶ Another term industry often uses when referring to OCC rejects is “recycling process residuals” which was identified in the March 21, 2011 final rule (76 FR 15486).

legitimacy criteria. For example, the data stated that the contaminant levels in these materials are comparable to, if not less than, those in traditional fuels used at pulp and paper mills. With respect to the meaningful heating value criterion, we noted that, although the Btu value of OCC rejects, as fired, is lower than 5,000 Btu/lb, it can still meet this criterion if it can be demonstrated that the combustion unit can cost-effectively recover energy from these materials. Last, the information submitted also demonstrated that OCC rejects are managed as a valuable commodity as they are managed in the same manner as the analogous fuel—bark (76 FR 15456-7, March 21, 2011). Therefore, the Agency generally concluded that OCC rejects burned as a fuel within the control of the generator are not discarded and not solid wastes. The EPA has determined for this final rule, as discussed further below, that these legitimacy criteria are indeed met for OCC rejects and are also met for certain other types of PRRs and, under the conditions of the final rule, these PRRs (including OCC rejects) can be burned under Clean Air Act section 112.

b. February 2013 NHSM Final Rule

Under the February 2013 final rule, we stated that PRRs (which include OCC rejects) are not discarded when burned under the control of the generator. Also, after publication of the March 21, 2011 final rule and during finalization of the February 7, 2013 final rule, we received additional information regarding the cost effectiveness of PRRs used as a fuel, including the amount of PRRs replacing traditional fuels at paper recycling mills and percentages of residuals generated that are combusted as a fuel.⁷⁷ Based upon the information received at that time, we stated that the information supported the categorical listing of PRRs as a non-waste fuel burned on-site. For PRRs transferred off-site for use as a fuel, we requested information regarding how

⁷⁷ Generation, Management, and Processing of Paper Processing Residuals. Industrial Economics Corporation, October 26, 2012.

and where they are burned and whether they are managed as a valuable commodity. We also stated that if the information submitted supports off-site use as a fuel, the Agency may include those PRRs in a subsequent rulemaking.⁷⁸

3. Scope of the Proposed Rule and Final Categorical Non-Waste Listing for Certain PRRs

In the April 14, 2014 proposed rule (79 FR 21005), the Agency proposed to categorically list PRRs, including OCC rejects, as a non-waste fuel for those paper recycling mills whose on-site boilers are designed to burn solid fuels. As stated in the proposal, PRRs generated during the paper recycling manufacturing process vary in composition. However PRRs used as fuel are composed primarily of the wet strength and short wood fibers that cannot be used to make new paper and paperboard products. Although PRRs are generated at more than 100 paper recycling mills, only between 15 and 20 mills can burn those materials as fuel because their boilers are designed to burn solid fuel. The majority of paper recycling mills cannot burn solid fuels because their boilers are designed to burn natural gas, and thus, usually send their PRRs to landfills. Data and information submitted to the Agency by industry demonstrated that PRRs are not discarded when used as a fuel on-site within the control of the generator. Further, the data and information indicated that all three legitimacy criteria are met.

This final rule adopts the listing of PRRs, including OCC rejects as categorical non-wastes, but makes several changes to the definition under 40 CFR 241.2 and the listing of PRRs under 40 CFR 241.4 to clarify that not all residuals are to be burned as a product fuel. Based on the rulemaking record, the final rule represents a further refinement of PRRs that may be burned as a non-waste product fuel and not are not discarded.

⁷⁸ 78 FR 9111, February 7, 2013 (page 9173).

Specifically, the proposed rule definition had stated “Paper recycling residuals means the co-product material generated from the paper recycling process and is composed primarily of wet strength and short wood fibers that cannot be used to make new paper and paperboard products. The term paper processing residuals also includes fibers from old corrugated container rejects.”

The definition of PRRs is revised in the final rule to limit the listing to those PRRs composed of wet strength, short wood fibers, with only small amounts of non-fiber materials remaining. The definition also clarifies that PRRs are more appropriately defined as secondary materials⁷⁹ rather than co-products, generated from the recycling of paper, paperboard and corrugated containers.

Use of the term co-products could infer that PRRs constitute a product fuel that has undergone processing through the paper recycling manufacturing process. Rather, the paper recycling manufacturing process generates wood fibers that are used to make new paper and paperboard products. PRRs are a secondary material or “byproduct” of that manufacturing process and are not discarded when used as a fuel within control of the generator or sent off-site to other paper recycling mills within the industry. Essentially, the PRRs are wood fibers used to make paper but, due to their inferior quality (fiber size), cannot be used in the paper making process. However, they may be combusted as a fuel.

The final categorical definition thus states: “Paper recycling residuals means the secondary material generated from the recycling of paper, paperboard and corrugated containers, composed primarily of wet strength and short wood fibers that cannot be used to make new paper

⁷⁹ Secondary materials are materials that are not the primary product of a manufacturing or commercial process, and can include post-consumer material, off-specification commercial chemical products or manufacturing chemical intermediates, post-industrial material and scrap.

and paperboard products. Paper recycling residuals that contain more than small amounts of non-fiber materials including polystyrene foam, polyethylene film, other plastics, waxes and adhesives, dyes and inks, clays, starches and other coating and filler material are not paper recycling residuals for purposes of this definition.”

Revisions are also made to the language for the categorical listing of PRRs under 40 CFR 241.4: Non-waste Determinations for Specific Non-Hazardous Secondary Materials When Used as a Fuel. The proposed 40 CFR 241.4(a)(6) had stated “Paper recycling residuals, including old corrugated cardboard rejects, generated from the recycling of recovered paper and paperboard products and burned on-site by paper recycling mills whose boilers are designed to burn solid fuel.” As discussed in the detail in section V.B.4 of this preamble, PRRs with lower heating values would not be considered discarded since recycling mills’ boilers can cost effectively recover energy from fuels because of the boiler design itself. The term, “on-site,” is deleted to clarify that PRRs can be combusted at any paper recycling mill with boilers designed to burn solid fuel, whether on-site at the generating mill, or transferred to another off-site paper recycling mill. Finally, the language “. . . including old corrugated cardboard rejects generated from the recycling of recovered paper, and paperboard products” is revised to parallel the definition of PRRs discussed above.

Thus, the final categorical rule listing states: Paper recycling residuals generated from the recycling of recovered paper, paperboard and corrugated containers and combusted by paper recycling mills whose boilers are designed to burn solid fuel.

The rationale for this final rule is discussed in sections V.B 4 and 5 of this preamble.

4. Rationale for Final Rule

This section discusses the reasoning provided in the proposed rule and the reasons for the EPA's final determinations for the categorical listing of PRRs. EPA adopts the reasoning in the proposed rule and further explains it in this preamble. Further explanations for the Agency's decision are provided in the Response to Comments below. The proposal, this section, and the Response to Comments all constitute the Agency's final determination supporting this rule.

a. Discard

When deciding whether an NHSM should be listed as a categorical non-waste fuel in accordance with 40 CFR 241.4(b)(5), the EPA first evaluates whether or not the NHSM has been discarded in the first instance and, if not so discarded, whether or not the material could be considered discarded because it is not legitimately used as a product fuel in a combustion unit.

Based on the rulemaking record, as discussed below, the Agency has determined that PRRs used as a fuel are secondary materials recovered from the paper recycling manufacturing process and are not discarded when burned within control of the generator or sent off-site to other paper recycling mills within the industry.

i. Generation of PRRs in the Paper Recycling Manufacturing Process.

The paper recycling process is grouped generally into three steps for purposes of identifying where residuals are generated. In the first step, bales of the incoming post-consumer paper enter a pulper where the paper and fiber are wetted and dispersed. A "debris rope" or "ragger" continuously withdraws strings, wires, and rags that could otherwise damage the processing equipment. Recovered metals may be sold to metals recovery facilities, but other materials removed by the ragger are landfilled because they produce a heterogeneous mixture.

In the second step, materials that remain in the pulper can either pass to a junk tower for removal of heavy materials and continue to a drum screen for removal of lighter materials; or go directly to coarse screens. For those materials that go to the coarse screens, the resulting rejects may pass through an air separator and/or a high efficiency cyclone, which further removes materials based on size, shape and density, such as plastic and unsuitable paper fibers (i.e., wet strength and short wood fibers), which make-up the largest portion of PRRs that would eventually be used as a fuel. These PRRs may be consolidated with those generated from the junk tower and drum screen, and sent across a dewatering screen or a screw or ram press to improve both ease of handling and heating value.

In the final step, a series of fine screens remove any remaining material that cannot be used to make paper or paperboard products. These rejected materials include unusable paper fiber fines, clays, starches, waxes and adhesives, other plastics, filler and coating additives, and dyes and inks. During this step, reject materials may either pass along to the wastewater treatment system or become part of the PRR stream and be used as a fuel. For example, for some grades of reject materials that are dispersed and small, such as dyes and inks, waxes, and coating adhesives generated from recovered magazines and other papers, these materials will not be removed by fine screens and therefore, enter the wastewater treatment system. In contrast, for other grades, these light reject materials are captured in fine screens and can be used as a fuel.⁸⁰ These PRRs would then be consolidated with the PRRs generated in the preceding step before being conveyed to the combustion source where they are blended with traditional fuels and fed to the combustor.

⁸⁰ AF&PA Technical Bulletin, Attachment 4, Recycling Process Residuals, p 2. September 10, 2009.

Thus, PRRs are generated at various steps of the paper recycling process, with the second step producing the bulk of PRRs (i.e., unsuitable fibers) destined for use as a fuel. Other non-fiber reject material (i.e., clays, starches, waxes and adhesives, other plastics, filler and coating additives, and dyes and inks) contained in the PRRs would be considered to have a lower heating value than the unsuitable fibers (see meaningful heating value discussion section V.B.4.b.. of this preamble). All that is generally required for use of PRRs as a fuel after screening of non-fiber material that cannot be used to make paper or paperboard products is removal of moisture to increase the Btu value. Removal of moisture can range from simply allowing PRRs to drain freely (e.g., for coarse and heavy PRRs) to sending them through a press (e.g., for smaller and compressible PRRs).

In determining whether PRRs used as a fuel are more product-like than waste-like, we considered the following attributes:

- PRRs are generated as a secondary material from the paper recycling process that makes new paper and paperboard products and consist primarily of unsuitable wood fibers that are never discarded within that paper making process.
- When these PRRs are combusted in mill boilers that burn solid fuel, they recover meaningful heating value;
- Paper recycling mills that can combust PRRs burn a significant amount of what they generate on-site: 55 percent - 100 percent.
- PRRs are used to replace traditional fuels by as much as 25 percent. Accordingly, the wet strength short fiber PRRs, when generated at the recycling facility, are more product-like than waste-like.

ii. Off-site Combustion of PRRs as Fuel.

As discussed in section V.B.5. of this preamble below, the Agency lacked sufficient information to determine that, after the recycling process described above, PRRs sent off-site for energy recovery to facilities outside the paper recycling industry are not discarded. The Agency stated in the proposal that it was requesting additional information for PRRs that are burned off-site which demonstrates how they: 1) are managed as a valuable commodity (from point of generation at the paper recycling mill to insertion at the off-site combustor, to show that discard is not occurring); 2) have a meaningful heating value; 3) contain contaminants at levels comparable to or lower than those in traditional fuel(s) which the combustor is designed to burn; and 4) the types of facilities that combust these PRRs. The agency received general statements that PRRs are an important part of paper mills' fuel mix and that third party sellers and purchasers classify PRRs as fuel. These general statements did not provide the detailed information the EPA needed to make a reasoned determination that PRRs sent off-site to entities outside of the paper recycling industry for combustion constituted discard or product fuel use.

Combustion of PRRs off-site and within the paper recycling industry, however, is different. For these facilities the Agency examined the data in the record from previous rulemakings as well as comments received on the proposal. The Agency has determined that the listing includes PRRs generated by paper recycling mills that transfer that material off-site for combustion at the estimated 15-20 paper recycling mills that have the solid fuel boilers capability of burning PRRs for energy recovery.

Regarding off-site use, the EPA has discussed in previous NHSM rulemakings that transferring secondary materials between companies or facilities does not necessarily mean that the material has been discarded (see 76 FR 15500, March 21, 2011). The PRRs transferred off-

site to other paper recycling facilities with the capability to combust these fuels are utilized in the same manner as self-generated paper recycling residuals, such that they are legitimately burned in solid fuel boilers that are designed to burn wet fuels (see V.B.4.b. of this preamble for a discussion of legitimacy criteria for off-site combustion), with mills optimizing their operation around boiler design. Thus, we have determined that such off-site use does not constitute discard.

b. Legitimacy Criteria

In determining whether to list PRRs as a categorical non-waste fuel in 40 CFR 241.4(a), the Agency evaluated the legitimacy criteria in 40 CFR 241.3(d)(1)—that is, whether it is managed as a valuable commodity, whether it has a meaningful heating value and is used as a fuel in a combustion unit to recover energy, and whether contaminants or groups of contaminants are at levels comparable to or less than those in the traditional fuel the unit is designed to burn. Materials not meeting these criteria are considered discarded and thus a solid waste.

i. Managed as a Valuable Commodity.

Regarding the first legitimacy criterion, PRRs that are utilized as a fuel are managed similarly to traditional fuels that are burned at paper recycling mills such as hogged wood, other clean biomass, or coal. PRRs are also managed as a valuable commodity when they are utilized off-site as a fuel within the paper recycling industry. Some paper recycling mills store PRRs in containers (i.e., from the container, PRRs can be fed directly to the boiler) or convey them to a storage pile of traditional solid fuels where they are comingled prior to burning. Other paper recycling mills convey PRRs directly to the fuel feed systems. This demonstrates that PRRs are handled promptly and are managed as a valuable commodity, such that, after generation on-site, they are fed directly to the boiler, or, when not used immediately, they are managed in containers and storage piles along with traditional fuels used on site.

For PRRs utilized as a fuel at off-site paper mills, PRRs are managed similarly to those generated on-site.⁸¹ These mills store PRRs in containers until sufficient quantities are accumulated for transfer (generally not more than several weeks). Upon arrival at the combustion mill, the material is managed as described above for on-site generated PRRs. Because storage does not exceed reasonable time frames, and management is similar to that of traditional fuels, the Agency has determined that PRRs burned on-site, as well as at off-site paper mills, meet this legitimacy criterion. To the extent PRRs do not meet these general standards for being handled as a valuable commodity, for example by being allowed to accumulate at the combustor or the applicable site for unreasonable lengths of time not normally done within the industry, the categorical listing would not apply.

ii. Meaningful Heating Value and Used as Fuel to Recover Energy.

With respect to the second legitimacy criterion, PRRs, as fired and generated, average 3,700 Btu/lb (or on a dry basis, average 9,100 Btu/lb).⁸² Although this is lower than the general guideline of 5,000 Btu/lb as fired, the Agency has previously stated that a person may demonstrate meaningful heating value below 5,000 Btu/lb if the energy recovery unit can cost effectively recover meaningful energy from the NHSM (76 FR 15522, March 21, 2011). For PRRs, industry has stated that paper recycling mills' boilers can cost effectively recover energy at such heating values because of the boiler design. Specifically, the mills' solid fuel boilers are designed to burn wet fuels, with each mill optimizing its operation around boiler design. Typical boilers used include stoker fired and fluidized bed combustion, which often have over-fire and/or under-grate air that assists in the efficient burning of wetter fuels. This allows paper recycling

⁸¹ American Forest and Paper Association phone communication to EPA, November 11, 2014 included in the docket to the final rule.

⁸² See AF&PA Comments, p 62, to Docket document ID: EPA-HQ-RCRA-2008-0329-0871.

mills to burn clean cellulosic biomass fuels, such as hog fuel and bark, which is the primary fuel, as well as PRRs that have varying degrees of moisture content. If the material being fed to the boiler is too dry, the combustion temperature can become too hot, requiring operational adjustments. Consistently wet materials are handled well in these boilers, leading to fewer temperature swings and minimized boiler tuning adjustments. Industry also stated that PRRs are analogous to the primary fuels—hog fuel and bark—used in solid fuel boilers at paper recycling mills in that they both have high moisture content, usually >40 percent, and can have Btu values below 5,000 Btu/lb, as fired. However, PRRs can also have Btu values higher than 5,000 Btu/lb, depending upon the amount of moisture that has been removed (i.e., whether simply draining freely versus pressed), amount of solids, fiber content, presence of non-fiber packing materials, and combustion conditions necessary for the effective operation of the boilers.⁸³

The EPA finds that the data in the record and the description of the combustion process of the particular combustors used in the paper recycling industry confirm that paper mill boilers cost-effectively recover energy from PRRs used as fuel. These solid fuel boilers are designed to burn wet fuels, and have over-fire and/or under-grate air that assists in the efficient burning of wetter fuels. These design characteristics allow the boilers to burn PRRs (as well as cellulosic biomass fuels) that have high moisture content.

The meaningful heating values for PRRs generated at off-site paper recycling mills are consistent with PRRs generated on-site.⁸⁴ Therefore, based on all of the available information,

⁸³ See “AF&PA-AWC Responses to EPA’s Questions on PRR and Railroad Ties (May 2013).”

⁸⁴ December 2011 boiler database -- Boiler Reconsideration Proposal Databases: Emissions Database for Boilers and Process Heaters Containing Stack Test, CEM, & Fuel Analysis Data Reported under ICR No. 2286.01 & ICR No. 2286.03 (version 7); <http://epa.gov/ttn/atw/boiler/boilerpg.html>. Data presented is for paper manufacturing facilities with NAICS code #322 and where fuel type indicates it refers to the repulped paper fibers that are used as fuels and include: “dewatered combustible residues,” “hydro pulper refuse,” “OCC rejects,” “recycle fiber lightweight rejects,” and “recycled fiber.”

including the fact that PRRs are primarily wood fibers, the Agency has determined that PRRs with heating values averaging 3,700 Btu/lb (or on a dry basis, averaging 9,100 Btu/lb), whether generated on-site or combusted at off-site paper recycling mills that burn solid fuel, meet the meaningful heating value legitimacy criterion and are burned as a product fuel. PRRs that average less than 3,700 Btu/lb (9,100 Btu/lb dry basis) would not have meaningful heating value for purposes of this categorical listing, thus the listing would not apply to those materials.⁸⁵

See also section V.B.6.a.i. for a discussion of data on facilities combusting PRRs greater than 3,700 Btu/lb, and options for facilities combusting PRRs that are less than that Btu/lb level.

iii. Contaminants Comparable to or Lower than Traditional Fuels.

For the third legitimacy criterion, a contaminant comparison was conducted to capture data that is representative of all PRR fuel types within the EPA’s Boiler MACT Database. The contaminant data include PRRs combusted both on-site and offsite.⁸⁶ See Table 2 of this preamble.

TABLE 2. Comparison of Contaminants in Paper Recycling Residuals (PRRs) and Traditional Fuels

Contaminants ^a	Clean Wood/Biomass	Coal ^b Range	PRRs ^{c,d}
Arsenic	ND – 298	ND – 174	0 – 17.7
Chromium	ND – 340	ND – 168	<0.17 – 26.9
Lead	ND – 340	ND – 148	<0.10 – 21.1
Mercury ^e	ND – 1.1	ND – 3.1	ND – 0.0724
Chlorine	ND – 5400	ND – 9,080	<9.8 – 7310

⁸⁵ In determining compliance with this legitimacy criterion (i.e., average value of 3,700 Btu/lb) the Agency anticipates, for PRRs generated on-site, that boiler operators will use generator knowledge in combination with testing on an as needed basis, to determine Btu value of the PRRs to be burned. For PRRs sent off-site to another paper recycling mill boiler, the receiving boiler also may rely on generator knowledge and testing, but may need to test more frequently based on the consistency of the PRRs composition from each of the generating mills.

⁸⁶ In response to the ANPRM, commenters submitted data for OCC rejects, which show that OCC rejects meet the contaminant criterion.

	Sulfur	ND – 8700	740 – 61,300	237 – 2500
	Antimony	ND – 26	ND – 10	0.07 – 0.9
	Beryllium	ND – 10	ND – 206	0.005 – 0.329
	Cadmium	ND – 17	ND – 19	0.03 – 7.1
	Cobalt	ND – 213	ND – 30	1.05 – 1.99
	Manganese	ND – 15,800	ND – 512	<0.10 – 21.1
	Nickel	ND – 540	ND – 730	<0.27 – 25
	Selenium ^f	ND – 9	ND – 74.3	ND – 3.29
	Fluorine ^g	ND – 300	ND – 178	<17 – <26

^a All units expressed in parts per million (ppm) on a dry weight basis.

^b Coal and Biomass data taken from the EPA document Contaminant Concentrations in Traditional Fuels: Tables for Comparison, November 29, 2011, available at www.epa.gov/epawaste/nonhaz/define/index.htm. Refer to document for footnotes and sources of the data.

^c December 2011 boiler database -- Boiler Reconsideration Proposal Databases: Emissions Database for Boilers and Process Heaters Containing Stack Test, CEM, & Fuel Analysis Data Reported under ICR No. 2286.01 & ICR No. 2286.03 (version 7); <http://epa.gov/ttn/atw/boiler/boilerpg.html>. Data presented is for paper manufacturing facilities with NAICS code #322 and where fuel type indicates it refers to the repulped paper fibers that are used as fuels and include: “dewatered combustible residues,” “hydro pulper refuse,” “OCC rejects,” “recycle fiber lightweight rejects,” and “recycled fiber.”

^d CAA 112 Hazardous Air Pollutant (HAP) compounds (e.g., benzene, PAHs) data was not collected in this data set. HAP compounds may be present.

^e Other PRR sample results indicate mercury was non-detect at 0.1 ppm; therefore, some samples could have been between the highest recorded value of 0.0724 ppm and the non-detect limit of 0.1 ppm.

^f Other PRR sample results indicate that selenium was non-detect at 7 ppm; therefore, some samples could have been between the highest recorded value of 3.29 ppm and the non-detect limit of 7 ppm.

