



6560-50-P

## ENVIRONMENTAL PROTECTION AGENCY

### 40 CFR Part 241

[EPA–HQ–OLEM-2016-0248; FRL-9969-80-OLEM]

RIN 2050-AG83

### Additions to List of Categorical Non-Waste Fuels: Other Treated Railroad Ties

**AGENCY:** Environmental Protection Agency (EPA).

**ACTION:** Final rule.

**SUMMARY:** The Environmental Protection Agency (EPA) is issuing amendments to the Non-Hazardous Secondary Materials regulations, which 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 February 2013, the EPA listed particular non-hazardous secondary materials as “categorical non-waste fuels” provided certain conditions are met. This final rule adds the following other treated railroad ties (OTRT) to the categorical non-waste fuel list: processed creosote-borate, copper naphthenate and copper naphthenate-borate treated railroad ties, under certain conditions depending on the chemical treatment.

**DATES:** This rule is effective [INSERT DATE OF PUBLICATION IN THE FEDERAL REGISTER].

**ADDRESSES:** The EPA has established a docket for this action under Docket ID No. EPA–HQ–OLEM-2016–0248. All documents in the docket are listed on the <https://www.regulations.gov> web site. Although listed in the index, some information is not publicly available, e.g., Confidential Business Information (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 <https://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 5303P, Environmental Protection Agency, 1200 Pennsylvania Ave., NW., Washington, DC 20460; telephone number: (703) 305-7652; email: [faison.george@epa.gov](mailto:faison.george@epa.gov).

**SUPPLEMENTARY INFORMATION:**

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## **I. General Information**

### *A. List of abbreviations and acronyms used in this final rule*

AWPA	American Wood Protection Association
Btu	British thermal unit
C&D	Construction and demolition
CAA	Clean Air Act
CBI	Confidential business information
CFR	Code of Federal Regulations
CISWI	Commercial and Industrial Solid Waste Incinerator
CTRT	Creosote-treated railroad ties
EPA	U.S. Environmental Protection Agency
FR	Federal Register
HAP	Hazardous air pollutant
MACT	Maximum achievable control technology
MDL	Method detection limit

NAICS	North American Industrial Classification System
ND	Non-detect
NESHAP	National emission standards for hazardous air pollutants
NHSM	Non-hazardous secondary material
OMB	Office of Management and Budget
OTRT	Other Treated Railroad Ties
PAH	Polycyclic aromatic hydrocarbons
ppm	Parts per million
RCRA	Resource Conservation and Recovery Act
RIN	Regulatory information number
RL	Reporting Limits
SBA	Small Business Administration
SO <sub>2</sub>	Sulfur dioxide
SVOC	Semi-volatile organic compound
TCLP	Toxicity characteristic leaching procedure
UPL	Upper prediction limit
U.S.C.	United States Code
VOC	Volatile organic compound

*B. What is the statutory authority for this final rule?*

The EPA is amending 40 CFR 241.4(a) to list additional non-hazardous secondary materials (NHSMs) as categorical non-waste fuels 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(g)(6)). 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).

*C. 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:

<b>Generators and Potential Users<sup>a</sup> of the New Materials to be Added to the List of Categorical Non-Waste Fuels</b>	
<i>Primary Industry Category or Sub Category</i>	<i>NAICS<sup>b</sup></i>
Utilities	221
Site Preparation Contractors	238910
Manufacturing	31, 32, 33
Wood Product Manufacturing	321
Sawmills	321113
Wood Preservation (includes cross tie creosote treating)	321114
Pulp, Paper, and Paper Products	322
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
<sup>a</sup> Includes: Major Source Boilers, Area Source Boilers, and Solid Waste Incinerators	
<sup>b</sup> 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 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.

*D. What is the purpose of this final rule?*

The RCRA statute defines “solid waste” as “any garbage, refuse, sludge from a waste treatment plant, water supply treatment plant, or air pollution control facility and *other discarded material*...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.

The meaning of “solid waste,” as defined under RCRA, is of particular importance as it relates to section 129 of the CAA. If material is a solid waste, under RCRA, a combustion unit burning it 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 112 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). CAA section 129 further states that the term “solid waste” shall have the meaning “established 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.

Regulations concerning NHSMs used as fuels or ingredients in combustion units are codified in 40 CFR part 241.<sup>1</sup> This action amends the part 241 regulations by adding three NHSMs, summarized below, to the list of categorical non-waste fuels codified in §241.4(a):

(1) Creosote-borate treated railroad ties, and mixtures of creosote, borate and/or copper naphthenate treated railroad ties that are processed and then combusted in:

(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, designed to burn biomass and fuel oil as part of normal operations and not solely as part of start-up or shut-down operations, but are modified in order to use natural gas instead of fuel oil. The creosote-borate and mixed creosote, borate and copper naphthenate treated railroad ties may continue to be combusted as product fuel only if certain conditions are met, which are intended to ensure that such railroad ties are not being discarded.

(iii) Units meeting requirements in (i) or (ii) that are also designed to burn coal.

(2) Copper naphthenate treated railroad ties that are processed and then combusted in units designed to burn biomass, biomass and fuel oil, or biomass and coal.

(3) Copper naphthenate-borate treated railroad ties that are processed and then combusted in units designed to burn biomass, biomass and fuel oil, or biomass and coal.

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<sup>1</sup> See 40 CFR 241.2 for the definition of non-hazardous secondary material.