^g Fluorine was not detected in any samples; the highest non-detect level is listed.

As discussed in the proposed rule (79 FR 21019, April 14, 2014), and adopted for the final rule, contaminant concentrations of those constituents found in Table 2 of this preamble in PRRs were compared to the levels found in coal and biomass, since both of these traditional fuels can be burned in boilers at paper recycling mills (see discussion below regarding combustion of coal). Data show that PRRs, whether combusted at on-site or off-site paper recycling mills, meet the contaminant legitimacy criterion. The only reported instance of PRRs containing a contaminant at levels approaching the highest levels in coal and biomass is a chlorine concentration at a mill burning OCC rejects. However, the highest reported value for chlorine in PRRs was 7,310 ppm, which is still below the highest reported value for chlorine in coal (9,080 ppm). Therefore, the contaminant concentrations for these contaminants are comparable to the traditional fuels that the boilers are designed to burn.

With regard to organic HAP present in PRRs, although no specific data is available on the concentration of these contaminants in PRRs, limited data has been published on TCLP extracts of OCC rejects that include several organic HAPs. With the exception of toluene, which was found at trace levels ranging from <0.001 to 0.004 mg/L, no other HAPs were detected in the TCLP extracts for OCC rejects.⁸⁷ For purposes of comparability, a total constituent analysis for toluene would yield a concentration of up to 0.08 mg/L (or 0.08 ppm), assuming worst case conditions, which is well below the concentration found in coal at 8.6 - 56 ppm.^{88, 89} Likewise, the EPA has no reason to find that results would be any different from the broader universe of PRRs, since the steps that generate PRRs, which must process multiple grades of recovered fibers, are equivalent to or more rigorous than those that generate only OCC rejects (i.e., where the feedstock is limited to OCCs).

The contaminant data submitted also compared PRRs to coal as the traditional fuel for comparison. As stated in section V.B.1. of this preamble, PRRs may represent between 20 to 25 percent of the total solid fuel burned in their solid fuel boilers, thus, units combusting PRRs may also be designed to burn other solid fuels such as coal. As shown in Table 2 of this preamble, PRR concentrations were comparable to those in coal as well as clean wood/biomass. Under the

⁸⁷ National Council for Air and Stream Improvement, Inc. Technical Bulletin (TB) No. 806, "Beneficial Use of Secondary Fiber Rejects," Appendix B, Table B1. TCLP Analysis of OCC Rejects. See attachment to AF&PA Comments to Docket, August 3, 2010 (document ID number; EPA-HQ-RCRA-2008-0329-0871).

⁸⁸ Section 1.2 of Method 1311 (Toxicity Characteristic Leaching Procedure) allows for a total constituent analysis in lieu of a TCLP analysis. That is, the Agency allows calculating a solid phase's maximum theoretical concentration expected in a TCLP extract by dividing a sample's total constituent concentration by 20, representing 20:1 liquid-to-solid ratio (by weight) employed in the TCLP procedure. See http://www.epa.gov/osw/hazard/testmethods/faq/faq_tclp.htm. While leaching extract concentrations do not reflect total constituent concentrations, multiplying the extract concentration (0.004 ppm) by 20 provides the minimum total concentration in the waste. However, because toluene is somewhat soluble in water (515 mg/L at 20° C), the leaching extract concentration multiplied by 20, is for this constituent, a reasonable approximation of the total toluene concentration. Water solubility data can be found at: http://www.epa.gov/chemfact/s_toluene.txt.

⁸⁹ Concentrations in Traditional Fuels: Tables for Comparison, November 29, 2011, available at www.epa.gov/epawaste/nonhaz/define/index.htm and in the docket (EPA-HQ-RCRA-2008-0329).

final rule, therefore, units that are designed to burn clean wood/biomass and are combusting PRRs in boilers that recover meaningful heating value from those residuals, may in addition burn coal if the unit is designed to burn that solid fuel.

5. Summary of Comments Requested

The proposed rule identified several issues pertaining to the listing of PRRs as categorical non-wastes and requested comment on those issues which are summarized below.

Meaningful heating value. Although the heating value is less than the general benchmark of 5,000 Btu/lb, the Agency determined that PRRs meet the meaningful heating value criterion since paper recycling mills have demonstrated that they can cost effectively recover energy from those materials. The Agency requested information regarding the percentages of non-fiber materials that typically make-up PRRs; such information would be useful in understanding the variability of the PRR's heating value since PRRs that contain a larger portion of wood fibers could be expected to have a higher heating value. Those non-fiber materials consist of light reject material captured in fine screens remaining after the processing steps described in section V.B.1. of this preamble and consist of polystyrene foam, polyethylene film, other plastics, waxes and adhesives, dyes and ink, clays, starches, and other filler and coating additives.

No information was received from industry regarding the percentage of these non-fiber materials. Lacking such information, the Agency finds that PRRs with higher amounts of non-fiber materials would have a lower heating value. Combustion of more than small amounts of these materials with these low heating values are discard of those materials and burning of a waste fuel. The Agency is thus revising the definition of PRRs to clarify that the categorical non-waste listing applies only to PRRs composed primarily of wet strength and short wood fibers that

do not contain more than small amounts of polystyrene foam, polyethylene film, other plastics, waxes and adhesives, dyes and ink, clays, starches, and other filler and coating additives.

Other discarded materials. Although the data provided in the boiler database regarding the level of contaminants in the PRRs indicate that they meet the contaminant legitimacy criterion, evaluations conducted for the development of the boiler database suggested that, in a few cases, OCC rejects used as feedstock at paper recycling mills contain other discarded materials. For example, some paper recycling mills may accept cardboard containers from off-site that have not been completely emptied of their contents or otherwise are contaminated with foreign materials. The Agency was interested in receiving information regarding how common this practice is, the composition of the contents/materials, any precautions taken to ensure that the contents/materials do not contribute to unacceptable contaminant concentrations, and whether any additional conditions should be imposed to ensure that such cardboard containers have been emptied. In other words, any remaining contents/materials should only be incidental.

Based on information received, and examination of the few cases in the boiler database of foreign materials present in OCC rejects undergoing recycling⁹⁰, the Agency concluded that such situations are incidental, and no specific conditions to ensure the containers are empty are warranted, other than to describe the incidental contamination as part of the categorical listing.

PRRs burned off-site. The Agency considered whether to expand the categorical listing to include PRRs that are burned as a fuel product off-site. According to earlier comments submitted on previous NHSM rulemakings, OCC rejects have been used as a supplemental fuel in two plants: a commercial biomass gasification plant and a commercial cogeneration plant (where

⁹⁰ December 2011 boiler database -- Boiler Reconsideration Proposal Databases: Emissions Database for Boilers and Process Heaters Containing Stack Test, CEM, & Fuel Analysis Data Reported under ICR No. 2286.01 & ICR No. 2286.03 (version 7); <http://epa.gov/ttn/atw/boiler/boilerpg.html>.

OCC rejects provide 3 to 4 percent of the total fuel input at the latter plant).⁹¹ An intermediary company takes the OCC rejects from three mills and processes them by removing large pieces of plastic, shredding, and drying the remaining residuals and delivers the OCC reject fuel to the plants.⁹² Thus, contrary to what the Agency previously concluded based on the information it had at the time of the March 21, 2011 final rule,⁹³ in these two instances, the OCC rejects burned off-site in commercial power plants can be managed more like a non-waste fuel than a waste fuel.

While the information generally indicates that these PRRs are managed much the same way as those burned on-site, it is based on only two cases and lacks sufficient detail to determine that PRRs when sent off-site for energy recovery continue to meet the legitimacy criteria and are not discarded. Therefore, we requested additional information for PRRs that are burned off-site which demonstrates how they: 1) are managed as a valuable commodity (from point of generation at the paper recycling mill to insertion at the off-site combustor, to clearly show that discard is not occurring); 2) have a meaningful heating value; 3) contain contaminants at levels comparable to or lower than those in traditional fuel(s) which the combustor is designed to burn; and 4) the types of facilities that combust these PRRs.

Commenters did not provide data regarding how that material meets other legitimacy criteria including management of the fuel as a valuable commodity and meaningful heating value. In particular, the Agency did not receive information that facilities outside the paper

⁹¹ In the December 23, 2011 final NHSM rule (76 FR 15487), the agency previously believed these facilities to be municipal or commercial incinerators. Subsequent comments have identified these facilities to be commercial biomass and cogeneration plants.

⁹² National Council for Air and Stream Improvement, Inc. Technical Bulletin (TB) No. 806, "Beneficial Use of Secondary Fiber Rejects," pp. 10-11. See attachment to AF&PA Comments to Docket, August 3, 2010 (document ID: EPA-HQ-RCRA-2008-0329-0871).

⁹³ The Agency had stated that limited information indicated that OCC rejects are "burned in municipal or commercial energy facilities (which appear to be municipal or commercial incinerators) and thus, would clearly indicate discard..." 76 FR 15487.

recycling industry combusted PRRs in the solid fuel boilers designed to burn wet fuels characteristic of paper recyclers. The Agency has determined that the listing be revised from the proposal to include PRRs generated by paper recycling mills that do not have the capability to combust the materials on-site, but are transferred off-site for combustion at the estimated 15-20 paper recycling mills that do have the solid fuel boilers capable of burning PRRs for energy recovery. The PRRs transferred off-site to other paper recycling facilities with the capability to combust these fuels are utilized in the same manner as self-generated paper recycling residuals i.e., they are legitimately burned for fuel in solid fuel boilers that are designed to burn wet fuels, with mills optimizing their operation around boiler design. Thus, we have determined that such use does not constitute discard.

6. Responses to Comments

a. Specific Request for Comments

i. Meaningful Heating Value.

Comment: The EPA appropriately determined that PRRs have meaningful heat value and are burned as a fuel to specifically recover energy in solid fuel boilers at paper recycling facilities. Mill boilers are specifically designed to produce heat by combusting materials such as PRRs and use wet fuels to regulate temperature. Since virgin biomass, as fired, can contain up to 60 percent moisture and have BTU values as low as 3,500 MMBtu/lb, there should be no Btu threshold for PRRs.

Response: The EPA finds that the data in the record and the description of the combustion process of the particular boilers used in the paper recycling industry confirms that paper mill boilers cost-effectively recover energy from PRRs used as fuel, thus meeting the meaningful heating value criterion.

The mills' solid fuel boilers are designed to burn wet fuels, with each mill optimizing its operation around boiler design. Typical boilers used include stoker fired and fluidized bed combustors, which often have over-fire and/or under-grate air that assists in the efficient burning of wetter fuels. If the material being fed to the boiler is too dry, the combustion temperature can become too hot, requiring operational adjustments. Consistently wet materials are handled well in these boilers, leading to fewer temperature swings and minimized boiler tuning adjustments.

PRRs are also analogous to the primary fuels—hog fuel and bark—used in solid fuel boilers at paper recycling mills in that they both have high moisture content, usually >40 percent, and can have Btu values below 5,000 Btu/lb, as fired. However, PRRs can also have Btu values higher than 5,000 Btu/lb, depending upon the amount of moisture that has been removed (i.e., whether simply draining freely versus pressed), amount of solids, fiber content, presence of non-fiber packing materials, and combustion conditions necessary for the effective operation of the boilers.⁹⁴

To further understand the variability of the PRR's heating value, the Agency requested information regarding the percentages of non-fiber materials (e.g., polystyrene foam, polyethylene film, other plastics, waxes and adhesives, dyes and inks, clays, starches, and other filler and coating additives, etc.). As discussed in section V.B.4. of this preamble, while unsuitable paper fibers (i.e., wet strength and short wood fibers), make up the largest portion of PRRs destined for fuel use, PRRs also contain these non-fiber materials that cannot be used to make paper or paperboard products. PRRs that contain a larger portion of wood fibers could be expected to have a higher heating value.

⁹⁴ See "AF&PA-AWC Responses to EPA's Questions on PRR and Railroad Ties (May 2013)."

However, no information was received from industry regarding the percentage of these non-fiber materials as the Agency requested. Lacking such information, the Agency finds that PRRs with higher amounts of non-fiber materials would have a lower heating value (i.e., consist predominantly of clays, pigments and inorganic fillers, which have little or no heat content). Combustion of more than small amounts of these materials which have low heating values constitute discard and thus burning of a waste fuel. The Agency has revised the definition of PRRs to clarify that the categorical non-waste listing applies only to PRRs composed primarily of wet strength and short wood fibers that do not contain more than small amounts of polystyrene foam, polyethylene film, other plastics, waxes and adhesives, dyes and ink, clays, starches, and other filler and coating additives. (See also comment response regarding PRR definition below.)

The Agency disagrees that heating value is irrelevant. As discussed in section V.B.4., based on all of the available information, including the fact that PRRs are primarily wood fibers, the Agency has determined that PRRs with heating values averaging 3,700 Btu/lb (or on a dry basis, averaging 9,100 Btu/lb), whether generated on-site or combusted at off-site paper recycling mills that burn solid fuel, meet the meaningful heating value legitimacy criterion and are burned as a product fuel. PRRs that average less than 3,700 Btu/lb (9,100 Btu/lb dry basis) would not have meaningful heating value for purposes of this categorical listing, thus, the listing would not apply to those materials.⁹⁵

The EPA realizes that some facilities may be combusting PRRs that average less than 3,700 Btu/lb. However, data in the record indicates that a majority of facilities combust PRRs

⁹⁵ In determining compliance with this legitimacy criterion (i.e., average value of 3,700 Btu/lb) the Agency anticipates, for PRRs generated on-site, that boiler operators will use generator knowledge in combination with testing on an as needed basis, to determine Btu value of the PRRs to be burned. For PRRs sent off-site to another paper recycling mill boiler, the receiving boiler also may rely on generator knowledge and testing, but may need to test more frequently based on the consistency of the PRRs composition from each of the generating mills.

with heating values greater than 3,700 Btu/lb. Technical data on PRRs cited by industry⁹⁶ shows that five of the eight facilities (that included moisture content and heating value data) have as-received heating values greater than 3,700 Btu/lb with an average per facility of 3915 Btu/lb. Review of facilities combusting PRRs in the Boiler MACT Database indicates six of eleven facilities have PRR as-received heating values equal to or greater than 3700 Btu/lb with an average per facility of 4777 Btu/lb (in other terms, 30 of 55 unique data points are above 3,700 Btu/lb).

Facilities combusting PRRs that do not meet the average 3,700 Btu/lb meaningful heating value criterion for the categorical PRR non-waste listing have several options to continue to burn those PRRs. Combustors may take additional measures to meet the average 3,700 Btu/lb level by further drying the PRRs or removing low heat content non-fiber material. Combustors burning lower BTU value PRRs may also make self-determinations under 40 CFR 241.3(b) that the material is a non-waste fuel and meets legitimacy criteria including meaningful heating value. Finally, combustors can continue to burn those lower BTU PRRs under the section 129 standards of the CAA.

ii. Other Discarded Materials.

Comment: A commenter noted that the proposal stated that evaluations conducted for the development of the boiler database suggested that, in a few cases, OCC rejects being recycled contain other discarded materials. For example, some paper recycling mills may accept cardboard containers from off-site that have not been completely emptied of their contents or otherwise are contaminated with foreign materials. The Agency was interested in receiving

⁹⁶ NCASI Technical Bulletin 806 included in docket number EPA-HQ_RCRA-0329-0871.

information regarding how common this practice is, the composition of the contents/materials, any precautions taken to ensure that the contents/materials do not contribute to unacceptable contaminant concentrations, and whether any additional conditions should be imposed to ensure that such cardboard containers have been emptied.

The commenter went on to say, however, that the EPA does not need to be concerned about other materials contained in PRRs, and any unacceptable contaminant concentrations related to such materials. For sales transactions that are direct with suppliers, the mills and suppliers rely on the Scrap Specification Circular⁹⁷ to assure the quality of the bales of recovered fiber received. There are practices in place to reduce the likelihood of contamination in the incoming bales. In isolated instances where bales contain unwanted materials, the bale may be rejected; the bale may be accepted but rejected after further inspection; or the bale may be used and the contaminants removed during processing. Given the amount of water and fiber that are processed together, it is unlikely that the contaminants would be at a level of concern. Rejected bales and boxes are sent to a landfill and are not used as fuel. Additional testing requirements are in place to assure that packaging is of suitable purity for mills producing recycled paper that will be used for food-contact packaging.

Response: The Agency disagrees that the presence of foreign materials in OCC rejects undergoing recycling should not be of concern. Combustion of such materials remaining in the PRRs after recycling constitute burning of a solid waste; and as such, units burning those materials would be subject to CAA section 129 standards. Information received from commenters states that the inspection practices described above prevent the introduction of other discarded materials and are standard practice. Based on that information, and examination of the

⁹⁷ Standard specifications for buying and selling of materials issued by the Institute of Scrap Recycling Industries Inc.

few cases in the boiler database of foreign materials present in OCC rejects undergoing recycling⁹⁸, the Agency has concluded that such situations are incidental, and no specific conditions to ensure the containers are empty are warranted, other than to describe the incidental contamination as part of the categorical listing. The Agency reiterates, however, that the combustion of discarded materials in PRRs would result in the application of the CAA section 129 standards.

iii. Combustion Off-Site.

Comment: Under D.C. Circuit precedent, the use of PRRs by the paper industry should not be treated any differently from the use of the PRRs by the generator. AMC I, at 1186, 1192-93 (materials recycled in an ongoing industrial process are not discarded and materials that are destined for beneficial use by the generating industry itself are not waste because such materials are not part of the waste disposal problem). Mills that do not combust solid fuel can and do send PRRs to mills that have that capability.

Response: For combustion at PRRs within the paper recycling industry, the Agency examined the data in the record from previous rulemakings as well as comments received on the proposal. The Agency has determined that it is appropriate to revise the proposed to include PRRs generated by paper recycling mills that are transferred off-site to other paper recycling mills for energy recovery. This determination addresses those generators that do not have the capability to combust the materials on-site, but who wish to transfer their PRRs off-site for combustion at the estimated 15-20 paper recycling mills that do have the solid fuel boilers capable of burning PRRs for energy recovery. The PRRs transferred off-site are utilized in the

⁹⁸ December 2011 boiler database -- Boiler Reconsideration Proposal Databases: Emissions Database for Boilers and Process Heaters Containing Stack Test, CEM, & Fuel Analysis Data Reported under ICR No. 2286.01 & ICR No. 2286.03 (version 7); <http://epa.gov/ttn/atw/boiler/boilerpg.html>.

same manner as self-generated paper recycling residuals i.e., they are legitimately burned for fuel in solid fuel boilers that are designed to burn wet fuels, with mills optimizing their operation around boiler design. Thus, we have determined that such use does not constitute discard.

While the EPA agrees that, under certain circumstances, PRRs may be transferred as a product fuel within the paper recycling industry (and are not discarded), the Agency disagrees with the comment's characterization of the AMC I case. AMC I does not directly apply in this instance. The AMC I holding stated that material reclaimed in a continuous industrial process could not be a waste. It did not specifically cover materials transferred between facilities, even in the same industry, particularly a material reclaimed from recycled paper but then used for another purpose – burning as a fuel.

Comment: PRRs are an important part of the fuel mix for facilities other than paper recycling mills, and third party sellers and purchasers classify PRR as fuel. Limiting the ability to utilize PRRs as fuel to those paper mills that have on-site boilers that are designed to burn solid fuel is arbitrary and unnecessary. Many facilities routinely purchase and transport non-hazardous secondary materials generated at a third party location to their sites for legitimate use as fuel. These materials are sourced and purchased as fuels from others and thereby satisfy the first two legitimacy criteria: 1) be handled as a commodity with an established market; and 2) have sufficient Btu content to support their use as fuel. The third legitimacy criterion (contain contaminants that are not significantly higher in concentration than traditional fuel products), is addressed in the user's air permit rather than in a duplicative non-waste determination process.

Several mills have also partnered with local utilities that can use the PRRs as fuel. Further, requiring an off-site facility to petition the EPA before it could acquire and burn PRRs

will add significant administrative costs. Small paper mills typically do not have solid-fuel boilers and therefore look to off-site partners to find appropriate uses for their PRRs

Response: The Agency disagrees that the categorical non-waste determination should include PRRs combusted at facilities that are not paper recycling mills, and lacks sufficient information to determine that combustors outside the paper recycling industry continue to meet the legitimacy criteria and are, therefore, not discarded.

The Agency clearly stated its need for additional information regarding residuals that are burned as fuel at facilities not under the control of the generator. The EPA requested detailed information about how PRRs are managed as a valuable commodity (from point of generation at the paper recycling mill to insertion at the off-site combustor); have a meaningful heating value; and contain contaminants at levels comparable to or lower than those in traditional fuel(s) which the combustor is designed to burn.

General statements that PRRs are an important part of the fuel mix outside the paper recycling industry, and that third party sellers and purchasers classify PRRs as fuel, is not the relevant consideration for deciding whether material, even a fuel, is burned as a waste.

Moreover, merely saying that a material is considered a fuel does not address the issue of whether that fuel is a waste. Wastes may be burned as fuels, but they still are wastes. The commenters did not provide data regarding how that material meets other legitimacy criteria including management of the fuel as a valuable commodity and meaningful heating value. In particular, the Agency did not receive information that facilities outside the paper recycling industry combusted PRRs in the solid fuel boilers designed to burn wet fuels characteristic of paper recyclers. While the EPA may accept the low Btu value of PRRs as a legitimate product

fuel for paper recycling facilities, the same kind of low Btu value fuel could be a waste at other facilities. At those facilities, any low Btu value material could simply be thrown in as a waste.

In addition, the EPA rejects arguments that the Agency should rely on air permit emissions limitations in determining whether material is a waste. Prior to establishing emission limits, the EPA first needs to determine whether the material is discarded in order to decide whether boiler emission standards (under CAA section 112 regulations) or CAA section 129 standards would apply.

PRRs sent off-site for combustion to facilities outside the paper recycling industry will require submittal and approval of a non-waste petition under 40 CFR 241.3(c) to be burned at CAA section 112 facilities.

Comment: The EPA should include cement kilns as an appropriate off-site end-user for utilization of PRR categorical non-waste fuels. Cement kilns are capable of handling a wide variety of fuels without the need for extensive processing that some other combustion facilities require in order for the materials to be legitimate. A table comparing the contaminant levels in PRRs to those found in the solid traditional fuels used at cement kilns, including coal and coke was provided⁹⁹. The table shows that contaminant concentrations in the PRR categorical non-wastes are less than the range maximum for coal and coke, which are the solid traditional fuels used in cement kilns. Meaningful heating values of 3,700 Btu/lb are also well within the design and operating range of cement kilns. Some kilns inject water for NOx control and the same effect could be achieved using a high moisture fuel material. There is variation in the capabilities and other environmental restrictions of facilities capable of using PRR categorical non-waste fuels, and cement kilns in particular generally have the ability to use a wider variety of fuels. These

⁹⁹ Included in the docket for the final rule.

materials have great value to the energy intensive cement industry, which manages alternative fuels as valuable commodities.

Response: The Agency disagrees that the categorical non-waste determination should include PRRs transported offsite and combusted at cement kilns. The information presented on cement kilns lacks sufficient detail overall to determine that such PRRs continue to meet the legitimacy criteria and are not discarded. The information that was received included the referenced table showing that contaminant concentrations in the PRRs combusted in cement kiln are less than the range for solid fuels, as well as cement kilns overall capability to use a wide range of materials with lower heating values that may not be practical in other combustion processes. However, no information was provided, as requested, as to how PRRs are managed as a valuable commodity from the point of generation at the paper recycling mill to insertion at the off-site combustor (i.e., cement kiln) to clearly show that discard is not occurring.

The arguments that cement kilns are capable of handling a wide variety of fuels without the need for extensive processing that some other facilities require and that processing needs to be flexible and appropriate to the receiving combustion unit could demonstrate that cement kilns can burn waste fuels as well as non-waste fuels. The commenter also misunderstands the “processing” requirements under 40 CFR part 241 standards. Under 40 CFR 241.3(b)(4), when discarded, NHSMs must be processed i.e., “transformed” into a non-waste fuel, in accordance with the processing definition at 40 CFR 241.2, and meet legitimacy criteria prior to combustion. The capabilities of the combustion unit are not a factor in determining whether the material has been sufficiently processed.

To reiterate, these comments generally confirm that cement kilns are capable of burning wastes as fuels. If they do, they should be regulated under section 129 of the Clean Air Act.

b. Definition of PRRs

Comment: The EPA proposes to define PRRs as follows: “Paper recycling residuals means the co-product material generated from the paper recycling process and is composed primarily of wet strength and short wood fibers that cannot be used to make new paper and paperboard products. The term paper processing residuals also includes fibers from old corrugated container rejects.” Proposed 40 CFR 241.2.

It is our understanding that the EPA does not intend to distinguish between residuals from recycling paper and residuals from recycling old corrugated containers and that the EPA recognizes that these residuals are composed primarily of fibers but that there could include other materials from the paper and corrugated cardboard bales. As the EPA has noted: “For example, use of old corrugated cardboard (OCC) rejects (clay, starches, other filler and coating materials, as well as fiber) are not discarded when used within the control of the generator, since these secondary materials are part of the industrial process. OCC rejects can include, and are usually burned in conjunction with, other fuels (such as bark) at pulp and paper mills that recycle fibers. 76 FR at 15472.

To apply this understanding to both paper and paperboard, we suggest the following revision to the definition: Paper recycling residuals means the co-product material generated from the recycling of paper, paperboard, and corrugated containers and is composed primarily of wet strength and short wood fibers that cannot be used to make new paper and paperboard products.

Response: The EPA disagrees that the definition of PRR should not distinguish between wet strength and short wood fibers and the non-fiber material contained in OCC rejects (clays, starches, and other filler and coating additives) as well as other non-fiber material (polystyrene

foam, polyethylene film, other plastics, waxes and adhesives, dyes and ink). As discussed in section V.B.4. of this preamble, the Agency finds that PRRs that are not composed primarily of wood fibers unsuitable for making paper and contain more than small amounts of certain non-fiber materials would be considered waste fuels and would not be eligible for this categorical listing.

As discussed in the comment above regarding meaningful heating value, no specific information was received from industry regarding the percentage of these non-fiber materials as the Agency requested. Lacking information to the contrary, the Agency finds that PRRs with higher amounts of non-fiber materials would have a lower heating value. Combustion of materials with low heating values would be considered discard of those materials and burning of a waste fuel. The Agency is thus revising the proposed definition of PRRs and clarifying the previous statements at 76 FR 15472, March 21, 2011, regarding non-fiber material contained in OCC rejects to make clear that the categorical non-waste listing applies only to PRRs composed primarily of wet strength and short wood fibers that do not contain more than small amounts of polystyrene foam, polyethylene film, other plastics, waxes and adhesives, dyes and ink clays, starches, and other filler and coating additives.

The definition also clarifies that PRRs are more appropriately defined as secondary materials¹⁰⁰ rather than co-products, generated from the recycling of paper, paperboard and corrugated containers. Use of the term co-products could infer that PRRs are a product fuel that has undergone processing through the paper recycling manufacturing process. Rather, the paper recycling manufacturing process primarily makes wood fibers that are used to make new paper

¹⁰⁰ Secondary materials are materials that are not the primary product of a manufacturing or commercial process, and can include post-consumer material, off-specification commercial chemical products or manufacturing chemical intermediates, post-industrial material and scrap.

and paperboard products. PRRs are a secondary material or “byproduct” of that manufacturing process and are not discarded when used as a fuel within control of the generator or sent off-site to other paper recycling mills within the industry and legitimately burned in solid fuel boilers that are designed to burn wet fuels.

The revised definition of Paper recycling residuals at 40 CFR 241.2 appears in the regulatory language at the end of this document.

C. Creosote-Treated Railroad Ties (CTRTs)

The April 14, 2014 proposed rule described CTRTs in detail, explained the status of CTRTs under current rules, discussed comments received during previous proceedings, and discussed the scope of the proposed non-waste listing (79 FR 21021-23). The proposed rationale for the listing is found in the proposal at 79 FR 210 23-28 and is summarized and incorporated into this final rule, along with all sources referenced in that discussion and cited therein. The final decision in this rule is based on the information in the proposal and supporting materials in the rulemaking record. Any changes made to the final rule are based on the rationale, as described below.

1. Detailed Description of CTRTs

Railroad ties are typically comprised of North American hardwoods that have been treated with creosote. Creosote was introduced as a wood preservative in the late 1800’s to prolong the life of railroad ties. Creosote-treated wood ties remain the material of choice by railroads due to their long life, durability, cost effectiveness, and sustainability. As creosote is a by-product of coal tar distillation, and coal tar is a by-product of making coke from coal, creosote is considered a derivative of coal. The creosote component of CTRTs is governed by the standards established by the American Wood Protection Association (AWPA). AWPA has

established two blends of creosote, P1/13 and P2.¹⁰¹ Railroad ties are typically manufactured using the P2 blend that is more viscous than other blends.

CTRTs are railroad crossties removed from service and processed prior to being used as a fuel. Approximately 17 million crossties are removed from service each year. About one third of the removed CTRTs are used for landscaping, with the majority of the remaining two thirds used for energy recovery. Because of its high energy content, CTRTs can be used for heat and energy recovery in combustion units as a nonhazardous biomass alternative to fossil fuel.¹⁰²

Most of the energy recovery with crossties is conducted through three parties: the generator of the crossties (railroad or utility); the reclamation company that sorts the crossties, and in some cases processes the material received from the generator;¹⁰³ and the combustor as third party energy producers. Typically, ownership of the crossties is transferred directly from the generator to the reclamation company that sorts materials for highest value secondary uses, and then sells the products to end-users, including those combusting the material as fuel. Some reclamation companies sell CTRTs to processors who remove metal contaminants and grind the ties into chipped wood. Other reclamation companies have their own grinders, do their own contaminant removal, and can sell directly to the combusting facilities. Information submitted to the Agency states there are approximately 15 CTRT recovery companies in North America with industry wide revenues of \$65-75 million. Members of AF&PA report that the value of CTRTs is

¹⁰¹ AWWPA Standard P1/P13 and P2 provide specifications for coal-tar creosote used for preservative treatment of piles, poles and timber for marine, land and freshwater use. The character of the tar used, the method of distillation, and the temperature range in which the creosote fraction is collected all influence the composition of the creosote, and the composition may vary with the requirement of standard specifications. April 2010. Forest Products Laboratory. 2010 Wood Handbook. General Technical Report FPL_GTR-190. Madison, WI.

¹⁰² American Forest & Paper Association, American Wood Council – Letter to EPA Administrator, December 6, 2012.

¹⁰³ In some cases, the reclamation company sells the crossties to a separate company for processing.

underscored by the approximately \$20 - \$30 per ton paid for CTRTs which can sometimes be a premium price compared to certain hog fuels (untreated clean wood residues from sawmills).¹⁰⁴

After crossties are removed from service, they are transferred for sorting/processing, but in some cases, they may be temporarily stored in the railroad rights-of-way or at another location selected by the reclamation company. One information source stated that when the crossties are temporarily stored, they are stored until their value as an alternative fuel can be realized, generally through a contract completed for transfer of ownership to the reclamation contractor or combustor.¹⁰⁵ This means that not all CTRTs originate from crossties removed from service in the same year; some CTRTs are processed from crossties removed from service in prior years and stored by railroads or removal/reclamation companies until their value as a landscaping element or fuel could be realized.

CTRTs are transferred to reclamation companies, typically by rail. The processing of the crossties into fuel by the reclamation/processing companies involves several steps. Metals (spikes, nails, plates, etc.) are removed using a magnet, occurring one or several times during the process. The crossties are then ground or shredded to a specified size depending on the particular needs of the end-use combustor, with chip size typically between 1 – 2 inches. This step occurs in several phases, including primary and secondary grinding, or in a single phase. Once the crossties are ground to a specific size, additional metal is removed if present and there is further screening based on the particular needs of the end-use combustor. Depending on the configuration of the facility and equipment, screening occurs concurrently with grinding or at a

¹⁰⁴ American Forest & Paper Association, American Wood Council – Letter to EPA Administrator, December 6, 2012.

¹⁰⁵ M.A. Energy Resources LLC, Petition submitted to Administrator, EPA. February 2013.

subsequent stage. Throughout the process, a non-toxic surfactant is applied to the crossties being processed to minimize dust.

Once the processing of CTRTs is complete, the CTRTs are sold directly to the end-use combustor for energy recovery. Processed CTRTs are delivered to the buyers by railcar or truck. The CTRTs are then stockpiled prior to combustion, with storage timeframes ranging from a day to a week. When the CTRTs are to be burned for energy recovery, the material is then transferred from the storage location using a conveyor belt or front-end loader. The CTRTs are combined with other biomass fuels, including hog fuel and bark. CTRTs are used to provide high Btu fuel to supplement low (and sometimes wet) Btu biomass to ensure proper combustion, often in lieu of coal or other fossil fuels.¹⁰⁶ The combined fuel may be further hammered and screened prior to combustion. Contracts for the purchase and combustion of CTRTs may include fuel specifications limiting contaminants, such as metal, and precluding the receipt of wood treated with preservatives other than creosote.

2. CTRTs under Previous NHSM Rules

a. March 21, 2011 NHSM Final Rule

The March 21, 2011 NHSM final rule stated that most creosote-treated wood is non-hazardous. However, the presence of hexachlorobenzene, a CAA section 112 HAP, as well as other HAP suggested that creosote-treated wood, including CTRTs, contained contaminants at levels that are not comparable to or lower than those found in wood or coal, the fuel that creosote-treated wood would replace. In making the assessment, the Agency did not consider

¹⁰⁶ American Forest & Paper Association, American Wood Council – Letter to EPA Administrator, December 6, 2012.

fuel oil¹⁰⁷ as a traditional fuel that CTRTs would replace, and concluded at the time that combustion of creosote-treated wood may result in destruction of contaminants contained in those materials. Such destruction is an indication of incineration, a waste activity. Accordingly, creosote-treated wood, including CTRTs when burned, seemed more like a waste than a commodity, and did not meet the contaminant legitimacy criterion. This material, therefore, was considered a solid waste when burned and units combusting it would be subject to the CAA section 129 emission standards. The conclusions from the March 21, 2011 rule regarding creosote-treated wood are discussed further in section V.C.4. of this preamble.

b. February 2013 NHSM Final Rule

In the February 7, 2013 NHSM final rule, the EPA noted that AF&PA and the American Wood Council submitted a letter with supporting information on December 6, 2012, seeking a categorical listing for CTRT combusted in any unit. The letter included information regarding the amounts of railroad ties combusted each year and the value of the ties as fuel. The letter also discussed how CTRTs satisfy the legitimacy criteria, including its high Btu value.

While this information was useful, it was not sufficient for the EPA to propose that CTRTs be listed categorically as a non-waste fuel. As explained in the proposed rule, the EPA had requested that additional information be provided to further inform the Agency as to whether to list CTRTs categorically as a non-waste fuel, and stated that if this additional information supported and supplemented the representations made in the December 2012 letter, the EPA would expect to propose a categorical listing for CTRTs.

The requested information and responses provided are outlined below.

¹⁰⁷ For the purposes of this final rule, fuel oil means oils 1-6, including distillate, residual, kerosene, diesel, and other petroleum based oils. It does not include gasoline or unrefined crude oil.

- A list of industry sectors, in addition to forest product mills, that burn railroad ties for energy recovery: One respondent claimed that a number of end-use combustors utilize CTRTs as an alternative fuel to offset fossil fuel at all times. Such facilities use as much as 100-500 tons of CTRTs daily. The respondent also claimed to know of additional end-use combustors that utilize CTRTs occasionally based on availability and cost.

Furthermore, the respondent was aware of other end-use combustors that are operationally able to utilize CTRTs as an alternative fuel to offset fossil fuel, but have chosen not to use CTRTs as a result of the current solid-waste implications associated with CTRTs. The end-use combustors that currently utilize CTRTs, both full-time and part-time, represent a variety of industry sectors, including pulp and paper manufacturing, cogeneration plants, utilities, and chemical manufacturing facilities. For the utility sector, at least 14 utilities could burn (i.e., are permitted to burn) or are burning CTRTs.¹⁰⁸

Another respondent claimed that data¹⁰⁹ show that a number of forest product mills are currently using railroad ties as a fuel and that other mills are permitted to burn these materials as fuels, but have stopped using them as a fuel due to their uncertain regulatory status, as well as other economic factors (e.g., lower cost of other fuels).
- The types of boilers (e.g., kilns, stoker boilers, circulating fluidized bed, etc.) that burn railroad ties for energy recovery. Respondents stated that the types of units operated by those end-use combustors that utilize CTRTs as an alternative fuel include fluidized bed,

¹⁰⁸ Information received subsequent to the request for data in the February 13, 2013 rule discussed above claims that 14 entities in the utility sector could burn (i.e., are permitted to burn) or are burning cross-tie derived fuel (i.e., CTRTs). Of the 14 entities, 9 companies are currently firing or have fired CTRTs within the past two years. Information on pulp and paper and utility sources currently utilizing CTRTs demonstrates that several of these sources use between 5,000 and 70,000 tons of CTRTs per year. Information compiled by M.A. Energy LLC. (MAER) contained in letters and emails from All4 Inc. to EPA dated January 29, and February 28, 2014.

¹⁰⁹ American Forest and Paper Association and American Wood Council's letter to George Faison, EPA. March 7, 2013.

traveling grate, and spreader stoker. Forest product industry boilers that burn railroad ties are generally one of three types: stoker, bubbling bed or fluidized bed boilers.¹¹⁰

- The traditional fuels and relative amounts (e.g., startup, 30 percent, 100 percent) of these traditional fuels that could otherwise generally be burned in these types of units.

Respondents also claimed that units operated by end-use combustors that utilize CTRTs as an alternative fuel typically burn a variety of “traditional fuels,” such as coal, biomass (i.e., hog fuel, bark fuel, and other biomass fuel materials), and fuel oil, as well as other materials and wastes, such as tire derived fuel, waste derived liquid fuel, and waste derived solid fuel.^{111, 112} In general, they claimed that all of the units that burn CTRTs also burn significant quantities of biomass given the similarity of the fuels’ characteristics. In addition, they claimed that most of these units are permitted to burn fuel oil either during start-up or during normal operations. The respondents claimed that many factors determine how much fuel oil is burned. For example, because natural gas prices are low, natural gas is often the fuel of choice, if available. In addition, they claimed that some states are looking to reduce SO₂ emissions from sources and thus, encourage greater use of biomass or natural gas rather than fuel oil.¹¹³

¹¹⁰ Information was received that the forest products industry boilers combusting CTRTs also includes hybrid suspension grate boilers. See docket EPA-HQ-RCRA-2013-0110-0076.

¹¹¹ To the extent that any of these boilers burn fuel derived from waste, or any other solid waste, they would be subject to the CAA section 129 CISWI standards, and the Agency’s rule in this document would not impact their regulatory status.

¹¹² American Forest and Paper Association and American Wood Council’s letter to George Faison, EPA. March 7, 2013.

¹¹³ Examples of combustors utilizing a variety of traditional and other fuels, including facilities combusting both CTRTs and fuel oil, is found in documentation provided by the American Associations of Railroads (AAR). The document listed 11 non- pulp and paper facilities including power generators. All of the facilities listed combust CTRTs, three facilities combust CTRT and fuel oil, three facilities combust CTRT and natural gas. Other fuels combusted include tire-derived fuel, and landfill gas. February 2013.

Respondents claimed that the most comparable traditional fuel to railroad ties is fuel oil. However, they believe the question of whether a combustion unit is designed to burn a specific fuel is not relevant when the EPA makes a determination under 40 CFR 241.4(a). Specifically, the respondents claimed that the EPA has interpreted the phrase “designed to burn” to mean that a combustor that burns NHSMs as a non-waste fuel has to be able to burn the NHSM in the combustion unit, which in the case of CTRTs, would require the installation of a nozzle for the delivery of liquid fuel into the boiler, to meet the contaminant legitimacy criterion. The EPA explained that this standard is to avoid the possibility that discard could be occurring in some situations.¹¹⁴ However, in the context of a specific non-waste determination under 40 CFR 241.4(a), the respondents argued that the EPA has the opportunity to evaluate all the factors relating to the use of CTRTs as a fuel, including the fact that CTRTs is a commodity that is purchased by the combustor. Furthermore, respondents argued that the EPA has the discretion to recognize that when a combustor purchases CTRTs and then burns it in a boiler, that combustion is for the purpose of generating energy rather than discarding the railroad ties. According to the respondents, any other conclusion would lead to the absurd result that one boiler can burn CTRTs as a legitimate fuel and another boiler – with essentially the same design except for a nozzle feed for fuel oil – would have to consider the CTRTs as a solid waste. (See section V.B.6 of this preamble for the EPA’s consideration of the information and views presented by these respondents.)

- The extent to which non-industrial boilers (e.g., commercial or residential boilers) burn CTRTs for energy recover. The respondent understood that the residential use of CTRTs

¹¹⁴ See 78 FR 9149

for purposes of energy recovery is unlikely. However, they explained that several local utilities in the northern Midwest utilize CTRTs for purposes of power generation but they have not identified the specific facilities.

- Laboratory analyses for contaminants known or reasonably suspected to be present in creosote-treated railroad ties, and contaminants known to be significant components of creosote, specifically polycyclic aromatic hydrocarbons (i.e., PAH-16), dibenzofuran, cresols, hexachlorobenzene, 2,4-dinitrotoluene, biphenyl, quinoline, and dioxins.¹¹⁵ Respondents submitted contaminant data for crushed CTRTs, which are discussed in section V.C.4. of this preamble. With the exception of dioxins, which respondents explain will not be present in CTRTs, analyses were submitted for all requested constituents and other contaminants.

3. Scope of The Proposed Rule and Final Categorical Non-Waste Listing for CTRT

Under the proposed rule, CTRT was proposed to be listed as a categorical non-waste when combusted in units that burn both fuel oil and biomass. This limitation was based on the fact that contaminant levels for semi-volatile organics (SVOCs) are significantly higher in CTRT than levels in biomass and coal, but CTRT levels for those contaminants are lower than levels in fuel oil. In contrast, fluorine and nitrogen contaminant levels are significantly higher in CTRT than in fuel oil, but levels for those contaminants are lower than levels in biomass and coal (79

¹¹⁵ The Agency requested these analyses based on the limited information previously available concerning the chemical makeup of CTRTs. That limited information included one well-studied sample from 1990 (showing the presence of both PAHs and dibenzofuran), past TCLP results (which showing the presence of cresols, hexachlorobenzene and 2,4-dinitrotoluene), Material Safety Data Sheets for coal tar creosote (which showing the potential presence of biphenyl and quinoline), and the absence of dioxin analyses prior to combustion despite extensive dioxin analyses of post-combustion emissions.

FR 21023.) Thus, only units burning both biomass and fuel oil would pass the contaminant legitimacy criteria when comparing contaminants in the NHSM to the traditional fuel.

Based on information received after the February 7, 2013 final rule stating that units were switching from fuel oil to natural gas due to lower compliance costs during operation, we also stated in the proposal that the Agency was considering another approach for CTRTs combusted in existing units at major source pulp and paper mills that had been designed to burn fuel oil and biomass, but are being modified in order to use clean fuel such as natural gas instead of fuel oil (79 FR 21028). If the EPA were to include this additional approach in the categorical listing, the CTRT could continue to be combusted only if certain conditions were met, which are all intended to ensure that the CTRTs are not being discarded. Conditions included in the proposal are:

- CTRTs must be burned in an existing stoker, bubbling bed or fluidized bed boiler;
- the CTRTs can comprise no more than 40 percent of the fuel that is used on a monthly basis;¹¹⁶
- the boiler that burned the CTRTs must have been designed to burn both fuel oil and biomass; and
- boiler is modifying its design to also burn natural gas.