### *E. Effective Date*

The Administrative Procedure Act requires publication of a substantive rule 30 days or more before the effective date unless one of the following conditions in 5 USC 553(d) are met:

- (1) a substantive rule which grants or recognizes an exemption or relieves a restriction;
- (2) interpretative rules and statements of policy; or
- (3) as otherwise provided by the agency for good cause found and published with the rule.

This final rule establishing an OTRT non-waste categorical determination satisfies 553(d)(1) in that it relieves a restriction by allowing OTRTs to be combusted as non-waste rather than as waste when certain conditions are met as described below in Section III. OTRTs represent a relatively small percentage of the railroad ties in use with the majority being creosote treated railroad ties (CTRTs). When the railroad ties are taken out of service and used as fuel, there is no way to distinguish between the OTRTs and the CTRTs. In order to ensure that CTRTs mixed with OTRTs are not considered a waste, EPA is making this final rule effective immediately and providing regulatory certainty.

## **II. 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 (76 FR 15456) 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 (codified in 40 CFR 241.2).

A key concept under the March 21, 2011 rule is that NHSMs used as non-waste fuels and ingredients 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<sup>2</sup> at concentrations comparable to (or lower than) those in traditional fuels which the combustion unit is designed to

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<sup>2</sup> For additional information on grouping of contaminants see 78 FR 9146

burn. For NHSMs used as an ingredient, in addition to the other listed criteria, the ingredient must be used to make a valuable product.

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 that 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.<sup>3</sup> 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 which the Agency had received new information, as well as targeted revisions that the Agency

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<sup>3</sup> See October 14, 2011, Letter from Administrator Lisa P. Jackson to Senator Olympia Snowe. A copy of this letter is in the docket for the February 7, 2013 final rule (EPA-HQ-RCRA-2008-1873).

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:<sup>4</sup>

- *Revised Definitions:* The EPA revised three definitions discussed in the proposed rule: (1) “clean cellulosic biomass,” (2) “contaminants,” and (3) “established tire collection program.” 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.
- *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 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

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

determined the following NHSMs are not solid wastes when burned as a fuel in combustion units and categorically listed them in 40 CFR 241.4(a).<sup>5</sup>

- 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 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

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<sup>5</sup> 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 listed these NHSMs as categorical non-waste fuels.

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.

The February 8, 2016 final rule amendments (81 FR 6688) added the following to the list of categorical non-waste fuels:

- Construction and demolition (C&D) wood processed from C&D debris according to best management practices. Under this listing, 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 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. Additional required best management practices address removal of lead-painted wood.
- 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 (CTRT) that are processed (which includes metal removal and shredding or grinding at a minimum) 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 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 only if the following conditions are met, which are intended to ensure that the CTRTs are not being discarded: 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, CTRTs can comprise no more than 40 percent of the fuel that is used on an annual heat input basis.

Based on these non-waste categorical determinations, as discussed previously, 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.

#### *B. Background to This Final Rule*

The Agency received a petition from the Treated Wood Council (TWC) in April 2013<sup>6</sup> requesting that various 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 included: waterborne borate based preservatives; waterborne organic

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<sup>6</sup> Included in the docket for the February 2016 final rule - EPA-HQ-RCRA-2013-0110-0056.

based preservatives; waterborne copper based wood preservatives (ammoniacal/ alkaline copper quat, copper azole, copper HDO, alkaline copper betaine, or copper naphthenate); creosote; oil borne copper naphthenate; pentachlorophenol; or dual-treated with any of the above.

In the course of EPA's review of the April 2013 petition, additional data was requested and received, and meetings were held between TWC and EPA representatives. Overall, the EPA review determined that there were limited data points available and the analytical techniques for some contaminants were not appropriate to provide information on the entire preserved wood sample as it would be combusted. EPA also questioned the representativeness of the samples being analyzed and the repeatability of the analyses.

In the subsequent August 21, 2015 letter from TWC to Barnes Johnson,<sup>7</sup> TWC requested that the Agency move forward 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 CTRT, due, in part, to lower overall contaminant levels and because the ability to reuse these new types of treated ties as fuel is an important consideration in overall rail tie purchasing decisions. Other industry information claimed that these treatments have proven to increase decay resistance for ties in severe decay environments and for species that are difficult to treat with creosote alone.<sup>8</sup>

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<sup>7</sup> Included in the docket for the February 2016 final rule. Follow-up meetings were also held with TWC on September 14, 2015 and December 17, 2015 summaries of which are also included in that docket.

<sup>8</sup> Railway Tie Association "Frequently Asked Questions" available on <http://www.rta.org/faqs>.

The Agency reviewed TWC's information on the three types of treated railroad ties, creosote borate, copper naphthenate, and copper naphthenate-borate, submitted on September 11, 2015 and requested additional contaminant data, which was submitted on October 5, 2015 and October 19, 2015.<sup>9</sup> Based on that information, EPA stated in the February 2016 final rule that we believe these three treated railroad ties are candidates for categorical non-waste listings and expected to begin development of a proposed rule under 40 CFR 241.4(a) regarding those listings in the near future. That proposed rule was issued November 1, 2016 (81 FR 75781).

*C. How Will 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 (78 FR 9158). These determinations follow the weight-of-evidence criteria set out in 40 CFR 241.4(b)(5), which the Agency established 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 qualify as solid 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, the NHSM is functionally the same as the comparable traditional fuel, or other relevant factors as appropriate.

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<sup>9</sup> These data submissions and the letter from TWC on August 21, 2015 are included in the docket for this rule.