The Agency stated in the proposed rule that we did not believe that combustion of CTRT in boiler units that are currently designed to burn both biomass and fuel oil but are being modified (i.e., removing oil delivery equipment) in order to burn natural gas should be considered discard of the CTRTs. EPA considered that these facilities have demonstrated the

¹¹⁶ Statements at meeting between American Forest and Paper Association and Mathy Stanislaus on December 19, 2013 indicate that, CTRTs generally comprise 40% of total fuel load.

ability to burn fuel oil along with biomass and should not be penalized for switching to the cleaner natural gas fuel. Information submitted at the time indicating that CTRTs are an important part of the fuel mix due to the consistently lower moisture content and higher Btu value, as well as the benefits of drier, more consistent fuel to combustion units with significant swings in steam demand, further suggested that discard is not occurring.

The additional approach was meant to address only the circumstance where contaminants in CTRTs are comparable to or less than the traditional fuels the unit was originally designed to burn (both fuel oil and biomass) but that design was modified in order to combust natural gas. The approach was not a general means to circumvent the contaminant legitimacy criterion by allowing combustion of any NHSM with elevated contaminant levels, i.e. levels not comparable to the traditional fuel the unit is currently designed to burn. The particular facilities in this case had used CTRTs and would clearly be in compliance with the legitimacy criteria if they did not switch to the cleaner natural gas fuel. EPA believed it appropriate to balance other relevant factors in this categorical non-waste determination and that it is appropriate for the Agency to decide that the switching to the cleaner natural gas would not render the CTRTs a waste fuel in view of the historical usage as a product fuel in the stoker, bubbling bed and fluidized bed boilers.

For this final rule, based on comments received and information in the rulemaking record, the EPA has sufficient information to list CTRTs as a categorical non-waste fuel in combustion units that are designed to burn both biomass and fuel oil. The Agency finds that units will meet this condition if the unit combusts fuel oil as part of normal operations and not solely as part of start- up or shut- down operations.

The Agency is also adopting the additional approach outlined in the proposed rule with some revisions. Specifically, based on comments received and information in the rulemaking record, the Agency has sufficient information to list as categorical non-wastes CTRTs that are combusted in units at major source pulp and paper mills or power producers subject to 40 CFR Part 63 Subpart DDDDD (Boiler MACT) that had been designed to burn biomass and fuel oil, but are modified (e.g. oil delivery mechanisms are removed) in order to use natural gas instead of fuel oil as part of normal operations and not solely as part of start-up or shut-down operations. The CTRT may continue to be combusted as a product fuel under this section only if certain conditions are met, which are intended to ensure that the CTRTs are not being discarded:

- the CTRTs must be combusted in existing (i.e. commenced construction prior to April 14, 2014) stoker, bubbling bed, fluidized bed or hybrid suspension grate boilers; and
- CTRTs can comprise no more than 40 percent of the fuel that is used on an annual heat input basis.

The standard is applicable to existing units burning CTRTs that had been designed to burn fuel oil and biomass and have been modified to burn natural gas. The standard will also apply if an existing unit burning CTRTs and designed to burn fuel oil and biomass is modified at some point in the future.

Based on comments received on the proposed rule, several revisions were made in the additional approach as adopted for the final rule under section 241.(a)(7): 1) CTRTs combusted in units at power producers subject to 40 CFR Part 63 Subpart DDDDD (Boiler MACT) have been added to the categorical listing; 2) the 40% fuel load limit has been changed to an annual heat input basis; 3) regulatory language was added stating that units combusting fuel oil and natural gas, as well as units that had switched from fuel oil to natural gas, must combust these

materials as part of normal operations and not solely as part of start-up or shut-down operations; and 4) hybrid suspension grate boilers are added to the list of acceptable boilers and to provide further clarity regarding CTRTs combusted in “existing” stoker, bubbling bed, fluidized bed or hybrid suspension grate boilers, existing is defined as April 14, 2014, the date of issuance of the proposed rule.

See section V.C.6. Response to Comments for a further discussion of these changes.

4. Rationale for Final Rule

This section discusses the reasoning provided in the proposed rule and the reasons for the EPA’s final determinations for the categorical listing of CTRTs. EPA adopts the reasoning in the proposed rule and further explains it in this preamble. Further explanations for the Agency’s decision are provided in the Response to Comments below. The proposal, this section, and the Response to Comments all constitute the Agency’s final determination supporting this rule.

a. Discard

When deciding whether an NHSM should be listed as a categorical non-waste fuel in accordance with 40 CFR 241.4(b)(5), the EPA first evaluates whether or not the NHSM has been discarded in the first instance and, if not so discarded, whether or not the material could be considered discarded because it is not legitimately used as a product fuel in a combustion unit. Based on the rulemaking record, as discussed below, the Agency has determined that CTRTs are not discarded when processed and combusted in the types of units described herein.

i. Storage of CTRT.

As discussed in section V.C.1. of this preamble, crossties removed from service are sometimes temporarily stored in the railroad right-of-way or at another location selected by the reclamation company. This means that not all CTRTs originate from crossties removed from

service in the same year; some CTRTs are processed from crossties removed from service in prior years and stored by railroads or removal/reclamation companies until a contract for reclamation is in place.

The December 6, 2012, letter from AF&PA states that in those cases where the railroad or reclamation company wait for more than a year to realize the value of the CTRTs as a fuel (or in landscaping) does not mean that the CTRTs have been discarded and cite 76 FR 15456, 15520 of the March 21, 2011 rule. That section of the rule addresses the management of the NHSM as a valuable commodity and states that storage of the NHSM must be within a reasonable timeframe.¹¹⁷ The letter further states that there is a robust market for companies engaged in railroad tie reclamation, and the cost of this material indicates that the material is a valuable commodity and has not been discarded.

While the Agency recognizes that the reasonable timeframe for storage may vary by industry, the Agency disagrees that any explanation (other than a repeat of what the rules say) has been provided of why storage that may be longer than a year is not discard, especially when they argue that CTRTs are a valuable material. Therefore, without further explanation or information from the public, the Agency concludes that CTRTs removed from service that may be stored in a railroad right of way or other location for long periods of time—that is, a year or longer, without a determination regarding their final end use (e.g., landscaping, as a fuel or land filled) shows that the material has been discarded and is a solid waste (see the preamble discussion of discard 76 FR 15463 in the March 21, 2011 rule). The assertion that the CTRTs are a valuable commodity in a robust market does not change the fact that the CTRTs have been discarded at some point. NHSMs may have value in the marketplace and still be wastes.

¹¹⁷ As discussed in the NHSM final rule (76 FR 15520), "reasonable time frame" is not specifically defined as such time frames vary among the large number of non-hazardous secondary materials and industries involved.

ii. Processing of CTRTs.

The railroad ties removed from service are considered discarded because they can be stored for long periods of time without a final determination regarding their final end use. In order for them to be considered a non-waste fuel, they must be processed, thus transforming the railroad ties into a product fuel that meets the legitimacy criteria, or if not meeting the legitimacy criteria, would still be considered a non-waste fuel if the EPA decides so after balancing the legitimacy criteria with other relevant factors. The Agency concludes that the processing of CTRTs described above in section V.C.1. of this preamble meets the definition of processing in 40 CFR 241.2. Processing includes operations that transform discarded NHSM into a non-waste fuel or non-waste ingredient, including operations necessary to: remove or destroy contaminants; significantly improve the fuel characteristics (e.g., sizing or drying of 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 the purposes of the definition. Specifically, the Agency concludes that CTRTs meet the definition of processing in 40 CFR 241.3 because:

- Contaminants (spikes, nails, plates, etc.) are removed using a magnet. This magnetic removal of metals may occur several times during processing.
- The fuel characteristics of the material are improved when the crossties are ground or shredded to a specified size depending on the particular needs of the end-use combustor. The grinding may occur in one or more phases. Once the CTRTs are ground, there may be additional screening to bring the material to a specified size.

b. Legitimacy Criteria

In determining whether to list CTRTs as a categorical non-waste fuel in 40 CFR 241.4(a), the Agency evaluated the legitimacy criteria in 40 CFR 241.3(d)(1)—that is, whether it is managed as a valuable commodity, whether it has a meaningful heating value and is used as a fuel in a combustion unit to recover energy, and whether contaminants or groups of contaminants are at levels comparable to or less than those in the traditional fuel the unit is designed to burn. To the extent that CTRTs do not meet one or more of the legitimacy criteria, and are thus discarded, the Agency may consider other relevant factors in determining whether to list CTRT as a categorical non-waste fuel (40 CFR 241.4(b)(5)(ii)). The Agency adopts for the final rule the reasoning explained below.

i. Managed as a Valuable Commodity.

As discussed in the proposed rule and adopted for the final rule, the processing of CTRTs is correlated to the particular needs of the end-use combustor. Additional screening may take place after the grinding and shredding of the CTRTs if deemed necessary. Once the CTRTs meet the end use specification, they are then sold directly to the end-use combustor for energy recovery. CTRTs are delivered to the end-use combustors via railcar and/or truck similar to delivery of traditional biomass fuels. While awaiting combustion at the end-user, which usually takes place within a week of arrival, the CTRTs are transferred and/or handled from storage in a manner consistent with the transfer and handling of biomass fuels. Such procedures include screening by the end-use combustor, combining with biomass fuels, and transferring to the combustor via conveyor belt or front-end loader. Since processed CTRT storage does not exceed

reasonable time frames and are handled/treated similar to analogous biomass fuels by end-use combustors, CTRTs meets the criterion for being managed as a valuable commodity.¹¹⁸

ii. Meaningful Heating Value and Used as Fuel to Recover Energy.

As discussed in the proposal and adopted as the reasoning to support the final rule, the heating value of processed CTRTs ranges from 6,000-8,000 Btu/lb as fired, and combustion units recover energy by burning the material as fuel. In the March 21, 2011 NHSM final rule, the Agency stated that NHSMs with an energy value greater than 5,000 Btu/lb, as fired, are considered to have a meaningful heating value.¹¹⁹ Information compiled by the EPA in 2011 also specifies that CTRTs could replace clean wood that has an average as-fired heating value of 5,150 Btu/lb, with a low as-fired heating value of 3,440 Btu/lb.¹²⁰ Thus, CTRTs have greater heating value than the traditional fuel it replaces, and meet the criterion for meaningful heating value and used as a fuel to recover energy, and are not discarded for purposes of this criterion.

iii. Contaminants Comparable to or Lower than Traditional Fuels.

For CTRTs, the EPA compared the additional data submitted on contaminant levels by industry to analogous data for two traditional fuels: biomass (including untreated clean wood) and fuel oil. The data the EPA received on CTRTs comes from the following three sources: M.A. Energy Resources (MAER), URS Corporation on behalf of the Association of American Railroads, and AF&PA. The information submitted by MAER included a comprehensive analysis of one CTRT sample. The sample came from a CTRT pile located at an end-use combustor. The URS Corporation report included three samples of processed CTRTs from the

¹¹⁸ Prior to the CTRTs being processed as a product fuel, the CTRTs are considered solid wastes and would be subject to appropriate federal, state, and local requirements.

¹¹⁹ See 76 FR 15541.

¹²⁰ Fuel analysis data for unadulterated wood. USEPA, Office of Air Quality Planning and Standards, Emissions Data for Boilers and Process Heaters Containing Stack Test, CEM & Fuel Analysis Data Reported Under ICR No.2286.03 (Version 6) EPA Docket Number EPA-HQ-OAR-2002-0058-3255. February 2011.

National Salvage facility in Selma, Alabama, and from a Stella Jones facility in Duluth, Minnesota. AF&PA also submitted documents comparing contaminant concentrations in CTRTs with traditional fuels, compiling data from various sources in these documents. The EPA considers data from these eight facilities to be representative of the CTRT universe because the composition of the creosote component of the CTRTs is the same—that is, the P2 blend of creosote, as well as the fact that multiple samples have been taken in different parts of the country at different points in the CTRT management chain.

The section below discusses determinations on contaminant comparisons in CTRTs to fuel oil and biomass. The contaminant data received on CTRTs includes information that units combusting CTRTs and fuel oil may also combust coal; determinations regarding contaminant comparisons to that traditional fuel follows the discussion on fuel oil and biomass.

Contaminant Comparisons in CTRTs to Fuel Oil and Biomass. Table 3 of this preamble lists the aggregated CTRT data received as it compares to contaminants found in two traditional fuels that industry claim are used, in varying amounts, at facilities burning processed CTRTs for energy recovery.

TABLE 3. Contaminant Ranges in Traditional Fuels & CTRT (in parts per million)

Contaminant	Biomass ^a	Fuel Oil ^a	CTRT^b
Metal Elements			
Antimony (Sb)	ND – 26	ND - 15.7	ND
Arsenic (As)	ND – 298	ND – 13	ND – 3.2 ND
Beryllium (Be)	ND – 10	ND – 19	ND – 0.3
Cadmium (Cd)	ND – 17	ND – 1.4	ND – 0.3
Chromium (Cr)	ND – 340	ND – 37	ND – 15.3
Cobalt (Co)	ND – 213	ND – 8.5	ND
Lead (Pb)	ND – 340	ND – 56.8	ND – 9.6
Manganese (Mn)	ND – 15,800	ND – 3,200	63 – 185

Contaminant	Biomass^a	Fuel Oil^a	CTRT^b
Mercury (Hg)	ND – 1.1	ND – 0.2	0.02 – 0.05
Nickel (Ni)	ND – 540	ND – 270	ND – 38
Selenium (Se)	ND – 9	ND – 4	ND – 1
Non-Metal Elements			
Chlorine (Cl)	ND – 5,400	ND – 1,260	22 – 400
Fluorine (F)	ND – 300	ND – 14	100
Nitrogen (N)	200 – 39,500	42 – 8,950	1,600 – 14,400
Sulfur (S)	ND – 8,700	ND – 57,000	681 – 3,277
Volatile Organic Compound (VOC) Hazardous Air Pollutants			
Benzene	--	ND – 75	ND
Phenol	--	ND – 7,700	ND
Styrene	--	ND – 320	ND
Toluene	--	ND – 380	ND
Xylenes	--	ND – 3,100	0.325
Cumene	--	6,000 – 8,600	ND
Ethyl benzene	--	22 – 1270	0.058
Formaldehyde	1.6 – 27	--	ND
Hexane	--	50 – 10,000	ND
15 Additional VOC	--	--	ND
Total VOC^c	1.6 – 27	6,072 – 19,810	0.383
Semivolatile Hazardous Pollutants			
Biphenyl	--	1,000 – 1,200	137 – 330
16-PAH ^d	--	3,900 – 54,700	6641 – 21,053
Dibenzofuran	--	--	570 – 1,500
Quinoline	--	--	40.2
Cresols	--	--	1.51
Hexachlorobenzene	--	ND	ND
2,4-dinitrotoluene	--	ND	ND
Lindane	--	--	0.238
11 Additional SVOC	--	--	ND
Total SVOC^c	--	4,900 – 54,700	7,618 - 22,883

^a. “Contaminant Concentrations in Traditional Fuels: Tables for Comparison” document available at http://www.epa.gov/epawaste/nonhaz/define/pdfs/nhsm_cont_tf.pdf. Contaminant data drawn

from various literature sources and from data submitted to USEPA, Office of Air Quality Planning and Standards (OAQPS).

- b. (1) MA Energy Resources, LLC. February 2013 Crosstie Derived Fuel Petition; (2) URS, Evaluation of Used Railroad Ties Treated with Creosote. Prepared for Association of American Railroads. January 28, 2013; (3) AF&PA, Comparison of Contaminant Concentrations in Crosstie Derived Fuel with Traditional Fuels. February 28, 2013.
- c. Total VOC and SVOC ranges do not represent a simple sum of the minimum and maximum values for each contaminant. This is because minimum and maximum concentrations for individual VOCs and SVOCs do not always come from the same sample.
- d. 16-PAH includes: acenaphthene, acenaphthylene, anthracene, benz(a)anthracene, benzo(a)pyrene, benzo(b)fluoranthene, benzo(g,h,i)perylene, benzo(k)fluoranthene, chrysene, dibenz(a,h)anthracene, fluoranthene, fluorene, indeno(1,2,3-cd)pyrene, naphthalene, phenanthrene, and pyrene. 16-PAH is designated as Total PAH in the Table for Comparison cited in note “a” above.

As shown in Table 3 of this preamble, all contaminant concentration levels for metals are within the ranges identified for fuel oil and biomass. We note that when comparing the non-metal elemental contaminants, however, fluorine and nitrogen levels in CTRTs are not comparable to fuel oil, and semi-volatile organic compound (SVOC) levels are not comparable to biomass. Given that CTRTs are a type of treated wood biomass, and any unit burning CTRTs typically burns untreated wood, the EPA considered two scenarios that industry described.

In the first scenario, where a combustion unit is designed to only burn biomass, the EPA compared contaminant levels in CTRTs to contaminant levels in biomass. In this scenario, the total SVOC levels can reach 22,883 ppm, driven by high levels of polycyclic aromatic hydrocarbons (PAHs) and, to a lesser extent, the levels of dibenzofuran and biphenyl.¹²¹ These compounds are largely nonexistent in clean wood and biomass, and the contaminants are therefore not comparable in this instance. In fact, they are present at orders of magnitude higher than found in clean wood and biomass.

In the second scenario, a combustion unit is designed to burn biomass and fuel oil. As previously mentioned, fluorine, and nitrogen levels in CTRTs are present at elevated levels when

¹²¹ We note that for several SVOCs—cresols, hexachlorobenzene, and 2,4-dinitrotoluene, which were expected to be in creosote, and for which information was specifically requested in the February 7, 2013 NHSM final rule (78 FR 9111), the data demonstrate that they were not detectable, or were present at levels so low to be considered comparable.

compared to fuel oil. However, the highest levels of fluorine (100 ppm) and nitrogen (14,400 ppm) are comparable to, or well within the levels of these contaminants in biomass. Likewise, SVOCs are present in CTRTs (up to 22,883 ppm) at levels well within the range observed in fuel oil (up to 54,700 ppm). Accordingly, contaminant concentration levels for fluorine, nitrogen, and SVOCs are within the ranges identified for either biomass or fuel oil. Therefore, CTRTs have comparable contaminant levels to other fuels combusted in units designed to burn both biomass and fuel oil, and as such, meet this criterion if used in facilities that are designed to burn both biomass and fuel oil.¹²²

As stated in the preamble to the February 7, 2013, NHSM final rule, combustors may burn NHSMs as a product fuel if they compare appropriately to any traditional fuel the unit can or does burn. (78 FR 9149) Combustion units are often designed to burn multiple traditional fuels, and some units can and do rely on different fuel types at different times based on availability of fuel supplies, market conditions, power demands, and other factors. Under these circumstances, it is arbitrary to restrict the combustion for energy recovery of NHSMs based on contaminant comparison to only one traditional fuel if the unit could burn a second traditional fuel chosen due to such changes in fuel supplies, market conditions, power demands or other factors. If a unit can burn both a solid and liquid fuel, then comparison to either fuel would be appropriate.

¹²²As discussed previously, the March 21, 2011 NHSM final rule (76 FR 15456), noting the presence of hexachlorobenzene and dinitrotoluene, suggested that creosote-treated lumber include contaminants at levels that are not comparable to those found in wood or coal, the fuel that creosote-treated wood would replace, and would thus be considered solid wastes. This final rule differs in several respects from the conclusions in the March 2011 rule. This final rule concludes that CTRTs are a categorical non-waste when combusted in units designed to burn both fuel oil and biomass. The March 2011 rule, using 1990 data on railroad cross ties, was based on contaminant comparisons to coal and biomass and not fuel oil. As discussed above, when compared to fuel oil, total SVOC contaminant concentrations (which would include dinitrotoluene and hexachlorobenzene) in CTRTs would be less than those found in fuel oil, and in fact, the 2012 data referenced in this final rule showed non-detects for those two contaminants.

In order to make comparisons to multiple traditional fuels, units must be designed to burn those fuels. If a facility compares contaminants in an NHSM to a traditional fuel a unit is not designed to burn, and that material is highly contaminated, a facility would then be able to burn excessive levels of waste components in the NHSM as a means of discard. Such NHSMs would be considered wastes regardless of any fuel value. (78 FR 9149)¹²³ Accordingly, the ability to burn a fuel in a combustion unit does have a basic set of requirements, the most basic of which is the ability to feed the material into the combustion unit. The unit should also be able to ensure the material is well-mixed and maintain temperatures within unit specifications.

Available information regarding use of fuel oil. As discussed in section V.C.2. of this preamble, industry stated during the comment period that there are combustion units designed to burn biomass and fuel oil, but did not identify specific units. A March 2013 letter from AF&PA¹²⁴ stated that the overwhelming majority of CTRTs burned at paper mills are burned in boilers that are fully capable and permitted to burn at maximum capacity rating. Most of these boilers (80 percent) can or do burn oil during operating conditions outside of startup and shutdown periods.¹²⁵ Industry also stated that units operated by end-use combustors that utilize CTRTs as an alternative fuel typically burn a variety of “traditional fuels,” such as coal, biomass (i.e., hog fuel, bark fuel, and other biomass fuel materials), and fuel oil, as well as other materials. They stated that all of the units that burn CTRTs also burn significant quantities of

¹²³ 78 FR 9149 states “If a NHSM does not contain contaminants at levels comparable to or lower than those found in any [emphasis added] traditional fuel that a combustion unit could burn, then it follows that discard could be occurring if the NHSM were combusted. Whether contaminants in these cases would be destroyed or discarded through releases to the air, they could not be considered a normal part of a legitimate fuel and the NHSM would be considered a solid waste when used as a fuel in that combustion unit.”

¹²⁴ American Forest and Paper Association and American Wood Council’s letter to George Faison, EPA. March 7, 2013. EPA-HQ-RCRA-2013-0110-003

¹²⁵ American Forest and Paper Association and American Wood Council’s letter to George Faison, EPA. March 7, 2013. EPA-HQ-RCRA-2013-0110-003

biomass given the similarity of the fuels' characteristics. In addition, most of these units are permitted to burn fuel oil either during start-up or during normal operations. The EPA finds, based on this information, units do combust multiple fuel including fuel oil and CTRTs.¹²⁶

Contaminant Comparisons to Coal. Data received from industry' included information that boilers combusting CTRTs may also combust coal, which is a traditional fuel. For purposes of contaminant comparison to that traditional fuel, the EPA considered two scenarios.

In the first scenario, where CTRTs were combusted in units designed to burn only coal and biomass, contaminant levels in CTRTs were compared to those two traditional fuels.¹²⁷ In this scenario, as shown in Table 4 of this preamble, maximum levels of SVOCs in CTRTs (22,883 ppm) exceeded those in coal (2,343 ppm) and biomass (SVOC levels largely non-existent). Thus, units that are designed to burn only coal and biomass would not meet the legitimacy criterion for contaminant comparison to CTRTs, an indication that discard may be occurring.

In the second scenario, a combustion unit is designed to burn coal, biomass and fuel oil. As shown in Table 4 of this preamble, SVOCs are present in CTRTs (up to 22,883 ppm) at levels

¹²⁶ The Agency notes that in 2008, information was collected from owners and operators of combustion units across a wide variety of industries, including use of fuel oil, in its development of emissions standards for boilers and process heaters under section 112 of the Clean Air Act. In that context, based on the information submitted by industry at the time (including petitioners and others), EPA concluded that units that combust solid fuels generally used fuel oil or natural gas only as a startup fuel and that changing the fuel type in such units would generally require extensive changes to the fuel handling and feeding system, as well as modification to the burners and combustion chambers. 75 FR 32006, 32017. The information submitted for the ICR, however, also stated that some biomass units may combust fuel oil at other times, for example, for transient flame stability purposes if they are combusting biomass with a high moisture content. The ICR did not state the amount of fuel oil being combusted, or whether fuel oil was combusted alone or in conjunction with solid fuel, such as biomass. Although recent information outlined above shows that units do combust multiple fuels including CTRTs and fuel oil, at the time of the development of the boiler MACT, EPA did not have information, including information submitted in response to the ICR, indicating there are units designed to burn solid fuel which commonly switch between combusting biomass and fuel oil or otherwise combusted fuel oil as part of normal operation.

¹²⁷ Contaminant levels in coal presented in "Contaminant Concentrations in Traditional Fuels: Tables for Comparison" document available at http://www.epa.gov/epawaste/nonhaz/define/pdfs/nhsm_cont_tf.pdf. Contaminant data drawn from various literature sources and from data submitted to USEPA, Office of Air Quality Planning and Standards (OAQPS).

well exceeding those in coal and biomass but within the range observed in fuel oil (up to 54,700 ppm). Fluorine, and nitrogen levels in CTRTs are present at elevated levels when compared to fuel oil. However, the highest levels of fluorine (100 ppm) and nitrogen (14,400 ppm) are comparable to, or well within the levels of these contaminants in biomass. All other contaminants in CTRTs are comparable to those in coal.

Thus, CTRTs can be combusted in units burning coal (or other traditional fuels), but only if the unit is also designed to burn fuel oil and biomass. CTRTs have comparable contaminant levels in units designed to burn biomass fuel oil and coal, and as such, meet this criterion if used in facilities that are designed to burn those traditional fuels. (see also section V.C.6. Response to Comments regarding combustion of coal in units that switched from fuel oil to natural gas).

TABLE 4. Contaminant Ranges in Biomass, Fuel Oil, Coal & CTRT (in parts per million)

Contaminant	Biomass ^a	Fuel Oil ^a	CTRT ^b	Coal
Metal Elements				
Antimony (Sb)	ND – 26	ND - 15.7	ND	0.5 – 10
Arsenic (As)	ND – 298	ND – 13	ND – 3.2 ND	0.5 – 174
Beryllium (Be)	ND – 10	ND – 19	ND – 0.3	0.1 – 206
Cadmium (Cd)	ND – 17	ND – 1.4	ND – 0.3	0.1 – 19
Chromium (Cr)	ND – 340	ND – 37	ND – 15.3	0.5 – 168
Cobalt (Co)	ND – 213	ND – 8.5	ND	0.5 – 30
Lead (Pb)	ND – 340	ND – 56.8	ND – 9.6	2 – 148
Manganese (Mn)	ND – 15,800	ND – 3,200	63 – 185	5 – 512
Mercury (Hg)	ND – 1.1	ND – 0.2	0.02 – 0.05	0.02 – 31
Nickel (Ni)	ND – 540	ND – 270	ND – 38	0.5 – 730
Selenium (Se)	ND – 9	ND – 4	ND – 1	0.2 – 743
Non-Metal Elements				
Chlorine (Cl)	ND – 5,400	ND – 1,260	22 – 400	ND – 9,080
Fluorine (F)	ND – 300	ND – 14	100	ND – 178
Nitrogen (N)	200 – 39,500	42 - 8,950	1,600 – 14,400	13,600 – 54,000

Contaminant	Biomass ^a	Fuel Oil ^a	CTRT ^b	Coal
Sulfur (S)	ND – 8,700	ND – 57,000	681 – 3,277	740 – 61,300
Volatile Organic Compound (VOC) Hazardous Air Pollutants				
Benzene	--	ND – 75	ND	ND – 38
Phenol	--	ND – 7,700	ND	
Styrene	--	ND – 320	ND	1.0 – 26
Toluene	--	ND – 380	ND	8.6 – 56
Xylenes	--	ND – 3,100	0.325	4.0 – 28
Cumene	--	6,000 – 8,600	ND	
Ethyl benzene	--	22 – 1,270	0.058	0.7 – 5.4
Formaldehyde	1.6 – 27	--	ND	
Hexane	--	50 – 10,000	ND	
15 Additional VOC	--	--	ND	
<i>Total VOC</i> ^c	1.6 – 27	6,072 – 19,810	0.383	14.3 – 125.4
Semivolatile Organic Compound (VOC) Hazardous Air Pollutants				
Biphenyl	--	1,000 – 1,200	137 – 330	
16-PAH ^d	--	3,900 – 54,700	6641 – 21,053	6 – 253
Dibenzofuran	--	--	570 – 1,500	
Quinoline	--	--	40.2	
Cresols	--	--	1.51	
Hexachlorobenzene	--	ND	ND	
2,4-dinitrotoluene	--	ND	ND	
Lindane	--	--	0.238	
11 Additional SVOC	--	--	ND	
PAH (52 extractable)	--	--	--	14 – 2,090
<i>Total SVOC</i> ^c	--	4,900 – 54,700	7,618 - 22,883	20 – 2,343

^a. “Contaminant Concentrations in Traditional Fuels: Tables for Comparison” document available at http://www.epa.gov/epawaste/nonhaz/define/pdfs/nhsm_cont_tf.pdf. Contaminant data drawn from various literature sources and from data submitted to USEPA, Office of Air Quality Planning and Standards (OAQPS).

^b. (1) MA Energy Resources, LLC. February 2013 Crosstie Derived Fuel Petition; (2) URS, Evaluation of Used Railroad Ties Treated with Creosote. Prepared for Association of American Railroads. January 28, 2013; (3) AF&PA, Comparison of Contaminant Concentrations in Crosstie Derived Fuel with Traditional Fuels. February 28, 2013.

- c. Total VOC and SVOC ranges do not represent a simple sum of the minimum and maximum values for each contaminant. This is because minimum and maximum concentrations for individual VOCs and SVOCs do not always come from the same sample.
- d. 16-PAH includes: acenaphthene, acenaphthylene, anthracene, benz(a)anthracene, benzo(a)pyrene, benzo(b)fluoranthene, benzo(g,h,i)perylene, benzo(k)fluoranthene, chrysene, dibenz(a,h)anthracene, fluoranthene, fluorene, indeno(1,2,3-cd)pyrene, naphthalene, phenanthrene, and pyrene. 16-PAH is designated as Total PAH in the Table for Comparison cited in note “a” above.

Contaminant Information related to dibenzofurans and dioxins. As discussed above, the Agency requested data on dibenzofuran and dioxins, in large part because dibenzofuran is known to be present in CTRTs and listed as a HAP under CAA section 112 and dioxins are a pollutant under CAA sections 112 and 129.

Industry submitted an explanatory document in response to the Agency’s request.¹²⁸ The document provided additional information regarding (a) the presence of dibenzofuran in creosote and creosote-treated wood, and (b) whether the presence of dibenzofuran is associated with the concurrent presence of the polychlorinated versions of these compounds, viz., polychlorinated dibenzo p-dioxins and dibenzofurans (PCDD/F – often collectively termed dioxins).

The industry’ data confirms the presence of dibenzofurans. Industry acknowledged that coal tar creosote used in preparing railroad ties may have levels of dibenzofuran up to 4.5 percent or 45,000 ppm, and dibenzofuran concentrations measured in seven samples of railroad ties previously treated with creosote ranged from 570 to 1,500 ppm. However, as stated by the industry, this compound should not be confused with dioxins or furans, which refers to a larger group of polychlorinated dibenzofurans and dibenzodioxins.

The Agency agrees with the petitioner’s explanation that dibenzofuran present in the CTRTs will not result in the formation of dioxins, but as a HAP itself, dibenzofuran is still

¹²⁸ American Forest and Paper Association and American Wood Council – Letter to George Faison, EPA March 7, 2013. EPA-HQ-RCRA-0110-003

appropriate to include in the list of SVOCs for comparison to traditional fuels.¹²⁹ Regarding dioxins, the document shows that dioxins will not be present in the material. The Agency agrees that the level of chlorine during creosote production is not sufficient to form dioxins in coal tar creosote and therefore dioxin will not be present in CTRTs prior to combustion.

c. Other Relevant Factors in a Categorical Non-Waste Determination for CTRTs

In their request for a categorical listing of CTRTs and in background information submitted subsequent to that request, industry argued that, in the context of a specific non-waste determination under 40 CFR 241.4(a), the Agency can balance the legitimacy criteria against other relevant factors in any decision to list an NHSM categorically. See 40 CFR 241.4(b)(5). Specifically, industry argued that the phrase “designed to burn” can be another relevant factor that the Agency can consider in making a decision on listing CTRTs categorically as a non-waste fuel. They argued that by conducting such balancing, the Agency could allow CTRTs to be burned as a non-waste fuel in any combustion unit that can combust biomass, whether or not the combustion unit is designed to burn fuel oil. Thus, industry requested that the Agency re-define or ignore the “design to burn” concept, as currently interpreted for the purposes of this categorical listing.

In arguing that the Agency can re-define or ignore the “design to burn” concept, industry identified additional relevant factors to be considered in a categorical listing for CTRTs.

Specifically:

¹²⁹ When making contaminant comparisons for purposes of meeting the legitimacy criterion, it would be appropriate in this circumstance to find that grouping of contaminants would not result in discard. For example, under the grouping concept, individual SVOC levels may be elevated above that of the traditional fuel, but the contaminant legitimacy criterion will be met as long as total SVOCs is comparable to or less than that of the traditional fuel. Such an approach is standard practice employed by the Agency in developing regulations and is consistent with monitoring standards under CAA sections 112 and 129. See 78 FR 9146, February 7, 2013, for further findings that relate to the issue of grouping contaminants for purposes of determining discard.

- CTRTs are functionally the same as other comparable traditional fuels, such as fossil fuels used in a fuel mix to maintain an appropriate Btu level for the biomass boilers, combusted in the same units and subject to the same air pollution controls.^{130,131}
- CTRTs are integral to the production process similar to any other fuel used and consistently have lower moisture content and higher Btu value than other biomass fuel.
- CTRTs are commodity fuels – users pay \$20 - \$30 per ton thus industry believe that the material is not being discarded.
- High levels of PAHs in CTRTs and removal of oil delivery mechanisms from units designed to combust fuel oil and CTRTs is not an indication that the material is being “discarded” and is thus a solid waste.¹³² As discussed previously, units will be switching from fuel oil to natural gas. Such units designed to combust both fuel oil and CTRTs include stoker, bubbling bed and fluidized bed boilers. Boilers that have burned fuel oil currently or in the past will discontinue using fuel oil, however, industry argues that they have clearly demonstrated the ability to burn that material as a product fuel.

In general, industry argues that any combustor that purchases CTRTs for use as a fuel is purchasing the material because of its fuel value and that any burning is clearly for generating

¹³⁰ Petitioner arguments regarding functional equivalence and use of CTRTs as a commodity are also outlined in Legal Analysis Supporting Listing Railroad Tie Fuel as a Nonwaste under 40 CFR 241.4(a)(January 15, 2014.) American Forest and Paper Association. Docket number EPA-HQ-RCRA-201-0110-0008

¹³¹ To further support a finding of functional equivalency, petitioners submitted data claiming that stack emissions of PAHs (PAHs are higher in railroad ties than in coal or biomass), are controlled in the same way as all organic constituents present in the other fuels used by the boilers that combust railroad tie fuel. The Air Emissions Impact of Burning Railroad Tie-Derived Fuel. NCASI, January 2014.

¹³² Petitioners also argued in their December 19, 2013 background material that high PAH levels in fuels are not related to PAH emission levels. They state that Boiler MACT carbon monoxide (CO) limits ensure good combustion practices by minimizing PAHs and other products of incomplete combustion (under the Boiler MACT standards, CO is a surrogate for organic HAPs such as PAHs.) Dry fuels such as CTRTs increase heat value of the fuel mix improving combustion temperature and conditions.

energy, as opposed to discarding CTRTs. Otherwise, they argue it would lead to the absurd result that for a boiler that can burn fuel oil and CTRTs, the CTRTs would be considered a non-waste fuel, whereas another boiler that cannot burn fuel oil, but also burns CTRTs, the CTRTs would be considered a solid waste. Some recyclers and combustors, according to industry, have been managing CTRTs as non-waste fuel, irrespective of the type of boiler or combustion unit.

While we agree with industry that the agency may list an NHSM categorically by balancing the legitimacy criteria against other relevant factors (40 CFR 241.4(b)(5)(ii)), we do not agree that the Agency can simply ignore any of the legitimacy criteria, particularly the contaminant legitimacy criterion. In particular, industry argues that any biomass material regardless of the contaminant or how contaminated it is, should be considered a non-waste fuel.

Purchase of the material as a commodity for its fuel value is a factor, but not determinative when considering whether discard has occurred. Further, elevated levels of contaminants remaining in the material can indicate that the material is being discarded. While the Agency recognizes that other relevant factors may be considered when one of the legitimacy criteria are not met, there is a limit to the levels of contamination allowed in balancing other relevant factors with the legitimacy criteria to determine whether discard occurs.

We do not agree with petitioner's claim that CTRTs are functionally the same as other comparable traditional fuels, such as fossil fuels that are used in a fuel mix to maintain an appropriate Btu level for the biomass boilers and are combusted in the same units and subject to the same air pollution controls. CTRT contains contaminants at levels that are not comparable to the contaminant levels in biomass, the traditional fuel the units' combusting CTRT are designed to burn. As discussed, there is a limit to the levels of such contamination allowed in balancing other relevant factors, and elevated levels of contaminants remaining in the material can show

that the material is being discarded. Further, all CTRTs are not functionally the same as comparable traditional fuels since it must be processed by reclamation companies to remove metals (spikes, nails etc.) and shredded into chips to make it suitable as a fuel source.

We also do not agree that CTRTs are integral to the production process. In a previous categorical determination for resinated wood, the Agency did conclude that the material was integrated into the production process and was thus a categorical non-waste (78 FR 9155, February 7, 2013). The Agency based that conclusion on information indicating that resinated wood production facilities were specifically designed to utilize that material for their fuel value, and the plants could not operate as designed without the use of resinated wood. Similar information was not received for CTRTs.

We do agree with industry to a certain extent that removal of oil delivery mechanisms from units designed to combust fuel oil and CTRTs does not support a conclusive decision that the CTRTs are now being “discarded.” While contamination levels may be higher when compared to natural gas, these particular facilities have demonstrated the ability to combust fuel oil along with CTRTs and should not be penalized for switching to a cleaner fuel. As discussed in section V.C.3. of this preamble, the information from industry stated that while stoker, bubbling bed or fluidized bed boilers at major source¹³³ paper mills are currently designed to combust both fuel oil and CTRTs, few, if any, of these units may be combusting both fuel oil and biomass in the future since those units will be switching from fuel oil to natural gas for start-up periods and operations. The industry stated that continued use of fuel oil during operation would result in higher compliance costs and higher costs per Btu. Industry stated that the switch to

¹³³ Section 112(a)(1) of the CAA defines the term “major source” to mean any stationary source or group of stationary sources located within a contiguous area that emit or have the potential to emit in the aggregate, 10 tons per year or more of any hazardous air pollutant or 25 tons per year or more of any combination of hazardous air pollutants.

natural gas for operation requires replacement of start-up fuel systems, and that the most efficient and least emitting start-up systems use specialized burners for gas.

The proposed rule, as noted above, outlined the additional approach the Agency considered that would include as a categorical non-waste, CTRTs that are combusted in existing units at major source pulp and paper mills that have been modified in order to use clean fuel such as natural gas, instead of fuel oil. The additional approach required that such CTRTs only be combusted if certain conditions were met (in addition to the requirement that the CTRTs had been processed) that were intended to ensure that the CTRTs are not being discarded. Those conditions included in the proposal are: the CTRTs must be combusted in an existing stoker, bubbling bed or fluidized bed boiler; the CTRTs can comprise no more than 40 percent of the fuel used on a monthly basis; the boiler that burned the CTRTs must have been designed to burn both fuel oil and biomass; and the boiler is modifying its design to burn natural gas.

The Agency stated that the approach was meant to address only the circumstance where fuel oil and biomass facilities were modified in order to combust natural gas as a fuel for normal operations. The facilities in this case would have been met the legitimacy criteria if they did not switch to the cleaner natural gas fuel. The EPA now adopts as a final determination the reasoning in the proposal that it is appropriate for the Agency to decide that the switching to the cleaner natural gas¹³⁴ would not render the CTRT a waste fuel. The facilities have demonstrated the ability to burn fuel oil and biomass and should not be penalized for switching to a cleaner fuel.

The CTRTs do not become wastes solely because of the switch to natural gas. Information

¹³⁴ The Agency recognizes natural gas as a source of clean energy. The burning of natural gas produces nitrogen oxides and carbon dioxide, but in lower quantities than burning coal or oil. Methane, a primary component of natural gas and a greenhouse gas, can also be emitted into the air when natural gas is not burned completely. Similarly, methane can be emitted as the result of leaks and losses during transportation. Emissions of sulfur dioxide and mercury compounds from burning natural gas are negligible. (See <http://www.epa.gov/cleanenergy/energy-and-you/affect/natural-gas.html>.)

indicating that CTRTs are an important part of the fuel mix for these units due to the consistently lower moisture content and higher Btu value as well as the benefits of drier more consistent fuel to combustion units with significant swings in steam demand further show that discard is not occurring.

As noted above, the Agency is adopting the additional approach with some revisions. Specifically, based on comments received and information in the rulemaking record, the Agency has sufficient information to list as categorical non-wastes CTRTs that are processed and combusted in units at major pulp and paper mills or units at power production facilities subject to 40 CFR 63 Subpart DDDDD (Boiler MACT) that combust CTRT and had been designed to burn biomass and fuel oil, but are modified (e.g. oil delivery mechanisms are removed) in order to use natural gas instead of fuel oil as part of normal operations and not solely as part of start-up or shut-down operations. The CTRT may continue to be combusted as a product fuel only if certain conditions are met, which are intended to ensure that the CTRTs are not being discarded:

- CTRTs must be combusted in existing (i.e. commenced construction prior to April 14, 2014) stoker, bubbling bed, fluidized bed or hybrid suspension grate boilers; and
- CTRTs can comprise no more than 40 percent of the fuel that is used on an annual heat input basis.

The standard is applicable to existing CTRT units burning CTRTs that had been designed to burn fuel oil and biomass and have been modified to burn natural gas. The standard will also apply if an existing CTRT unit designed to burn fuel oil and biomass is modified at some point in the future.

The additional approach adopted for the final rule addresses only the circumstance where contaminants in CTRTs are comparable to or less than the traditional fuels the unit was

originally designed to burn (both fuel oil and biomass) but that design was modified in order to combust natural gas. The approach is not a general means to circumvent the contaminant legitimacy criterion by allowing combustion of any NHSM with elevated contaminant levels, i.e. levels not comparable to the traditional fuel the unit is currently designed to burn. The particular facilities in this case had used CTRTs and would clearly be in compliance with the legitimacy criteria if they did not switch to the cleaner natural gas fuel. EPA determined that it is appropriate to balance other relevant factors in this categorical non-waste determination and that it is appropriate for the Agency to decide that the switching to the cleaner natural gas would not render the CTRTs a waste fuel in view of historical usage as a product fuel in stoker, bubbling bed, fluidized bed and hybrid suspension grate boilers.

Based on comments received on the proposed rule, several revisions were made in the additional approach for the final rule under section 241.7(a): 1) CTRTs combusted in units at power producers subject to 40 CFR Part 63 Subpart DDDDD (Boiler MACT) were added to the categorical listing; 2) the 40% fuel load limit was changed to an annual heat input basis; regulatory language was added stating that units combusting fuel oil and natural gas as well as units that had switched from fuel oil to natural gas must combust these materials as part of normal operations and not solely for start-up or shut-down operations; and 4) hybrid suspension grate boilers are added to the list of acceptable boilers and to provide further clarity regarding CTRTs combusted in “existing” stoker, bubbling bed fluidized bed or hybrid suspension grate boilers, existing is defined as April 14, 2014, the date of issuance of the proposed rule.

See section V.C.6. Response to Comments for a further discussion of the changes identified above. The Agency has also determined that recordkeeping requirements under the

Boiler MACT 40 CFR part 63 at section 63.7555(d)(2) are sufficient to document compliance with these standards. See section V.C.6. for a further discussion of recordkeeping requirements.