Based on the information in the rulemaking record and comments received, the Agency is finalizing amendments to 40 CFR 241.4(a) by listing three other types of treated railroad ties as categorical non-waste fuels, in addition to CTRTs added in February 2016. Specific determinations regarding these other treated railroad ties (OTRTs, *i.e.*, creosote-borate, copper naphthenate, copper naphthenate-borate; and, mixtures of creosote, borate and/or copper naphthenate treated railroad ties) 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 III of this preamble.

The rulemaking record for this rule (*i.e.*, EPA-HQ-RCRA-2016-0248) includes those documents and information submitted specifically to support a determination as to whether certain OTRTs should be listed as a categorical non-waste fuel. However, the principles used to determine categorical listings are based on the NHSM rules promulgated over the past few years. While EPA is not formally including in the record for this rule materials supporting the previous NHSM rulemakings, the Agency is nevertheless issuing this rule consistent with the NHSM regulations and the supporting records for those rules. This rulemaking in no way reopens any issues resolved in previous NHSM rulemakings. It simply responds to a petition in accordance with the standards and procedures outlined in the existing NHSM regulations.

### **III. Comments on the Proposed Rule and Rationale for Final Decisions**

The following sections provide the Agency rationale for its determination that OTRTs are appropriate for listing in § 241.4(a) as categorical non-wastes when burned as a fuel in prescribed combustion units. It also addresses major comments the Agency received on the November 1, 2016 NHSM OTRT proposed rule (81 FR 75781). That proposal explained the status of OTRT under current rules, discussed information received during previous rulemakings, as well as the scope of the proposed categorical non-waste fuel listings. The proposed rationale

for the listings is found at 81 FR 75788-96 and is 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, comments received on the proposal and supporting materials in the rulemaking record. Any changes from the proposed rule made to the final rule are identified below.

#### *A. Detailed Description of OTRTs*

##### *1. Processing*

As described in the proposed rulemaking (81 FR 75781, November 1, 2016 (page 75785)), industry representatives stated that the removal of OTRTs from service and processing of those ties into a product fuel is similar to processing of CTRTs described in the February 2016 rule.<sup>10</sup> OTRTs are typically comprised of North American hardwoods that have been treated with a wood preservative. The removal from service, processing and use as a fuel happens 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; and the combustor as third party energy producers. Typically, ownership of the OTRTs are generally 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 OTRTs 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

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<sup>10</sup> 81 FR 6688 The OTRTs 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 OTRTs into a product fuel that meets the legitimacy criteria. (81 FR 75788; November 1, 2016)

combusting facilities. Information submitted to the Agency indicates there are approximately 15 recovery companies in North America with industry-wide revenues of \$65-75 million.

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<sup>11</sup> indicated 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 transferal of ownership to the reclamation contractor or combustor. This means that not all OTRTs originate from crossties removed from service in the same year; some OTRTs 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.

Typically, reclamation companies receive OTRTs by rail. The processing of the crossties into fuel by the reclamation/processing companies involves several steps. Contaminant metals (spikes, nails, plates, etc.) undergo initial separation and removal by the user organization (railroad company) during inspection. At the reclamation company, 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. Such grinding and shredding facilitates handling, storage and metering to the combustion chamber. By achieving a uniform particle size, combustion efficiency will be improved due to the uniform and controlled fuel feed rate and the ability to regulate the air supply. Additionally, the size reduction process exposes a greater

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<sup>11</sup> M.A. Energy Resources LLC, Petition submitted to Administrator, EPA, February 2013

surface area of the particle prior to combustion, releasing any moisture more rapidly, and thereby enhancing its heating value. This step may occur in several phases, including primary and secondary grinding, or in a single phase. Additional metal removal may also occur after shredding.

Once the crossties are ground to a specific size, there is further screening based on the particular needs of the end-use combustor. Depending on the configuration of the facility and equipment, screening may occur concurrently with grinding or at a subsequent stage. Once the processing of OTRTs is complete, the OTRTs are sold directly to the end-use combustor for energy recovery. Processed OTRTs are delivered to the buyers by railcar or truck. The processed OTRTs are then stockpiled prior to combustion in a manner consistent with biomass fuels, with a typical storage timeframe ranging from a day to a week. When the OTRTs 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 OTRTs may be combined with other biomass fuels, including hog fuel and bark. OTRTs are commonly used to provide the high British thermal unit (Btu) fuel to supplement low (and sometimes wet) Btu biomass to ensure proper combustion, often in lieu of coal or other fossil fuels.<sup>12</sup> The combined fuel may be further hammered and screened prior to combustion.

In general, contracts for the purchase and combustion of OTRTs include fuel specifications limiting contaminants, such as metals, and prohibiting the receipt of wood treated with other preservatives such as pentachlorophenol.

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<sup>12</sup> American Forest & Paper Association, American Wood Council – Letter to EPA Administrator, December 6, 2012.

## 2. *Treatment Descriptions*

### i. *Copper Naphthenate*

Copper naphthenate's effectiveness as a preservative has been known since the early 1900s, and various formulations have been used commercially since the 1940s. It is an organometallic compound formed as a reaction product of copper salts and naphthenic acids derived from petroleum. Unlike other commercially applied wood preservatives, small quantities of copper naphthenate can be purchased at retail hardware stores and lumberyards. Cuts or holes in treated wood can be treated in the field with copper naphthenate. Wood treated with copper naphthenate has a distinctive bright green color that weathers to light brown. The treated wood also has an odor that dissipates somewhat over time. Oil borne copper naphthenate is used for treatment of railroad ties since that treatment results in the ties being more resistant to cracks and checking. Waterborne copper naphthenate is used only for interior millwork and exterior residential dimensional lumber applications such as decking, fencing, lattice, recreational equipment, and other structures. Thus, this final rule does not address waterborne copper naphthenate.