5. Summary of Comments Requested

The proposed rule identified several issues pertaining to the listing of CTRTs as categorical non-wastes and requested comment on those issues which are summarized below (see also section V.C.6 of this preamble):

Use of Multiple Fuels. The Agency requested comments specifically on the use of multiple fuels for contaminant comparison in evaluating whether to categorically list CTRTs, including whether fuel oil itself should be one of the traditional fuels used for comparison given, and any additional data that should be considered in making the comparability determination.

Additional Approach. Regarding the additional approach under consideration, the Agency requested comment on the approach and the following conditions: whether the approach should be applied to sources at other industries in addition to pulp and paper mills (e.g., utilities and co-generation plants); the appropriateness of the 40 percent limit as a percentage of fuel used including the monthly or yearly basis for the limit; if the additional approach is applied to other industries, such as utilities, what percentage (if any) would be appropriate for that industry(s); and whether the approach should be subject to recordkeeping requirements.

6. Responses to Comments

a. Specific Requests for Comment

i. Use of Multiple Fuels.

Comment: Regarding the use of multiple fuels for contaminant comparison in evaluating whether to categorically list CTRTs, combustion units are often designed to burn multiple traditional fuels, some relying on different fuel types at different times based on availability of

fuel supplies, market conditions, power demands, and other factors. It would be arbitrary to restrict NHSM combustion for energy recovery, based on contaminant comparison to only one traditional fuel, if that unit could burn a second traditional fuel

Response: As stated in the preamble to the February 7, 2013, NHSM final rule, combustors may burn NHSMs as a product fuel if they compare appropriately to any traditional fuel the unit can or does burn. (78 FR 9149) Combustion units are often designed to burn multiple traditional fuels, and some units can and do rely on different fuel types at different times based on availability of fuel supplies, market conditions, power demands, and other factors. Under these circumstances, it would be arbitrary to restrict the combustion for energy recovery of NHSMs based on contaminant comparison to only one traditional fuel if the unit could burn a second traditional fuel chosen due to such changes in fuel supplies, market conditions, power demands or other factors. The Agency agrees with the commenter and is retaining the regulatory standard that CTRTs are categorical non-wastes when combusted in units designed to burn both fuel oil and biomass.

ii. Additional Approach.

Comment: As the EPA stated regarding the additional approach under consideration, fuel switching from oil to natural gas is not evidence of any motivation to discard CTRTs and should not affect the classification of CTRTs as non-solid waste for combustion purposes. The modification has nothing to do with the properties of CTRTs or the burning of CTRTs for energy recovery, but is due to unrelated market conditions for fuel oil and natural gas. The listing should not be limited to only units “that are currently designed to burn both biomass and fuel oil but are changing (i.e., removing oil delivery equipment) in order to burn natural gas.” There is no

rational basis for this limitation on unit type and it is unclear why the EPA limits this proposed “expansion.”

The EPA should also include units that have already switched from fuel oil to natural gas or are currently being modified to switch from fuel oil to natural gas, in addition to those that will switch from fuel oil to natural gas in the future. Many pulp and paper mills formerly combusted fuel oil, but have already moved or are moving away from fuel oil to natural gas. The EPA’s rationale applies equally in each case.

Moreover, if the EPA retains the limitation on the types of boilers at pulp and paper mills that can combust CTRTs under the expanded listing, hybrid suspension grate boilers should be added to that list because they are similar to the listed boilers and combust CTRTs, as well as other biomass fuels.

Response: The Agency has determined that the additional approach must be limited to units that are currently designed to burn both biomass and fuel oil but are modified (e.g., removed oil delivery mechanisms) in order to burn natural gas as part of normal operations and not solely as part of start-up or shut-down operations. As discussed above, the particular facilities in this case have used CTRTs and would clearly be in compliance with the legitimacy criteria if they did not switch to the cleaner natural gas fuel. It is appropriate to balance other relevant factors in this categorical non-waste determination and it is appropriate for the Agency to decide that the switching to the cleaner natural gas would not render the CTRTs a waste fuel in view of the historical usage as a product fuel in the stoker, bubbling bed, and fluidized bed boilers. The nature of the CTRTs as a product fuel does not make it a waste on switching to the cleaner natural gas for the boiler.

Thus, combustion of CTRTs in boiler units in the sectors identified above that are designed to burn both biomass and fuel oil but have been modified to burn biomass and natural gas should not be considered discard. The additional approach is meant to address only the circumstance where contaminants in CTRTs are comparable to or less than the traditional fuels the unit was designed to burn (both fuel oil and biomass) but that design has been modified in order to combust natural gas. The approach is not a general means to circumvent the contaminant legitimacy criterion by allowing combustion of any NHSM with elevated contaminant levels, i.e. levels not comparable to the traditional fuel the unit is currently designed to burn.

Based on information from industry that in addition to stoker, bubbling bed and fluidized bed boilers, hybrid suspension grate (HSG) boilers also combust CTRT¹³⁵, the Agency is extending the additional approach to CTRT combusted in HSG boilers. The Agency notes, however, that use of that boiler type for combustion of CTRT as the primary fuel may be limited. Review of HSG boilers in the Boiler MACT Database (ICR No. 2286.01) (Version 4), indicates that all of the boilers in the HSG subcategory fire bagasse fuels as the primary fuel, and none report routine firing of other types of biomass fuels or CTRTs. When the EPA finalized the HSG subcategory (76 FR 15634, March 21, 2011) the rationale for adding the subcategory was that for combustion-related pollutants (used as a surrogate for organic HAP emissions), the design differences for such hybrid suspension grate boilers are significant, and combustion conditions in these types of units are not similar to those in dutch ovens or true suspension burners that combust fine, dry fuels. The rationale was provided solely in the context of hybrid suspension/grate boilers designed to combust very wet biomass fuels such as bagasse. Bagasse

¹³⁵See EPA-HQ-RCRA-2013-0110-0076 in the docket for this final rule.

fuels have a moisture content ranging between 40 and over 60 percent moisture content. By contrast, CTRTs have a moisture content of 20 percent on average.¹³⁶

On November 5th, 2015, EPA signed a final reconsideration for the Boiler MACT. In that action, the definition of the HSG subcategory was modified to require demonstration of the 40 percent moisture level (as-fired basis) using monthly fuel analysis, instead of a 40 percent moisture level on an annual average heat input basis. The addition of the monthly requirement will require consistently high moisture contents of the fuels fired in HSG boilers thus limiting the use of the drier CTRT.

Comment: The EPA's proposed approach should not include conditions specifying a CTRT fuel use limit of 40 percent on a monthly basis for the clean fuel modified unit listing (i.e. CTRTs combusted in units at major source pulp and paper mills that are being modified in order to use clean fuel such as natural gas, instead of fuel oil). There is no rational basis for this limitation, since a percentage cap has nothing to do with whether or not a material is discarded, and the EPA did not demonstrate that this limit would provide any greater environmental protection. In addition, the EPA should not limit the clean fuel modified unit category to units located only at major source pulp and paper mills. There is no reason why this should be an industry-specific provision. A number of biomass boilers in both the forest products and biomass power industries rely on CTRT fuel, and the EPA has information in the record showing that a variety of other industry sectors currently combust railroad ties, including utilities and chemical manufacturing facilities.

¹³⁶http://www.rta.org/assets/docs/RTASponsoredResearch/Environmental/creosote%20tie%20evaluation%20article%20_4_.pdf

Response: The Agency is adopting the conditions under the additional approach intended to ensure that the CTRTs are not being discarded, including the condition that CTRTs can comprise no more than 40 percent of the fuel used on an annual heat input basis. While this commenter disagreed on the proposed 40 percent limit on use of CTRTs in units that were once designed to burn fuel oil but do not any longer, we note that other commenters expressed support for this approach¹³⁷. As discussed in footnote 114, statements from the pulp and paper industry indicate that CTRTs generally comprise 40% of the total fuel load. EPA also reviewed information from the Boiler MACT database as well as similar information obtained for CISWI units, and noted that the reported annual heat input rates for CTRTs for units that reported firing this material did not exceed 13 percent. Considering that CTRTs have elevated contaminants compared to biomass and natural gas, allowing a fuel usage percentage greater than industry has typically used previously could be indicative of discard. Therefore, the Agency is maintaining the 40 percent usage limitation as a reasonable condition for the categorical non-waste determination for CTRTs in units that have been modified to burn biomass and natural gas instead of biomass and fuel oil.

We have also determined that the annual heat input basis is the appropriate measure for facilities to use instead of the proposed monthly basis. Several commenters stated that facilities already measure and keep records on an annual basis, and we have noted that the subcategory applicability records required by the major source boiler NESHAP are on an annual heat input basis as well. Thus this approach maintains consistency with other recordkeeping requirements required under other rules and practices already in place.

¹³⁷ See docket comment EPA-HQ-RCRA-2013-0110-0082.

This non-waste determination approach is also extended to CTRTs combusted in units at power production facilities subject to 40 CFR Part 63 Subpart DDDDD (Boiler MACT) in addition to major source pulp and paper mills. The information sources cited above indicate that these types of units may combust both CTRTs and fuel oil. The sources did not show that chemical manufacturing facilities combust both types of fuels, thus these facilities were not included in the categorical non-waste determination for units that have been modified to burn biomass and natural gas instead of biomass and fuel oil. ¹³⁸

Comment: With regard to whether combustors should be required to keep records that the conditions for burning of CTRTs described above have been met, and the additional recordkeeping requirements to show that the conditions in the additional approach are met, are unnecessary. Any potential issues should already be adequately addressed by the recordkeeping provisions already in place in applicable Boiler MACT and NSPS requirements, state and local regulatory requirements, and facility permits. Further, the existence of a record does not demonstrate whether or not discard is occurring under RCRA. The EPA should continue to rely on the record-keeping requirements under the Clean Air Act rules.

Other commenters supported such recordkeeping requirements, explaining that the EPA and/or delegated state or local air agencies will have no way to ensure compliance with the conditions without requiring recordkeeping. If required, recordkeeping should be streamlined with air quality requirements, in other words, one system may support the NHSM determination and air pollution control requirements.

¹³⁸ 40 CFR 241.2 defines power producer as a boiler unit producing electricity for sale to the grid. The term does not include units meeting the definition of electricity generating unit under 40 CFR 63.10042 of the Utility Mercury and Air Toxics Standards rule..

Response: The Agency has concluded that additional specific recordkeeping requirements are not required to determine compliance with the additional approach. Current recordkeeping requirements for boilers under 40 CFR 63.7555 require documentation that the material is listed as a categorical non-waste under §241.4(a) of this chapter, which would include records demonstrating adherence to any conditions applied to the categorical non-waste determination, such as the 40 percent annual heat input limitation

b. Additional Comments

Comment: The EPA should expand this additional approach to allow the combustion of CTRTs in biomass boilers, and specifically, biomass boilers that have already or in the future will convert from coal to biomass. The conversion of a unit from coal to biomass reduces the steam generation capacity compared to the original design. A portion of a higher Btu fuel (such as CTRTs) is incorporated into the mix to make the conversion successful.

It is environmentally preferable to avoid the use of coal or fuel oil for that higher Btu fuel, and the EPA shouldn't discourage facilities from switching to biomass by not allowing the co-firing of CTRTs. The EPA can balance other factors against the contaminant legitimacy criterion, and the environmental benefits of coal-to-biomass conversion are a relevant factor to be considered.

Many biomass boilers in the forest products industry rely on CTRT fuel but are not current or former users of either oil or coal. CTRT is a significant fuel for a number of biomass plants and will become increasingly important as facilities are forced to secure feedstocks from non-forest product sources.

The biomass power industry operates with mostly grid-connected standalone power plants which use organic materials in the production of energy. These commenters reported that

20-35 percent of the organic materials used in these facilities are CTRTs, stressing that CTRTs enhance boiler performance and efficiency, and are therefore valuable to these facilities because of their high BTU value, low moisture content, and low ash.

Biomass power facilities may also be subject to Renewable Portfolio Standards which provide states with a mechanism to increase renewable energy generation. Such programs require energy utilities to supply a minimum amount of customer load from eligible renewable energy sources, such as biomass rather than fossil fuel sources such as fuel oil.

Response: The Agency recognizes the importance of CTRTs as a fuel to the biomass power industry and to boilers designed specifically for the use of biomass as a fuel. Indeed, there may be environmental benefits to allowing CTRT use. The statutory requirement under RCRA, however, is to determine whether the material is a waste when burned as a fuel. The environmental and efficiency benefits, moreover, would accrue if the facilities were burning under CAA 112 or 129. Thus, most of the policy arguments propounded by the comment may be valid but not necessarily relevant to whether material is discarded.

The key for the facilities discussed in the comment is the use of both fuel oil and biomass as fuels that the facilities are designed to burn. Since the comment discusses facilities that do not use fuel oil in their fuel mix now or in the past, they do not meet legitimacy criteria for contaminant comparison and will not be eligible for the categorical listing regarding CTRTs. Under these conditions, the CTRTs have been discarded when they are burned as a fuel.

Comment: The EPA's proposal included the combustion of CTRTs as a non-waste fuel, and stressed that these materials are a valuable commodity and a legitimate alternative fuel. However, combustion of CTRTs should not be limited to only units "designed to burn biomass and fuel oil." Such limitations may be necessary when evaluating case-by-case NHSMs against

the legitimacy criteria, but, they are not appropriate for the categorical listing of a non-waste fuel. For example, in listing TDF (tire-derived fuel) as a categorical non-waste fuel, the EPA compared the contaminants in scrap tires to the contaminants in coal, which was considered the traditional fuel that TDF typically replaces, to satisfy the third legitimacy criterion. However, it is important to note that no “designed to burn” conditions are included in the categorical non-waste listing for TDF. TDF are NHSMs that are categorically not solid waste when used as fuel in a combustion unit. Therefore, the specification of “designed to burn” conditions associated with the proposed non-waste fuel listing for CTRTs is inconsistent with previous rulemakings and non-waste fuel determinations.

The “designed to burn” condition was intended to determine which traditional fuels should be the basis of comparison for the contaminant levels in the material under evaluation as a non-waste fuel, not to put limitations on the use of the NHSM as non-waste fuel. As the EPA stated “the reason we analyze what a unit is designed to burn is to decide the traditional fuel(s) to which contaminants should be compared. This comparison is then used as an aid to decide whether the NHSM is being legitimately used as a fuel or whether excess contaminants show that the burning is waste treatment” (78 FR 9149).

Response: The Agency disagrees that designed to burn conditions or limitations are inappropriate for categorical non-waste determinations. Further, the commenter’s argument as to why the “designed to burn” condition should not put limitations on the use of the NHSM as non-waste fuel is unclear. The purpose of the designed to burn condition is to ensure a facility is not combusting CTRTs as a means of discard. Discard would be occurring if the unit is not designed to burn CTRTs with elevated levels of PAHs. As discussed in section V.C.4. of this preamble, to meet legitimacy criteria and ensure discard is not occurring, any categorical non-waste (as well

as materials determined to be non-waste on a case-by-case basis) must contain contaminants or groups of contaminants at levels comparable in concentration to or lower than those in the traditional fuel(s) which the combustion unit is designed to burn (40 CFR 241.3(d)(1)(iii), 40 CFR 241.4(b)). If a facility compared contaminants to a traditional fuel that the unit is not designed to burn, and the fuel is highly contaminated, combustion of that fuel would be considered discard.

As further discussed in section V.C.4. of this preamble, for CTRTs, the Agency considered traditional fuel contaminant comparison information for biomass, fuel oil and coal. To meet the contaminant legitimacy criterion, the Agency determined that CTRTs must be combusted in units designed to burn biomass and fuel oil due to elevated levels of SVOCs, or as described, above in specific industry facilities that have switched from burning fuel oil and biomass to natural gas and fuel oil. Units designed to burn both biomass and fuel oil may, in addition, burn coal or other traditional fuels if the unit is also designed to burn that material. With respect to the comment's view of the TDF categorical listing, the EPA first notes that that listing has not been reopened for any comment. Regardless, the EPA disagrees with the comment that there is no designed to burn provision in the categorical listing. Any categorical listing imposes a requirement that legitimacy criteria must be met, as is the case for any material burned as a fuel in order to be burned as a product fuel. Facilities that are not designed to burn coal may not burn TDF because they will be burning a "dirtier" fuel than would normally be burned by the facility. While a separate case-by-case determination regarding contaminants does not have to be made, TDF may not be burned in an oil or gas-fired facility under CAA section 112. In such a case there would be substantial burning of waste contaminants, which would result in the application of CAA section 129 standards.

The categorical listing for tires was based on the determination made in the March 21, 2011 rule (76 FR 15456) that TDF had contaminants at levels comparable to or less than coal, the traditional fuel which TDF would replace.^{139,140} The Agency did not receive information on contaminant comparisons to other traditional fuels besides coal. It is not necessary for the EPA to repeat the importance of the legitimacy criteria in every provision in its regulations.

Comment: Seven boilers at a facility are built and designed as biomass boilers, and use fossil fuels for startup and flame stabilization. However, only three of the boilers are permitted and equipped to burn fuel oil, and the remaining units are permitted and equipped to use natural gas. The categorical listing of CTRTs as a non-waste fuel in units designed to burn fuel oil would only allow listing CTRTs as a fuel for one of its facilities (three boilers), while being a waste in the others, despite each of the units being designed to burn primarily solid fuels such as CTRT.

CTRTs should be allowed to be used as a fuel in units designed, built and operated to burn biomass, provided that the units are operated in compliance with their air permit regardless of their capacity to burn fuel oil. These units are designed to burn solid fuels, and CTRTs are a solid fuel. Requiring boilers to be equipped with fuel oil delivery systems would result in unnecessary permitting and burden with no environmental benefit. The commenter further notes that the EPA's concerns on combustion by-products and PAH are best addressed through air permitting.

Response: The Agency does not agree that CTRTs should be allowed to be used as a fuel in units designed to burn only biomass. In order to legitimately combust CTRTs, the unit must be designed to burn both biomass and fuel oil. As stated in section V.C.4.b.iii., of this preamble,

¹³⁹ See 78 FR 9154

¹⁴⁰ See 76 FR 15494

where a combustion unit is designed to only burn biomass, the EPA compared contaminant levels in CTRTs to contaminant levels in biomass. In this scenario, the total SVOC levels can reach 22,883 ppm, driven by high levels of PAHs and, to a lesser extent, the levels of dibenzofuran and biphenyl.¹⁴¹ These compounds are largely nonexistent in clean wood and biomass, and the contaminants are therefore not comparable in this instance. In fact, they are present at orders of magnitude higher than found in clean wood and biomass. Thus, if a unit combusts CTRTs and the unit is designed to burn only biomass, the unit would be able to burn excessive levels of contaminants, which would be waste components. This would constitute discard.

The Agency also disagrees that because the units are operated in compliance with the air permits, the units should be allowed to burn CTRTs regardless of the capacity to burn fuel oil. The determination whether CTRTs are a waste or a non-waste and, thus, whether CTRTs can be combusted in a particular unit is made prior to combustion of the material. Emission standards, either CAA section 112 or CAA section 129, are applied through the permit based on the waste-non-waste determination. The concept of the NHSM rule is to determine whether particular materials should be burned as waste fuels or product fuels, while the air permit emission standards help ensure protection of human health and the environment for burning of the NHSM in the unit.

Comment: The EPA has stated that “information indicating that CTRTs are an important part of the fuel mix due to the consistently lower moisture content and higher Btu value, as well as the benefits of drier more consistent fuel to combustion units with significant swings in steam

¹⁴¹ We note that for several SVOCs—cresols, hexachlorobenzene, and 2,4-dinitrotoluene, which were expected to be in creosote, and for which information was specifically requested in the February 7, 2013 NHSM final rule (78 FR 9111), the data demonstrate that they were not detectable, or were present at levels so low to be considered comparable.

demand, further suggest that discard is not occurring” (79 FR 21028). This statement supports the determination that CTRTs are functionally equivalent to traditional fuels they replace.

When balanced against the contaminant legitimacy criterion it should outweigh any implication the EPA is inferring from the PAH levels that discard is occurring. CTRTs may have higher concentrations of such semi-volatile organic compounds in comparison to biomass, but the EPA should give more weight to other factors demonstrating that CTRTs are fuel rather than waste (such as the long-standing practice of purchasing CTRTs as a viable fuel source for boilers).

EPA also stated in the December 2011 preamble (76 FR 80471) that “certain NHSMs may not meet the legitimacy criteria, especially the ‘contaminant legitimacy criterion,’ in all instances, but the material would still generally be considered a non- waste fuel.” It is appropriate to balance the legitimacy criteria and other relevant factors in determining that a NHSM is not a solid waste when used as a fuel in a combustion unit. The motivation of the combustor is a significant factor that should be considered in a non-waste determination. CTRTs are generally purchased under contracts to provide a reliable, cost-effective fuel source, rather than burned to destroy a group of contaminants. Use of CTRTs are important in reducing carbon dioxide emissions, maintaining capacity for managing agricultural biomass and urban wood, and the continued economic viability of many facilities as relevant factors for the EPA to balance with the contaminant legitimacy criterion.

Response: In the first instance, the EPA must correct the comment’s statement that materials are either fuels or wastes. The very basis of the EPA’s NHSM rule is that we need to determine whether materials burned as fuels are wastes or products. The fact that the Agency

agrees that material is a good fuel does not mean it is a product fuel. All legitimacy criteria must be met.

Further, the EPA disagrees that elevated PAH levels should not compel the conclusion that CTRTs can only be combusted as product fuels in units designed to burn fuel oil or in existing units that had combusted fuel oil in the past and switched to a cleaner natural gas fuel. As discussed in the February 7, 2013 final rule and the proposed rule (79 FR 21027), the Agency can list an NHSM categorically by balancing the legitimacy criteria against other relevant factors (40 CFR 241.4(b)(5)(ii)) as is done for CTRTs combusted in existing units that had switched to natural gas . However, balancing does not mean the Agency can simply ignore any of the legitimacy criteria no matter the type of levels or contaminants because the material is a source of fuel with higher Btu value and low moisture. In the case of CTRTs, to the extent that a combustion unit was never designed to burn fuel oil and biomass, the traditional fuels that are most comparable to CTRTs, the Agency would be allowing toxic contaminants that are present in the CTRTs several orders of magnitude higher than what is found in the traditional fuel. While the Agency recognizes that other relevant factors, including purchase of the material as a commodity for its fuel value, may be considered when one of the legitimacy criteria are not met, we do not agree that consideration of such factors would allow the EPA to undermine the legitimacy criterion if it is inconsistent with the concept of discard.

By adopting the approach suggested by the commenters, the Agency would be allowing any biomass-based material that is significantly contaminated to be burned in any combustion unit, including residential and commercial boilers. We also do not agree with petitioner's claim that CTRTs are functionally the same as other comparable traditional fuels. Unlike traditional

fuels, CTRTs must be processed by reclamation companies to remove metals (spikes, nails etc.) and shredded into chips to make it suitable as a new fuel product.

Comment: Cement kilns can utilize a wide variety of fuels and should be included as an acceptable fuel end-user for CTRT non-waste fuels. If the EPA retains the “designed-to-burn” condition, the EPA should state that a source that burns coal and fuel oil, such as cement kilns, also qualifies for the use of CTRTs as a categorically exempt non-waste NHSM. Currently, a source with a combustion unit that predominantly burns coal and fuel oil has to infer that the categorical non-waste NHSM exemption for CTRTs applies based on Footnote 96 (79 FR 21025, April 14, 2014). More clarity would be present if the exemption specifically referenced coal, coke, biomass, and fuel oil fired combustion units.

Response: The Agency notes first that the comment is in error by characterizing the listing of CTRTs as a categorically “exempt” non-waste. Such determinations are not exempting those materials from the solid waste definition under the RCRA. The part 241 standards overall determine whether materials are solid wastes under the RCRA and must be combusted in units meeting CAA 129 standards, or not solid wastes under the RCRA, and can be combusted in units meeting CAA 112 standards. This rule determines whether or not materials are categorical non-wastes. At no point is the EPA “exempting” or “excluding” material from the solid waste definition.

The Agency agrees that more clarity is needed regarding combustion of CTRTs in units designed to burn coal in addition to biomass and fuel oil (information was not received by the Agency regarding coke). Footnote 96 in the proposal, cited by the commenter, stated that units designed to burn both biomass and fuel oil may, in addition, burn coal if the unit is also designed to burn that material and still be eligible for the categorical non-waste determination. Cement

kilns are an example of a combustor that may have the ability to combust all fuels (see also discussion on cement kilns in C&D wood in section V.A.5. of this preamble).

To provide additional clarity regarding units designed to burn coal, fuel oil and CTRTs, the footnote was deleted, and an expanded explanation was provided in section V.C.4. of this preamble stating that the EPA considered two scenarios for units that combust CTRTs, fuel oil and coal. For purposes of contaminant comparison to that traditional fuel, the EPA considered two scenarios.

In the first scenario, where CTRTs were combusted in units designed to burn only coal and biomass, contaminant levels in CTRTs were compared to those two traditional fuels.¹⁴² In this scenario, maximum levels of SVOCs in CTRTs (22,883 ppm) exceeded those in coal (2,343 ppm) and biomass (SVOC levels largely non-existent). Thus, units that are designed to burn only coal and biomass would not meet the legitimacy criterion for contaminant comparison to CTRTs. This shows that discard is occurring.

In the second scenario, a combustion unit is designed to burn coal, biomass and fuel oil. SVOCs are present in CTRTs (up to 22,883 ppm) at levels well exceeding those in coal and biomass but within the range observed in fuel oil (up to 54,700 ppm). As previously mentioned, fluorine, and nitrogen levels in CTRTs are present at elevated levels when compared to fuel oil. However, the highest levels of fluorine (100 ppm) and nitrogen (14,400 ppm) are comparable to, or well within, the levels of these contaminants in biomass. All other contaminants in CTRTs are comparable to those in coal. Thus, CTRTs can be combusted in units burning coal, but only if the unit is also designed to burn fuel oil and biomass. CTRTs have comparable contaminant levels in

¹⁴² Contaminant levels in coal presented in “Contaminant Concentrations in Traditional Fuels: Tables for Comparison” document available at http://www.epa.gov/epawaste/nonhaz/define/pdfs/nhsm_cont_tf.pdf. Contaminant data drawn from various literature sources and from data submitted to USEPA, Office of Air Quality Planning and Standards (OAQPS).

units designed to burn biomass, fuel oil and coal, and as such, meet this legitimacy criterion if used in facilities that are designed to burn those traditional fuels.¹⁴³

In addition to units combusting biomass, fuel oil and coal, consistent with the discussion above, CTRTs also can be combusted in units at major pulp and paper mills and in units at power production facilities subject to the Boiler MACT that had been designed to burn biomass, fuel oil and coal but were modified (e.g. oil delivery equipment removed) in order to use natural gas instead of fuel oil. The CTRT may continue to be combusted as a product fuel only if certain conditions were met, described above, which are all intended to ensure that the CTRTs are not being discarded.

Comment: Start-up and shut down operating scenarios are sufficient to demonstrate a source's ability to meet a designed to burn criteria for fuel oil. Not including those scenarios is not supported by previous U.S. EPA policy nor by the language in 40 CFR 241.3(d)(1)(iii), which includes the phrase "...may choose a traditional fuel that can be or is burned in the particular type of combustion unit..."

The EPA's use of "can be" is inconsistent with the language in the preamble: "We would like to make clear that the Agency would consider units to meet this requirement if the unit combusts fuel oil as part of the normal operations and not solely as part of start-up or shut down operations." The EPA should restate this sentence as "We would like to make clear that the

¹⁴³As discussed previously, the March 21, 2011 NHSM final rule (76 FR 15456), noting the presence of hexachlorobenzene and dinitrotoluene, suggested that creosote-treated lumber include contaminants at levels that are not comparable to those found in wood or coal, the fuel that creosote-treated wood would replace, and would thus be considered solid wastes. This final rule differs in several respects from the conclusions in the March 21, 2011 rule. This final rule concludes that CTRTs are a categorical non-waste when combusted in units designed to burn both fuel oil and biomass. The March 21, 2011 rule, using 1990 data on railroad cross ties, was based on contaminant comparisons to coal and biomass and not fuel oil. As discussed above, when compared to fuel oil, total SVOC contaminant concentrations (which would include dinitrotoluene and hexachlorobenzene) in CTRTs would be less than those found in fuel oil, and in fact, the 2012 data referenced in this final rule showed non-detects for those two contaminants.

Agency would consider units to meet this requirement if the unit can combust fuel oil as part of the normal operations which includes periods of start-up or shut down operations.”

Response: The Agency disagrees that start-up and shut-down of sources is considered normal operations for the purposes of determining whether a unit is designed to burn a traditional fuel used for contaminant comparison. With regard to meeting the design to burn criteria, the Agency considers normal operations to be a unit that contains burners capable of firing fuel oil as the primary fuel during periods of steady state operations or periods where the fired oil is used as a supplemental fuel to maintain consistent heat input during steady state operations. Specific regulatory language is added in this final rule to clarify that the listing applies only to units designed to burn both biomass and fuel oil as part of normal operations and not just start-up and shut-down operations, as well as units at major source pulp and paper mills or power producers that were modified (e.g. oil delivery mechanisms were removed) in order to use natural gas as part of normal operations and not just start-up and shut down operations (see section 241.4(a)(7)).

Comment: The EPA should expand the definition of CTRTs to include ties dual treated with creosote and borate. As proposed, the definition is limited to railway support ties treated with a wood preservative containing creosols and phenols and made from coal tar oil. CTRTs may also be treated with a combination of borate and creosote. Use of borate-based compounds has recently become prevalent for the protection of railroad crossties. Use of borate allows for treatment of the inner layers of wood (or heartwood), while creosote typically only treats sapwood. Encapsulating the borate-treated crosstie with creosote adds a hydrophobic outer layer of protection and a barrier that repels white-rot fungi. Borate treatment also reduces the amount of creosote that needs to be used in crossties.

The EPA has already reviewed data that demonstrates that the levels of contaminants in borate-treated wood are comparable to those found in unadulterated wood. The December, 2013, data submitted to the EPA by the Treated Wood Council¹⁴⁴ demonstrate that wood dual treated with both borate and creosote has lower PAH levels (and lower metals levels) than wood that is treated with creosote alone. Furthermore, the combination of creosote and borate is not expected to yield unwanted synergistic chemical reactions, based on one example of a patented process that treats wood simultaneously using a blended solution of creosote and borate.

Because the EPA has already established that CTRTs meet the other two legitimacy criteria (managed as a valuable commodity and having meaningful heat value), all three legitimacy criteria are met for borate-treated wood. As such, ties treated with a combination of creosote and borate also meet the criteria and should be included in this rulemaking.

Various consequences may arise if the EPA fails to include dual-treated ties in the non-waste listing. First, the utility of the CTRT non-waste listing would be short-lived, as most newer ties are treated with borate as well as creosote. Secondly, because borate is typically applied first and then covered with creosote treatment, suppliers will struggle to distinguish between the two types of ties. Although these newer ties are likely to be in service currently, when they need to be replaced they would likely be processed with creosote-only-treated ties, this would create uncertainty regarding the waste status of all railroad ties, and the CTRT processing industry would be adversely affected.

Some CTRT business partners are evaluating investments in new CTRT processing facilities that are located closer to the facilities that combust them, in order to address

¹⁴⁴ Included in the docket for this final rule.

transportation costs, but these partners would have stranded assets when dual-treated ties begin to be removed from service, and the uncertainty would prevent investments from being made.

Response: The EPA disagrees that the definition of CTRTs should be expanded to include dual treated creosote and borate ties (dual-treated ties) based on the data received. Unlike CTRTs, the December 2013 data for dual-treated ties cited above was limited to a single data point.¹⁴⁵ A single data point does not provide enough information that the data analyzed are truly representative of the category of material under consideration, and the legitimacy criterion for contaminants comparable to or less than the traditional fuel the unit is designed to burn has been met. Thus, no determination can be made whether or not the material has been discarded, and is a waste or non-waste. As the record indicates in previous categorical determinations, including CTRTs, multiple unique analytical data points were considered in making categorical determinations.

Several consequences of not including dual-treated ties in this categorical determination are identified. The first suggested consequence stated that most newer ties are treated with borate and the utility of a creosote only categorical listing would be short-lived. As indicated, this final rule determination on dual-treated ties is based on a single data point, however, the EPA could revisit that determination in the future should additional data be made available. Further, not including dual-treated ties in this rule's CTRT categorical determination does not necessarily preclude suppliers from determining that dual-treated ties are non-wastes. Instead of relying on this rule's categorical non-waste determination, the suppliers can instead follow the procedures outlined in 40 CFR 241.3 to make a non-waste determination specific to their product.

¹⁴⁵ See also discussion under Comments and Information Received on Other Types of Treated Wood section V.A.6.c.

The commenter also suggests that suppliers and CTRT processing facilities may have difficulty in distinguishing between CTRTs and dual-treated ties. These statements, however, are inconsistent with information received by the Agency on management of CTRTs. As stated in section V.C.1. of this preamble, contracts for the purchase and combustion of CTRTs may include fuel specifications limiting contaminants, such as metal, and precluding the receipt of wood treated with preservatives other than creosote.

Comment: The EPA does not indicate in the proposal how CTRTs are to be processed to qualify as a non-waste fuel. The EPA has also not included in the proposal any requirements that processing of CTRTs must be conducted using best management practices. The EPA should include in the final rule requirements for processing of CTRTs that include specific criteria for best management practices.

Response: The Agency agrees the rule should include language identifying how CTRTs are to be processed to qualify as a non-waste fuel. The language in the proposed rule stated the following was a categorical non-waste under 40 CFR 241.4 “Creosote-treated railroad ties that are processed (emphasis added) and combusted in units designed to burn both biomass and fuel oil.”

Ties that are not processed into a new product fuel that meets legitimacy criteria would be considered discarded, but the rule did not specifically identify how the ties should be processed. As discussed in section V.C.4. of this preamble, certain practices are standard within the industry for the processing of cross-ties into fuel by reclamation/processing companies. Specifically, metals (spikes, nails, plates, etc.) are removed using a magnet which may occur several times during the process. The cross-ties are then ground or shredded to a specified size depending on the particular needs of the end-use combustor.

To provide specificity as to how CTRTs must be processed to meet the requirements of the categorical non-waste standard, the language pertaining to CTRTs as a categorical non-waste fuel under 40 CFR 241.4 is amended as follows: “Creosote-treated railroad ties that are processed and then combusted in units designed to burn both biomass and fuel oil as part of normal operations and not solely as part of start-up or shut-down operations. Processing must include, at a minimum, metal removal and shredding or grinding.

Comment: The EPA bases its treatment of CTRTs as fuel on an incorrect, arbitrary conclusion, reflected in this preamble statement: “CTRTs removed from service and stored in a railroad right of way or other location for long periods of time—that is, a year or longer, without a determination regarding their final end use (e.g., landscaping, as a fuel or land filled) indicates that the material has been discarded and is a solid waste.” This statement reflects a complete misunderstanding of how CTRTs are processed and treated in the marketplace. Often times, CTRTs are transported a significant distance to the end user of the ties and therefore, those ties may need to be stored long enough to provide a shipment at a cost-effective freight rate. The availability of CTRTs may not always match the demand for CTRTs. Significant deconstruction of a railway could occur at a time when the marketplace for CTRTs as a fuel is flooded. Thus, storage of CTRTs is reasonable and by no means indicates that CTRTs are discarded.

Response: The EPA disagrees that lack of cost-effective freight rates and variability in demand would result in a determination that CTRTs are not discarded. Such factors show that the value of ties as a commodity in the marketplace is predicated in part on these variables. The material would, in such cases, be speculatively accumulated with no clear market value. The fact that they may at some point in the future have value as a commodity does not render them non-wastes. Thus, the Agency sees no reason to reconsider its conclusion that CTRTs removed from

service that may be stored in a railroad right of way or other location for long periods of time—that is, a year or longer, without a determination regarding their final end use shows that the material has been discarded and is a solid waste.

c. Comments and Information Received on Other Types of Treated Railroad Ties

The Agency received a petition from the Treated Wood Council in April 2013 requesting that nonhazardous treated wood (including borate and copper naphthenate) be categorically listed as non-waste fuels in 40 CFR 241.4(a). Under the April 2013 petition, nonhazardous treated wood would include waterborne borate based preservatives, waterborne organic based preservatives, waterborne copper based wood preservatives (ammoniacal/ alkaline copper quat, copper azole, copper HDO, alkaline copper betaine, or copper naphthenate); creosote; oilborne copper naphthenate; pentachlorophenol; or dual-treated with any of the above. In the course of EPA's review of the petition, additional data was requested and received, and meetings were held between TWC and EPA representatives.

In an August 21, 2015 letter from TWC to Barnes Johnson,¹⁴⁶ TWC requested that the Agency move forward quickly on a subset of materials that were identified in the original April 2013 petition which are creosote borate, copper naphthenate, and copper naphthenate-borate treated railroad ties. In the letter, TWC indicated that these types of ties are increasingly being used as alternatives to creosote treated ties, and that the ability to reuse the ties is an important consideration in rail tie purchasing decisions. The letter stated that TWC will discuss the remaining treated wood materials with EPA as a separate matter.

The Agency has reviewed TWC information on the three treated railroad ties, creosote borate, copper naphthenate, and copper naphthenate-borate, submitted on September 11, 2015 and

¹⁴⁶ Included in the docket for the final rule.

has requested additional contaminant data which was submitted on October 5, 2015 and October 19, 2015. Based on information provided to the Agency to date, we believe these three treated railroad ties are candidates for categorical non-waste listings and expect to begin development of a proposed rule under 40 CFR 241.4(a) regarding those listings in the near future.

The Agency understands the importance of the January 31, 2016 compliance deadline for existing boiler units and the need to make decisions on fuel use by that deadline. Agency action on the three treated railroad ties, however, must follow required action development processes including public notice and comment required under the Administrative Procedures Act. Due to such processes, the categorical non-waste listing could not be completed prior to the January deadline. The Agency emphasizes, however, that facilities may also make self-determinations of their material under 40 CFR 241.3(b). In order to be regulated under CAA section 112 rather than CAA section 129, a combustion source can make a non-waste determination for the NHSM used as fuel when managed within their control (241.3(b)(1)); or for fuel or products produced from processed discarded NHSM (241.3(b)(4)). Prior to the effective date of this rule, such self-determinations may apply to materials categorically listed as non-wastes by this rule.

In an October 5, 2015 meeting with the Office of Management and Budget under EO 12866, industry representatives indicated that although the three types of RR ties are just coming into use, a few may have to be replaced, collected and mixed in with creosote treated railroad ties by processor prior to being sent to the combustor. Industry representatives were concerned that the presence of these small amounts of creosote borate, copper naphthenate, and copper naphthenate-borate, since they are not included in the categorical determination, would render all of the creosote treated processed ties into solid wastes. The Agency has determined that small (de minimis) amounts of such materials would not result in determinations that the creosote ties

being combusted are solid wastes. This is supported by the rulemaking record, specifically the discussion in the March 2011 final rule where commenters argued that there should be a de minimis exemption for processed C&D wood to address small or de minimis amounts of material remaining on the wood. In response, the EPA acknowledged that “C&D-derived wood can contain de minimis amounts of contaminants and other materials provided it meets the legitimacy criterion for contaminant levels” and thus, did not find it necessary to finalize a de minimis exemption.¹⁴⁷ That discussion supports the application of a de minimis principle.

VI. Technical Corrections

A. Change to 40 CFR 241.3(b)(2)

NHSMs that are not solid wastes when combusted are identified under 40 CFR 241.3(b). Paragraphs (i) and (ii) of 40 CFR 241.3(b)(2) were reserved in response to the 40 CFR 241.4(a)(1) categorical non-waste standards in the February 7, 2013 rulemaking. Those standards had eliminated the need for previous standards under 40 CFR 241.3(b)(2)(i) and (ii) related to scrap tires managed under established tire collection programs and resinated wood (see section IV.A. History of NHSM Rulemakings). However, reserving only 40 CFR 241.3(b)(2)(i) and (ii), and not the introductory sentence, led to some confusion with the categorical non-waste standards. For clarity, and to ensure consistent numbering with the following sections, we proposed to amend 40 CFR 241.3(b)(2) by reserving paragraph (b)(2) in its entirety.

B. Change to 40 CFR 241.3(c)(1)

The description of the petition process identified in 40 CFR 241.3(c)(1) contains a typographical error. Specifically, the last sentence of the 40 CFR 241.3(c)(1) regulatory text

¹⁴⁷ See 76 FR 15486.

from the February 2013 final rule is stated as follows: “The determination will be based on whether the non-hazardous secondary material that has been discarded is a legitimate fuel as specified in paragraph (d)(1) of this section and on the following criteria:”

However, the intent of this sentence is to say that the determination is based on “whether it has or has not been discarded” in addition to other factors. Therefore, we proposed to amend the regulatory text to add a “not” before “been discarded” and remove “that” after “non-hazardous secondary material.” The proposed regulatory text, therefore, was “. . .The determination will be based on whether the non-hazardous secondary material has not been discarded is a legitimate fuel as specified in paragraph (d)(1) of this section and on the following criteria:”

A comment was received on the proposed amendments stating the word "that" appears to have been omitted in the last sentence, and should be add to the sentence as shown in italics below:

“The determination will be based on whether the non-hazardous secondary material *that* has not been discarded is a legitimate fuel as specified in paragraph (d)(1) of this section and on the following criteria. . .”

The Agency agrees with the commenter. The word “that” clarifies the sentence’s meaning and should not have been omitted. Thus, the sentence in the final rule reads: “The determination will be based on whether the non-hazardous secondary material *that* has not been discarded is a legitimate fuel as specified in paragraph (d)(1) of this section and on the following criteria. . .”

C. Change to 40 CFR 241.3(d)(1)(iii)

The Agency also proposed to make a technical correction to 40 CFR 241.3(d)(1)(iii) to clarify that the provision applies to cement kilns, as well as boilers. Specifically, that section of the rule identifies the legitimacy criteria for NHSMs relating to contaminant comparisons between the traditional fuel(s) a unit is designed to burn and the NHSM. It states that a person may choose a traditional fuel that can be burned in any type of boiler (emphasis added), whereas the rest of the sentence refers to the combustion unit. Like a boiler, a cement kiln that combusts any non-hazardous solid waste is subject to regulation as a CISWI unit pursuant to section 129 (g)(1) of the CAA. In order for a cement kiln not to be classified as a CISWI unit, it must use a fuel that is/has been determined to be a non-waste fuel under 40 CFR part 241 when combusted. Consistent with the section as a whole, the word boiler is replaced with combustion unit to clarify that a person may choose a traditional fuel that can be or is burned in a combustion unit, which can be a cement kiln, as well as a boiler. Thus, the proposed regulatory text was "...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 combustion unit, whether or not the combustion unit is permitted to burn that traditional fuel. . . ." The EPA received no comments on this technical change and is issuing the rule in final, as proposed.

VII. Effect of This Rule on Other Programs

Beyond expanding the list of NHSMs that categorically qualify as non-waste fuels, this rule does not change the effect of the NHSM regulations on other programs as described in the March 21, 2011 NHSM final rule, as amended on February 7, 2013 (78 FR 9138). Refer to section VIII of the preamble to the March 21, 2011 NHSM final rule¹⁴⁸ for the discussion on the effect of the NHSM rule on other programs.