Copper naphthenate can be dissolved in a variety of solvents: the heavy oil solvent (specified in American Wood Protection Association (AWPA) Standard P9, Type A) or the lighter solvent (AWPA Standard P9, Type C). The lighter solvent is the most commonly used for railroad ties due to its ability to penetrate the wood. Copper naphthenate is listed in AWPA standards for treatment of major softwood species that are used for a variety of wood products. It is not listed for treatment of any hardwood species, except when the wood is used for railroad ties. The minimum copper naphthenate retentions (the amount of retention of the preservative in the tie after treatment application) range from 0.04 pounds per cubic foot (0.6 kilograms per

cubic meter) for wood used aboveground, to 0.06 pounds per cubic foot (1 kilogram per cubic meter) for wood that will contact the ground and 0.075 pounds per cubic foot (1.2 kilograms per cubic meter) for wood used in critical structural applications.<sup>13</sup>

When dissolved in No. 2 fuel oil (Type C under AWP standards), copper naphthenate can penetrate wood that is difficult to treat. Copper naphthenate loses some of its ability to penetrate wood when it is dissolved in heavier oils. Copper naphthenate treatments do not significantly increase the corrosion of metal fasteners relative to untreated wood.

Copper naphthenate is commonly used to treat utility poles, although fewer facilities treat utility poles with copper naphthenate than with creosote or pentachlorophenol. Unlike creosote and pentachlorophenol, copper naphthenate is not listed as a Restricted Use Pesticide (RUP)<sup>14</sup> by the EPA. Even though human health concerns do not require copper naphthenate to be listed as an RUP, precautions such as the use of dust masks and gloves are used when working with wood treated with copper naphthenate.

*ii. Borates*

Borates is the name for a large number compounds containing the element boron. Borate compounds are the most commonly used unfixed waterborne preservatives. Unfixed preservatives can leach from treated wood. They are used for pressure treatment of framing lumber used in areas with high termite hazard and as surface treatments for a wide range of wood products, such as cabin logs and the interiors of wood structures. They are also applied as

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<sup>13</sup> U.S. Forest Service Preservative Treated Wood and Alternative Products in the Forest Service: <https://www.fs.fed.us/t-d/pubs/htmlpubs/htm06772809/page02.htm>

<sup>14</sup> List of Restricted Use Pesticides found at: <https://www.epa.gov/pesticide-worker-safety/restricted-use-products-rup-report>

internal treatments using rods or pastes. At higher rates of retention, borates also are used as fire-retardant treatments for wood. Copper naphthenate treated ties are most effective when dual-treated with borate to prevent decay.<sup>15</sup>

Performance characteristics of borate treatment include protection of the wood against fungi and insects, with low mammalian toxicity. Another advantage of boron is its ability to diffuse with water into wood that normally resists traditional pressure treatment. Wood treated with borates has no added color, no odor, and can be finished (primed and painted).

Inorganic boron is listed as a wood preservative in the AWWPA standards, which include formulations prepared from sodium octaborate, sodium tetraborate, sodium pentaborate, and boric acid. Inorganic boron is also standardized as a pressure treatment for a variety of species of softwood lumber used out of contact with the ground and continuously protected from water. The minimum borate ( $B_2O_3$ ) retention is 0.17 pounds per cubic foot (2.7 kilograms per cubic meter). A retention of 0.28 pounds per cubic foot (4.5 kilograms per cubic meter) is specified for areas with Formosan subterranean termites.<sup>16</sup>

Borate preservatives are available in several forms, but the most common is disodium octaborate tetrahydrate (DOT). DOT has higher water solubility than many other forms of borate, allowing more concentrated solutions to be used and increasing the mobility of the borate through the wood. With the use of heated solutions, extended pressure periods, and diffusion periods after treatment, DOT can penetrate wood species that are relatively difficult to treat, such

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<sup>15</sup> Railroad Tie Association. Frequently Asked Questions <http://www.rta.org/faqs-main>

<sup>16</sup> U.S. Forest Service Preservative Treated Wood and Alternative Products in the Forest Service <https://www.fs.fed.us/t-d/pubs/htmlpubs/htm06772809/page02.htm>

as spruce. Several pressure treatment facilities in the United States use borate solutions. For refractory wood species destined for high decay areas, it has now become relatively common practice to use borates as a pre-treatment to protect the wood prior to processing with creosote.

### *iii. Creosote*

Creosote was introduced as a wood preservative in the late 1800's to prolong the life of railroad ties. CTRTs 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 also governed by the standards established by AWWA. AWWA has established two blends of creosote, P1/13 and P2. Railroad ties are typically manufactured using the P2 blend that is more viscous than other blends.

## *B. OTRTs under Current NHSM Rules*

### *1. March 2011 NHSM Final Rule*

The March 2011 NHSM final rule stated that most creosote-treated wood is non-hazardous. However, the presence of hexachlorobenzene, a CAA section 112 hazardous air pollutant (HAP), as well as other HAPs 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 this assessment in 2011, the Agency did not consider fuel oil<sup>17</sup> 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

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<sup>17</sup> For the purposes of this 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.

contained in those materials. Such destruction is an indication of discard and 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 (40 CFR part 60, subparts CCCC and DDDD).

Regarding borate-treated wood, after reviewing data from one commenter which showed that the levels of contaminants in this material are comparable to those found in unadulterated wood for the seven contaminants for which data was presented, the Agency stated in the March 2011 final rule that such treated-wood meets the legitimacy criterion on the level of contaminants and comparability to traditional fuels. The rule further stated that borate-treated wood could be classified as a non-waste fuel, provided the other two legitimacy criteria are met and the contaminant levels for any other HAP that may be present in this material are also comparable to or less than those in traditional fuels. The rule noted that such borate-treated wood would need to be burned as a fuel for energy recovery within the control of the generator. Finally, the rule indicated that EPA was aware of some borate-treated wood is subsequently treated with creosote, to provide an insoluble barrier to prevent the borate compounds from leaching out of the wood. The Agency did not receive data on the contaminant levels of the resulting material with both treatments, but data presented on creosote treated lumber when combusted in units designed to burn biomass indicated that this NHSM would likely no longer meet the legitimacy criteria and would be considered a solid waste when burned as a fuel.

As indicated in the rule, EPA did not have information generally about the transfer of borate-treated wood to other companies to make a broad determination about its use as a fuel

outside the control of the generator. Thus, under the March 2011 rule, borate-treated wood would need to be burned as a fuel for energy recovery within the control of the generator (76 FR 15484). Persons could make self-determinations regarding other uses of the material as fuel including use outside the control of the generator.

With regard to wood treated with copper naphthenate, the March 2011 rule indicated that no additional contaminant data was provided that would reverse the position in the June 2010 proposed rule, which considered wood treated with copper naphthenate a solid waste because of concerns of elevated levels of contaminants (76 FR 15484, March 21, 2011). The March 2011 rule acknowledged, as in the June 2010 proposed rule (75 FR 31862, June 4, 2010), that the Agency did not have sufficient information on the contaminant levels in wood treated with copper naphthenate. The rule further stated that if a person could demonstrate that copper naphthenate treated-wood is burned in a combustion unit as a fuel for energy recovery within the control of the generator and meets the legitimacy criteria, or if discarded, can demonstrate that they have sufficiently processed the material and meet legitimacy criteria, that person can handle its copper naphthenate treated-wood as a non-waste fuel.

## *2. February 2013 NHSM Final Rule*

In the February 2013 NHSM final rule (78 FR 9173), EPA noted that the American Forest and Paper Association (AF&PA) and the American Wood Council submitted a letter with supporting information on December 6, 2012, seeking a categorical non-waste listing and clarification letter for CTRTs combusted in any unit.<sup>18</sup> The letter included information regarding

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<sup>18</sup> American Forest & Paper Association, American Wood Council – Letter to EPA Administrator, December 6, 2012. Included in docket for this final rule.

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 at that time. Therefore, EPA requested that additional information be provided, and indicated that if this additional information supported and supplemented the representations made in the December 2012 letter, EPA would expect to propose a categorical non-waste listing for CTRTs. The requested information included:

- A list of industry sectors, in addition to forest product mills, that burn railroad ties for energy recovery,
- The types of boilers (*e.g.*, kilns, stoker boilers, circulating fluidized bed, etc.) that burn railroad ties for energy recovery,
- 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. The extent to which non-industrial boilers (*e.g.*, commercial or residential boilers) burn CTRTs for energy recover, and
- 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.<sup>19</sup> (78 FR 9173, February 7, 2013.)

See 81 FR 6723-24, February 8, 2016, for the detailed responses to the above requested information.

### *3. February 2016 NHSM Final Rule*

As discussed in section II.B of this preamble, the February 2016 final rule stated that EPA had reviewed the information submitted from stakeholders regarding CTRTs and determined that the information supported a categorical determination for those materials under certain conditions which were promulgated in that rule (see 40 CFR 241.4(a)(7)). The final rule preamble language also referenced an August 21, 2015 letter to Barnes Johnson where TWC requested that the Agency move forward on a subset of materials that were identified in the April 2013 petition (*i.e.* creosote borate, copper naphthenate, and copper naphthenate-borate) (81 FR 6738, February 8, 2016). EPA stated that based on the information received, the Agency believed these three types of treated railroad ties were candidates for categorical non-waste listings and expected to begin development of a proposed rule under 40 CFR 241.4(a) for the three materials in the near future.

### *C. Scope of the Final Categorical Non-Waste Listing for OTRTs*

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<sup>19</sup> The Agency requested these analyses based on the limited information previously available concerning the chemical makeup of CTRTs. That limited information included one 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 dioxin analyses of post-combustion emissions.

As discussed in section II.B of this preamble, the November 1, 2016 proposed OTRT rule was based on TWC submitted letters and supporting documents requesting a categorical non-waste fuel listing for OTRTs. The information supporting the proposal and the comments received indicated that these materials have been processed, and meet legitimacy criteria including management as a valuable commodity, meaningful heating value and contaminants at levels comparable to or less than those in the traditional fuels that these combustion units are designed to burn as fuel. In this final rule, the Agency is listing, as categorical non-wastes, processed OTRTs when used as fuels. The rationale for this listing is discussed in detail in the Section D.

For units combusting copper naphthenate-borate and/or copper naphthenate railroad ties, such materials could be combusted as non-waste fuels in units designed to burn biomass, biomass and fuel oil, or biomass and coal under CAA 112 standards. For units combusting railroad ties containing creosote, including creosote-borate or any mixtures of ties containing creosote, borate and copper naphthenate, such materials must be burned in combustion units that are designed to burn, both, biomass and fuel oil in order for the material to be considered a non-waste fuel. The Agency would consider combustion units to meet this requirement if the unit combusts fuel oil as part of normal operations and not solely as part of start up or shut down operations. Units combusting ties mixed with creosote that are designed to burn biomass and fuel oil may also be designed to burn coal under this categorical non-waste fuel listing.