¹⁴⁸ 76 FR 15456, March 21, 2011 (page 15545)

VIII. State Authority

A. Relationship to State Programs

This final rule does not change the relationship to state programs as described in the March 21, 2011 NHSM final rule. Refer to section IX of the preamble to the March 21, 2011 NHSM final rule¹⁴⁹ for the discussion on state authority including, “Applicability of State Solid Waste Definitions and Beneficial Use Determinations” and “Clarifications on the Relationship to State Programs.” The Agency, however, would like to reiterate that this rule (like the March 21, 2011 and the February 7, 2013 final rules) is not intended to interfere with a state’s program authority over the general management of solid waste.

B. State Adoption of the Rulemaking

No federal approval procedures for state adoption of this final rule are included in this rulemaking action under RCRA subtitle D. Although the EPA does promulgate criteria for solid waste landfills and approves state municipal solid waste landfill permitting programs, RCRA does not provide the EPA with authority to approve state programs beyond those landfill permitting programs. While states are not required to adopt regulations promulgated under RCRA subtitle D, some states incorporate federal regulations by reference or have specific state statutory requirements that their state program can be no more stringent than the federal regulations. In those cases, the EPA anticipates that, if required by state law, the changes being proposed in this document, if finalized, will be incorporated (or possibly adopted by authorized state air programs) consistent with the state’s laws and administrative procedures.

IX. Cost and Benefits

¹⁴⁹ 76 FR 15456, March 21, 2011 (page 15546)

The value of any regulatory action is traditionally measured by the net change in social welfare that it generates. This rulemaking establishes a categorical non-waste listing for selected NHSMs under RCRA. This categorical non-waste determination allows these materials to be combusted as a product fuel in units, subject to the section 112 CAA emission standards, without being subject to a detailed case-by-case analysis of the material(s) by individual combustion facilities, provided they meet the conditions of the categorical listing. The rule establishes no direct standards or requirements relative to how these materials are managed or combusted. As a result, this action alone does not directly invoke any costs¹⁵⁰ or benefits. Rather, this RCRA proposal is being developed to simplify the rules for identifying which NHSMs are not solid wastes and to provide additional clarity and direction for owners or operators of combustion facilities. In this regard, this proposal provides a procedural benefit to the regulated community, as well as the states through the establishment of regulatory clarity and enhanced materials management certainty.

Because this RCRA action is definitional only, any costs or benefits indirectly associated with this action would not occur without the corresponding implementation of the relevant CAA rules. However, in an effort to ensure rulemaking transparency, the EPA prepared an assessment in support of this action that examines the scope and direction of these indirect impacts, for both costs and benefits.¹⁵¹ A document discussing the effects of the proposed rule was available in the docket for review. No comments were received on the assessment and the document reflecting the final rule has been placed in the rulemaking docket.

¹⁵⁰ Excluding minor administrative burden/cost (e.g., rule familiarization).

¹⁵¹ U.S. EPA, Office of Resource Conservation and Recovery, “Assessment of the Potential Costs, Benefits, and Other Impacts for the Final Rule: Categorical Non-Waste Determination for Selected Non Hazardous Secondary Materials (NHSMs): Construction and Demolition Wood, Recycling Process Residuals, and Creosote-Treated Railroad Ties” May 22, 2015.

X. Statutory and Executive Order Reviews

A. Executive Order 12866: Regulatory Planning and Review and Executive Order 13563:

Improving Regulation and Regulatory Review

This action is a significant regulatory action that was submitted to the Office of Management and Budget (OMB) for review, because it may raise novel legal or policy issues [3(f)(4)] arising out of legal mandates, although it is not economically significant. Any changes made in response to OMB recommendations have been documented in the docket. The EPA prepared an economic analysis of the potential costs and benefits associated with this action. This analysis, “Assessment of the Potential Costs, Benefits, and Other Impacts for the Final Rule – Categorical Non-Waste Determination for Selected Non-Hazardous Secondary Materials (NHSMs): Construction and Demolition Wood, Recycling Process Residuals, and Creosote-Treated Railroad Ties”, is available in the docket. Interested persons are encouraged to read and comment on this document.

B. Paperwork Reduction Act

The information collection activities in this rule will be submitted for approval to the Office of Management and Budget (OMB) under the PRA. The Information Collection Request (ICR) document that the EPA prepared has been assigned EPA ICR number 2493.03. You can find a copy of the ICR in the docket for this rule, and it is briefly summarized here. The information collection requirements are not enforceable until OMB approves them.

This action will impose a direct RCRA related burden associated with reading and understanding the rule. This burden is estimated at approximately \$102 per entity and would impact facilities that generate the NHSMs, and those that combust these materials as a fuel product. Combustors of C&D wood must also request a written certification from C&D

processing facilities that the C&D wood that they intend to burn as a non-waste fuel has been processed by trained operators in accordance with best management practices, as defined in the rule. The preparation of the certification statement and the need to maintain certification status is the responsibility of the processor. The combustors also would be required to maintain the certification statement on file; however, there is already an existing requirement for combustors to maintain records that show how they are in compliance with the 40 CFR 241.3 and 241.4 requirements (40 CFR 60.2740(u) (Emissions Guidelines) and 40 CFR 60.2175(w) (New Source Performance Standards) for CISWI units and 40 CFR 63.11225(c)(2)(ii) for area source boilers and 40 CFR 63.7555(d)(2) for major source boilers). Because there are already existing recordkeeping requirements for combustors to maintain records that show how they are in compliance with the 40 CFR 241.3 and 241.4 requirements, the requirement to maintain the certification statement provided by the processor would simply be in place of records that would need to be maintained for processed C&D wood, absent a categorical non-waste fuel determination. OMB has previously approved the information collection requirements contained in the existing NHSM regulation at 40 CFR part 241 under the provisions of the Paperwork Reduction Act, 44 U.S.C. 3501 et seq. and has assigned OMB control number 2050-0205.

Respondents/affected entities: Processors and combustors of C&D wood

Respondent's obligation to respond: Mandatory per 40 CFR 241.4(a)(5)(iii) and (iv).

Estimated number of respondents: 605

Frequency of response: Annual

Total estimated burden: 2,252 hours (per year). Burden is defined at 5 CFR 1320.3(b)

Total estimated cost: \$230,111 (per year), includes \$0 annualized capital or operation & maintenance costs.

An agency may not conduct or sponsor, and a person is not required to respond to, a collection of information unless it displays a currently valid OMB control number. The OMB control numbers for the EPA's regulations in 40 CFR are listed in 40 CFR part 9. When OMB approves this ICR, the Agency will announce that approval in the *Federal Register* and publish a technical amendment to 40 CFR part 9 to display the OMB control number for the approved information collection activities contained in this final rule.

C. Regulatory Flexibility Act

I certify that this action will not have a significant economic impact on a substantial number of small entities under the RFA. In making this determination, the impact of concern is any significant adverse economic impact on small entities. An agency may certify that a rule will not have a significant economic impact on a substantial number of small entities if the rule relieves regulatory burden, has no net burden or otherwise has a positive economic effect on the small entities subject to the rule. The addition of the three NHSMs to the list of categorical non-waste fuels will indirectly reduce materials management costs. In addition, this action will reduce regulatory uncertainty associated with these materials and help increase management efficiency. We have therefore concluded that this final rule will relieve regulatory burden for all affected small entities. We continue to be interested in the potential impacts of the final rule on small entities and welcome comments on issues related to such impacts outside the scope of this rule.

D. Unfunded Mandates Reform Act

This action does not contain any unfunded mandate as described in UMRA, 2 U.S.C. 1531–1538, and does not significantly or uniquely affect small governments. The action imposes no enforceable duty on any state, local or tribal governments or the private sector.

E. Executive Order 13132: Federalism

This action does not have federalism implications. It will not have substantial direct effects on the States, on the relationship between the national government and the States, or on the distribution of power and responsibilities among the various levels of government.

F. Executive Order 13175: Consultation and Coordination with Indian Tribal Governments

This action has tribal implications. However, it will neither impose substantial direct compliance costs on federally recognized tribal governments, nor preempt tribal law. Potential aspects associated with the categorical non-waste fuel determinations under this final rule may invoke minor indirect implications to the extent that entities generating or consolidating these NHSMs on tribal lands could be affected. However, any impacts are expected to be negligible.

The proposed rule solicited comment from tribal officials on actions contained in the rule. As no comments were received, the above determination is adopted for this final rule.

G. Executive Order 13045: Protection of Children from Environmental Health Risks and Safety Risks

This action is not subject to Executive Order 13045 because it is not economically significant as defined in Executive Order 12866, and because the EPA does not believe the environmental health or safety risks addressed by this action present a disproportionate risk to children. Based on the discussion below, the Agency finds that the populations of children near potentially affected boilers are either not significantly greater than national averages, or in the case of landfills, may potentially result in reduced discharges near such populations.¹⁵²

¹⁵² U.S. EPA, Office of Resource Conservation and Recovery. Summary of Environmental Justice Impacts for the Non-Hazardous Secondary Material (NHSM) Rule, the 2010 Commercial and Industrial Solid Waste Incinerator (CISWI) Standards, the 2010 Major Source Boiler NESHAP and the 2010 Area Source Boiler NESHAP. February 2011.

The final rule may indirectly stimulate the increased fuel use of one or more of the three NHSMs by providing enhanced regulatory clarity and certainty. This increased fuel use may result in the diversion of a certain quantity of these NHSMs away from current baseline management practices. Any corresponding disproportionate impacts among children would depend upon: (1) Any potential change in emissions from combustion units subject to the CAA section 112 standards, relative to baseline management patterns, and (2) whether children make up a disproportionate share of the population near the affected combustion units. Therefore, to assess the potential for the final rule to result in an indirect disproportionate effect on children, we conducted a demographic analysis for this population group surrounding CAA section 112 major source boilers, municipal solid waste landfills, and C&D landfills, and cement kilns.¹⁵³ We assessed the share of the population under the age of 18 living within a three-mile (approximately five kilometers) radius of these facilities.

For major source boilers, our findings indicate that the percentage of the population in these areas under age 18 years of age is generally the same as the national average.¹⁵⁴ In addition, while the fuel source and corresponding emission mix for some of these boilers may change as an indirect response to this rule, emissions from these sources remain subject to the CAA section 112 standards.

For municipal solid waste and C&D landfills, we do not have demographic results specific to children. However, using the population below the poverty level as a rough surrogate for children, we found that within three miles of facilities that may experience diversions of one

¹⁵³ The absence of site-specific coordinates for area sources prevents assessments of the demographics of populations located near these sources.

¹⁵⁴ U.S. EPA, Office of Resource Conservation and Recovery. Summary of Environmental Justice Impacts for the Non-Hazardous Secondary Material (NHSM) Rule, the 2010 Commercial and Industrial Solid Waste Incinerator (CISWI) Standards, the 2010 Major Source Boiler NESHAP and the 2010 Area Source Boiler NESHAP. February 2011.

or more of these NHSMs, low-income populations, as a percent of the total population, are disproportionately high relative to the national average. Thus, to the extent that these NHSMs are diverted away from municipal solid waste or C&D landfills, any landfill-related emissions, discharges, or other negative activity potentially impacting low-income (children) populations living near these units are likely to be reduced. Finally, transportation emissions associated with the diversion of some of this material away from landfills to boilers are likely to be generally unchanged, while these emissions are likely to be reduced for on-site generators of paper recycling residuals that would reduce off-site shipments.

The public was invited to submit comments or identify peer-reviewed studies and data that assess effects of early life exposure to the specific NHSMs addressed in the proposal. The Agency did not receive comments or studies in these subject areas, and is therefore adopting the determinations described above for this final rule.

H. Executive Order 13211: Actions Concerning Regulations That Significantly Affect Energy Supply, Distribution, or Use

This action is not “significant energy action” because it is not likely to have a significance adverse effect on the supply, distribution or use of energy. The selected NHSMs affected by this final action are not generated in quantities sufficient to significantly (adversely or positively) impact the supply, distribution, or use of energy at the national level.

I. National Technology Transfer and Advancement Act

This final rulemaking does not involve technical standards.

J. Executive Order 12898: Federal Actions to Address Environmental Justice in Minority Populations and Low-Income Populations

The EPA believes the human health or environmental risk addressed by this action will not have potential disproportionately high and adverse human health or environmental effects on minority, low-income or indigenous populations. This is because the overall level of emissions, or the emissions mix from boilers, will not change significantly as the three categorically listed non-waste fuels are comparable to the types of fuels that the combustors would otherwise burn.

Potential indirect impacts on minority and/or low-income citizens have been assessed by looking at the following: 1) any change in emissions or the emissions mix from combustion units subject to the CAA section 112 standards that may accept increased quantities of one or more of the three NHSMs addressed in this final rule, 2) any change in emissions resulting from the diversion of these NHSMs from their current baseline management methods, and 3) any other impacts related to material diversion (e.g., noise, aesthetics, water pollution, etc.). These factors were considered in conjunction with our assessment of the demographic characteristics surrounding the affected areas.

Our environmental justice assessment¹⁵⁵ for the March 21, 2011 final rule, based on the most recent census data, reviewed the distributions of minority and low-income groups that might be impacted by the sources indirectly affected by this rule. We focused on census blocks within three miles (approximately five kilometers) of the indirectly affected sources. We then determined the demographic composition (e.g., race, income, etc.) of these census blocks and compared them to the corresponding national compositions. Our findings show that populations living within three miles of major source boilers represent areas with minority and low-income

¹⁵⁵ U.S. EPA, Office of Resource Conservation and Recovery. Summary of Environmental Justice Impacts for the Non-Hazardous Secondary Material (NHSM) Rule, the 2010 Commercial and Industrial Solid Waste Incinerator (CISWI) Standards, the 2010 Major Source Boiler NESHAP and the 2010 Area Source Boiler NESHAP. February 2011. The findings of that study, based on the most recent census data, are not expected to change as a result of this action.

populations that are higher than the national averages. In these areas, the minority share¹⁵⁶ of the population was found to be 33 percent, compared to the national average of 25 percent. For these same areas, the percent of the population below the poverty line (16 percent) is also higher than the national average (13 percent).

We also considered the potential for non-combustion environmental justice concerns related to the potential incremental increase in NHSMs diversions from current baseline management practices. These include the following:

- **Reduced upstream emissions resulting from the reduced production of virgin fuel:** Any reduced upstream emissions that may indirectly occur in response to reduced virgin fuel mining or extraction may result in a human health and/or environmental benefit to minority and low-income populations living near these projects.
- **Alternative materials transport patterns:** Transportation emissions associated with NHSMs diverted from landfills to boilers are likely to be similar, except for on-site paper recycling residuals, where the potential for less off-site transport to landfills may result in reduced truck traffic and emissions where such transport patterns may pass through minority or low-income communities.
- **Change in emissions from baseline management units:** The diversion of some of these NHSMs away from disposal in landfills may result in a marginal decrease in activity at these facilities. This may include non-adverse impacts, such as marginally reduced emissions, odors, groundwater and surface water impacts, noise pollution, and reduced maintenance cost to local infrastructure. Because municipal solid waste and C&D

¹⁵⁶ This figure is for overall population minus white population and does not include the Census group defined as “White Hispanic.”

landfills were found to be located in areas where minority and low-income populations are disproportionately high relative to the national average, any reduction in activity and emissions around these facilities is likely to benefit the citizens living near these facilities.

Finally, this rule, in conjunction with the corresponding CAA rules, may help accelerate the abatement of any existing stockpiles of the targeted NHSMs. To the extent that these stockpiles may represent negative human health or environmental implications, minority and/or low-income populations that live near such stockpiles may experience marginal health or environmental improvements. Aesthetics may also be improved in such areas.

As previously discussed, this RCRA action alone does not directly require any change in the management of these materials. Thus, any potential materials management changes stimulated by this action, and corresponding impacts to minority and low-income communities, are considered to be indirect impacts, and would only occur in conjunction with the corresponding CAA rules.

K. Congressional Review Act (CRA)

This action is subject to the CRA, and the EPA will submit a rule report to each House of the Congress and to the Comptroller General of the United States. This action is not a “major rule” as defined by 5 U.S.C. 804(2).

List of Subjects in 40 CFR Part 241

Environmental protection, Air pollution control, Waste treatment and disposal.

Dated: January 21, 2016.

Gina McCarthy,

Administrator.

For the reasons stated in the preamble, Title 40, chapter I, of the Code of Federal Regulations is amended as follows:

PART 241—SOLID WASTES USED AS FUELS OR INGREDIENTS IN COMBUSTION UNITS

1. The authority citation for part 241 continues to read as follows:

Authority: 42 U.S.C. 6903, 6912, 7429.

Subpart A—General.

2. Section 241.2 is amended by adding in alphabetical order the definitions “Construction and demolition (C&D) wood”, “Creosote treated railroad ties”, “Paper recycling residuals” and “Power producer” to read as follows:

§ 241.2 Definitions.

* * * * *

Construction and demolition (C&D) wood means wood that is generated from the processing of debris from construction and demolition activities for the purposes of recovering wood. C&D wood from construction activities results from wood generated during any installation activity or from purchasing more wood than a project ultimately requires. C&D wood from demolition activities results from dismantling buildings and other structures, removing materials during renovation, or from natural disasters.

* * * * *

Creosote treated railroad ties means railway support ties treated with a wood preservative containing creosols and phenols and made from coal tar oil.

* * * * *

Paper recycling residuals means the secondary material generated from the recycling of paper, paperboard and corrugated containers composed primarily of wet strength and short wood fibers that cannot be used to make new paper and paperboard products. Paper recycling residuals that contain more than small amounts of non-fiber materials including polystyrene foam, polyethylene film, other plastics, waxes and adhesives, dyes and inks, clays, starches and other coating and filler material are not paper recycling residuals for purposes of this definition.

* * * * *

Power producer means a boiler unit producing electricity for sale to the grid. The term does not include units meeting the definition of electricity generating unit under 40 CFR 63.10042.

* * * * *

Subpart B—Identification of Non-Hazardous Secondary Materials That Are Solid Wastes When Used as Fuels or Ingredients in Combustion Units

3. Section 241.3 is amended by revising paragraphs (c)(1) introductory text and (d)(1)(iii) to read as follows:

§ 241.3 Standards and procedures for identification of non-hazardous secondary materials that are solid wastes when used as fuels or ingredients in combustion units.

* * * * *

(c) * * *

(1) Submittal of an application to the Regional Administrator for the EPA Region where the facility or facilities are located or the Assistant Administrator for the Office of Land and Emergency Management for a determination that the non-hazardous secondary material, even though it has been transferred to a third party, has not been discarded 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 paragraph (d)(1) of this section and on the following criteria:

* * * * *

(d) * * *

(1) * * *

(iii) 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) that 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 combustion unit, whether or not the 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.

* * * * *

4. Section 241.4 is amended by adding paragraphs (a)(5) through (7) to read as follows:

§ 241.4 Non-waste Determinations for Specific Non-Hazardous Secondary Materials When Used as a Fuel.

(a) * * *

(5) Construction and demolition (C&D) wood processed from C&D debris according to best management practices. Combustors of C&D wood must obtain a written certification from C&D processing facilities that the C&D wood has been processed by trained operators in accordance with best management practices. Best management practices for purposes of this categorical listing must include sorting by trained operators that excludes or removes the following materials from the final product fuel: non-wood materials (e.g., polyvinyl chloride and other plastics, drywall, concrete, aggregates, dirt, and asbestos), and wood treated with creosote, pentachlorophenol, chromated copper arsenate, or other copper, chromium, or arsenical preservatives. In addition:

(i) Positive sorting. C&D processing facilities that use positive sorting—where operators pick out desirable wood from co-mingled debris—or that receive and process positive sorted C&D wood must either:

(A) Exclude all painted wood (to the extent that only de minimis quantities inherent to processing limitations may remain) from the final product fuel,

(B) Use X-ray Fluorescence to ensure that painted wood included in the final product fuel does not contain lead-based paint, or

(C) Require documentation that a building has been tested for and does not include lead-based paint before accepting demolition debris from that building.

(ii) Negative sorting. C&D processing facilities that use negative sorting—where operators remove contaminated or otherwise undesirable materials from co-mingled debris—must remove fines (i.e., small-sized particles that may contain relatively high concentrations of lead and other contaminants) and either:

(A) Remove all painted wood (to the extent that only de minimis quantities inherent to processing limitations may remain),

(B) Use X-ray Fluorescence to detect and remove lead-painted wood, or

(C) Require documentation that a building has been tested for and does not include lead-based paint before accepting demolition debris from that building.

(iii) Training. Processors must train operators to exclude or remove the materials as listed in paragraph (a)(5) of this section from the final product fuel. Records of training must include date of training held and must be maintained on-site for a period of three years.

(iv) Written certification. A written certification must be obtained by the combustor for every new or modified contract, purchase agreement, or other legally binding document, from each final processor of C&D wood and must include the statement: the processed C&D wood has been sorted by trained operators in accordance with best management practices.

(6) Paper recycling residuals generated from the recycling of recovered paper, paperboard and corrugated containers and combusted by paper recycling mills whose boilers are designed to burn solid fuel.

(7) Creosote-treated railroad ties that are processed and then combusted in the following types of units. Processing must include, at a minimum, metal removal and shredding or grinding.

(i) Units designed to burn both biomass and fuel oil as part of normal operations and not solely as part of start-up or shut-down operations, and

(ii) Units at major source pulp and paper mills or power producers subject to 40 CFR part 63, subpart DDDDD, that combust CTRTs and had been designed to burn biomass and fuel oil, but are modified (e.g. oil delivery mechanisms are removed) in order to use natural gas instead of

fuel oil, as part of normal operations and not solely as part of start-up or shut-down operations. The CTRTs may continue to be combusted as product fuel under this subparagraph only if the following conditions are met, which are intended to ensure that the CTRTs are not being discarded:

(A) CTRTs must be burned in existing (i.e. commenced construction prior to April 14, 2014) stoker, bubbling bed, fluidized bed, or hybrid suspension grate boilers; and

(B) CTRTs can comprise no more than 40 percent of the fuel that is used on an annual heat input basis.

* * * * *

[FR Doc. 2016-01866 Filed: 2/5/2016 8:45 am; Publication Date: 2/8/2016]