Consistent with, and for the same reasons as the approach for CTRTs outlined in the February 2016 final rule (81 FR 6725), units combusting railroad ties treated with creosote-borate (or other combination mixtures of railroad ties containing creosote, borate and copper naphthenate) in units designed to burn biomass and fuel oil, could also combust those materials

in units at major pulp and paper mills or units at power production facilities subject to 40 CFR part 63, subpart DDDDD (Boiler MACT), that combust such ties 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. These ties may continue to be combusted as a product fuel only if certain conditions are met, which are intended to ensure that they are not being discarded:

- 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
- Must comprise no more than 40 percent of the fuel that is used on an annual heat input basis.<sup>20</sup>

These conditions will also apply if an existing unit designed to burn fuel oil and biomass (at a power production facility or pulp and paper mill) is modified to burn natural gas at some point in the future.

Units combusting ties mixed with creosote that are designed to burn biomass and fuel oil, but have switched from fuel oil to natural gas, may also be designed to burn coal under this categorical non-waste fuel listing.

The approach for railroad ties treated with creosote-borate (or other mixtures of treated railroad ties containing creosote, borate and copper naphthenate) addresses only the circumstance

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<sup>20</sup> As noted in the February 2016 rule, the standards are based on information received after the February 7, 2013 rule specifically with regard to *existing* stoker, bubbling bed, fluidized bed or hybrid suspension grate boilers in the pulp and paper and power production industries that were switching from fuel oil to natural gas due to lower compliance costs and the ability to use cleaner fuels during operation. The 40% fuel use condition is based on statements from industry indicating that CRTs generally comprise 40% of the total fuel load. These conditions regarding types of existing units and fuel use were designed to ensure, in this circumstance, that the ties were not discarded. (81 FR 6724).

where contaminants in these railroad ties are comparable to or less than the traditional fuels the combustion 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. As contaminants in railroad ties treated with creosote are comparable to the contaminant in biomass and fuel oil, units that had switched to natural gas from fuel oil would clearly be in compliance with the legitimacy criteria if they did not switch to the cleaner natural gas fuel. While contaminant levels may in fact be higher when compared to natural gas, boilers at pulp and paper mills and power production facilities have demonstrated the ability to combust these materials should not be penalized for switching to a cleaner fuel. Removal of oil delivery mechanisms from units designed to burn fuel oil does not support a conclusive decision that such ties do not meet legitimacy criteria and are now being discarded.

Information indicating that these railroad ties alone or in the combination mixtures are an important part of the fuel mix because of the consistently lower moisture content and higher Btu value, benefit the combustion units with significant swings in steam demand, therefore suggesting that discard is not occurring. The Agency believes it appropriate to balance other relevant factors in this categorical non-waste determination and to decide that the switching to the cleaner natural gas would not render these materials a waste fuel.

This determination is consistent with the February 2016 rule, and is based on the historical usage of CTRT as a product fuel in stoker, bubbling bed, fluidized bed and hybrid suspension grate boilers (*i.e.*, boiler designs used to combust used railroad ties, see 81 FR 6732).

#### *D. Rationale for Final Rule*

### *1. Discard*

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

Information submitted by petitioners regarding OTRTs removed from service and processed was analogous to that for CTRTs. Specifically, OTRTs removed from service are sometimes temporarily stored in the railroad right-of-way or at another location selected by the removal/reclamation company. This means that not all OTRTs originate from crossties removed from service in the same year; some OTRTs 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.

EPA reiterates its position from the February 8, 2016 (81 FR 6725) final rule regarding cases where a railroad or reclamation company waits for more than a year to realize the value of OTRTs as a fuel. The Agency again concludes that OTRTs are removed from service and stored in a railroad right-of-way or 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 landfilled) indicates that the material has been discarded in the first instance and is a solid waste (see also the general discussion of discard at 76 FR 15463, March 11, 2011 rule).<sup>21</sup> Regarding any assertion that

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OTRTs are a valuable commodity in a robust market, the Agency would like to remind persons that NHSMs may have value in the marketplace and still be considered solid wastes.

## 2. Processing

Since the OTRTs 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, to be considered a non-waste fuel they must be processed, *i.e.* transforming the OTRTs into a product fuel that meets the legitimacy criteria.<sup>22</sup> The Agency concludes that the processing of OTRTs described previously in section III.A.1 of this preamble meets the definition of processing in 40 CFR 241.2. As discussed in that section, processing includes operations that transform a 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. The Agency concludes that OTRTs meet the definition of processing in 40 CFR 241.3 because contaminant metals are removed in several steps and the fuel characteristics are significantly improved; specifically:

- Contaminants (*e.g.*, spikes, plates, transmission wire and insulator bulbs) are removed during initial inspection by the user organization;

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<sup>22</sup> Persons who concluded that their OTRTs are not discarded and thus are not subject to this categorical determination may submit an application to the EPA Regional Administrator that the material has not been discarded when transferred to a third party and is indistinguishable from a product fuel (76 FR 15551, March 21, 2011). Persons can also make self-determinations for their NHSM.

- Removal of contaminant metals occurs again at the reclamation facility using magnets; such removal may occur in multiple stages;
- The fuel characteristics of the material are improved when the crossties are ground or shredded to a specified size (typically 1 -2 inches) due to increased surface area. The final size depends on the particular needs of the end-use combustor. The grinding may occur in one or more phases; and
- Once the contaminant metals are removed and the OTRTs are ground, there may be additional operations to bring the material to a specified size.

### *3. Legitimacy Criteria*

EPA can list a discarded NHSM as a categorical non-waste fuel if it has been “sufficiently processed,” and meets the legitimacy criteria. The three legitimacy criteria to be evaluated are: (1) The NHSM must be managed as a valuable commodity, (2) the NHSM must have a meaningful heating value and be used as a fuel in a combustion unit to recover energy, and (3) the NHSM must have contaminants or groups of contaminants at levels comparable to or less than those in the traditional fuel the unit is designed to burn.<sup>23</sup>

#### *i. Managed as a Valuable Commodity.*

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<sup>23</sup> We note that even if the NHSM does not meet one or more of the legitimacy criteria, the Agency could still propose to list an NHSM categorically by balancing the legitimacy criteria with other relevant factors (see 40 CFR 241.4(b)(5)(ii)).

Data submitted<sup>24</sup> indicates that OTRT processing and subsequent management is analogous to that of CTRTs outlined in the February 8, 2016 final rule (81 FR 6725). The processing of OTRTs is correlated to the particular needs of the end-use combustor. The process begins when the railroad or utility company removes the old OTRTs from service. An initial inspection is conducted where non-combustible materials are sorted out. OTRTs are stored in staging areas until shippable quantities are collected. Shippable quantities are transported via truck or rail to a reprocessing center.

At the reprocessing center, pieces are again inspected, sorted, and non-combustible materials are removed. Combustible pieces then undergo size reduction and possible blending with compatible combustibles. Once the OTRTs meet the end use specification, they are then sold directly to the end-use combustor for energy recovery. OTRTs are delivered to the end-use combustors via railcar and/or truck similar to delivery of traditional biomass fuels.

After receipt, OTRTs are stockpiled similar to analogous biomass fuels (*e.g.*, in fuel silos) to maximize dryness and minimize dust. While awaiting combustion at the end-user, which usually occurs within one day to a week of arrival, the OTRTs are also transferred and/or handled from storage in a manner consistent with the transfer and handling of biomass fuels. Procedures include screening by the end-use combustor, combining with other biomass fuels, and transferring to the combustor via conveyor belt or front-end loader.

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<sup>24</sup> See section III.D.4. of this preamble for a description of EPA's review of all data submitted regarding meeting legitimacy criteria.

Since the storage of the processed material does not exceed reasonable time frames and the processed ties are handled/treated similar to analogous biomass fuels by end-use combustors, OTRTs meet the criterion for being managed as a valuable commodity.

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

EPA received the following information for the heating values of processed OTRTs: 6,867 Btu/lb for creosote-borate; 7,333 Btu/lb for copper naphthenate; 5,967 Btu/lb for copper naphthenate-borate; 5,232 Btu/lb for mixed railroad ties containing 56% creosote, 41% creosote-borate, 1% copper naphthenate, 2% copper naphthenate-borate; and 7,967 Btu/lb for mixed ties containing 25% creosote, 25% creosote borate, 25% copper naphthenate and 25% copper naphthenate-borate.<sup>25,26</sup> In the March 2011 NHSM final rule, the Agency indicated that NHSMs with an energy value greater than 5,000 Btu/lb, as fired, are considered to have a meaningful heating value.<sup>27</sup> Thus, OTRTs meet the criterion for meaningful heating value and used as a fuel to recover energy.

*iii. Contaminants Comparable to or Lower than Traditional Fuels.*

For each type of OTRT, EPA has compared the September 2015 data submitted on contaminant levels by petitioners to contaminant data for biomass/untreated wood, and fuel oil. In response to comments on the proposal, EPA has also taken the September 2015 data and compared them to coal. The petitioner's data included samples taken from 15 different used

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<sup>25</sup> Letter from Jeff Miller to Barnes Johnson, September 11, 2015; *see* docket for this rule.

<sup>26</sup> These values reflect averages from 2013 and 2015 data. Relevant lab data on Btu/lb for each types of processed OTRT can be viewed in the September and October 2015 letters from Jeff Miller to Barnes Johnson included in the docket.

<sup>27</sup> *See* 76 FR 15541, March 21, 2011.

creosote-borate ties, 15 different copper naphthenate-borate ties, 15 creosote ties, and 15 copper naphthenate ties. Each type of tie sample was divided into three groups of five tie samples each. This resulted in 12 total groups corresponding to the four different types ties. Each group was then isolated, mixed together, processed into a fuel-type consistency, and shipped to the laboratory for analysis.

Use of these types of ties are relatively new compared to creosote, so few of these OTRT have transitioned to fuel use at this time, but we expect more in the future. To simulate that transition over time, three samples of unequally-blended tie material (56% creosote, 41% creosote-borate, 1% copper naphthenate, 2% copper naphthenate-borate) and three samples of equally blended tie material (25% creosote, 25% creosote-borate, 25% copper naphthenate, 25% copper naphthenate-borate) were analyzed. The lab analyzed three samples of each of the processed tie treated with creosote, creosote-borate, copper naphthenate and copper naphthenate-borate. In addition, the lab analyzed three samples of equally-blended tie material, three samples of unevenly-blended tie material, and three samples of untreated wood for a total of 18 samples.

In addition to September 2015 data, copper naphthenate-borate, and copper naphthenate test data had also been submitted in conjunction with TWC's earlier December 4, 2013 petition and are included in the following tables. As noted in section II.B of this preamble, the 2013 data did not have details on the number of samples collected. In addition, sulfur was measured using leachable anion techniques that do not provide results of the total contaminant content, and heat content was not measured. Therefore, the Agency's decisions are based on the complete data submitted in 2015 supplemented by the 2013 data. The results of the analysis of the 2015 and 2013 data are shown in the following tables.

*Copper Naphthenate*

Contaminant	Copper Naphthenate Railroad Ties Contaminant Levels <sup>a,f</sup>	Biomass/ Untreated Wood <sup>b</sup>	Fuel Oil <sup>b</sup>	Coal <sup>b</sup>
<b>Metal Elements (PPM- dry basis)</b>				
Antimony	ND<1.4	ND - 26	ND - 15.7	0.5 – 10
Arsenic	0.53 - 0.93	ND - 298	ND - 13	0.5 – 174
Beryllium	ND - 0.05	ND - 10	ND - 19	0.1 – 206
Cadmium	ND - 0.20	ND - 17	ND - 1.4	0.1 – 19
Chromium	0.22 - 0.50	ND - 340	ND - 37	0.5 – 168
Cobalt	ND - 0.81	ND - 213	ND - 8.5	0.5 – 30
Lead	ND - 3.5	ND - 340	ND - 56.8	2 – 148
Manganese	7.1 - 166	ND - 15,800	ND - 3,200	5 – 512
Mercury	ND<0.20	ND - 1.1	ND - 0.2	0.02 – 3.1
Nickel	0.79 - 1.1	ND - 540	ND - 270	0.5 – 730
Selenium	0.41 - 0.84	ND - 9.0	ND - 4	0.2 – 74.3
<b>Non-metal Elements (ppm-dry basis)</b>				
Chlorine	ND<100	ND - 5,400	ND - 1,260	ND – 9,080
Fluorine	ND<100	ND - 300	ND - 14	ND – 178
Nitrogen	ND<500	200 - 39,500	42 - 8,950	13,600 – 54,000
Sulfur	190 - 240	ND - 8,700	ND - 57,000	740 – 61,300
<b>Semivolatile Hazardous Air Pollutants (ppm-dry basis)</b>				
Acenaphthene	3.0 - 95	ND - 50	111 <sup>h</sup>	--
Acenaphthylene	ND<1.3	ND – 4	4.1	--
Anthracene	ND - 6.3	0.4 - 87	96	--
Benzo[a]anthracene	ND<1.3	ND - 62	41 - 1,900	--
Benzo[a]pyrene	ND<1.3	ND - 28	0.60 - 960	--
Benzo[b]fluoranthene	ND<1.3	ND - 42	11 - 540	--
Benzo[ghi]perylene	ND<1.3	ND – 9	11.4	--
Benzo[k]fluoranthene	ND<1.3	ND - 16	0.6	--
Chrysene	ND<1.3	ND - 53	2.2 - 2,700	--
Dibenz [a, h] anthracene	ND<1.3	ND – 3	4.0	--
Fluoranthene	ND - 6.5	0.6 - 160	31.6 - 240	--
Fluorene	4.5 - 53	ND - 40 <sup>h</sup>	3,600	--
Indeno[1,2,3-cd] pyrene	ND<1.3	ND - 12	2.3	--
Naphthalene	8.2 - 80	ND - 38 <sup>h</sup>	34.3 - 4,000	--
Phenanthrene	8.2 - 77	0.9 - 190	0 - 116,000	--
Pyrene	ND - 15	0.2 - 160	23 - 178	--
16-PAH	49 - 298	5 – 921	3,900 - 54,700	6 – 253 <sup>h</sup>
PAH (52 extractable)	-- <sup>e</sup>	--	--	14 – 2,090

Contaminant	Copper Naphthenate Railroad Ties Contaminant Levels <sup>a,f</sup>	Biomass/ Untreated Wood <sup>b</sup>	Fuel Oil <sup>b</sup>	Coal <sup>b</sup>
Pentachlorophenol	ND <30 <sup>g</sup>	ND – 1	--	--
Biphenyl	-- <sup>c</sup>	--	1,000-1,200	--
<b>Total SVOC <sup>c</sup></b>	<b>77 - 328</b>	<b>5 – 922</b>	<b>4,900 - 54,700</b>	<b>20 – 2,343</b>
<b>Volatile Organic Compound Hazardous Air Pollutants (ppm-dry basis)</b>				
Benzene	ND<0.69	--	ND - 75	ND – 38
Phenol	-- <sup>c</sup>	--	ND - 7,700	--
Styrene	ND<0.69	--	ND - 320	1.0 – 26
Toluene	ND<0.69	--	ND - 380	8.6 – 56
Xylenes	ND<0.69	--	ND - 3,100	4.0 – 28
Cumene	-- <sup>c</sup>	--	6,000 - 8,600	--
Ethyl benzene	ND<0.69	--	22 - 1,270	0.7 – 5.4
Formaldehyde	-- <sup>c</sup>	1.6 - 27	--	--
Hexane	-- <sup>c</sup>	--	50 - 10,000	--
<b>Total VOC <sup>d</sup></b>	<b>ND&lt;3.4</b>	<b>1.6 - 27</b>	<b>6,072 - 19,810</b>	<b>14.3 – 125.4</b>

**Notes:**

- a. Data provided by Treated Wood Council on April 3, 2013, September 11, 2015 and October 19, 2015.
- b. Contaminant Concentrations in Traditional Fuels: Tables for Comparison, November 29, 2011, available at <https://www.epa.gov/rcra/contaminant-concentrations-traditional-fuels-tables-comparison>. Contaminant data drawn from various literature sources and from data submitted to USEPA, Office of Air Quality Planning and Standards (OAQPS). SVOC values from 2013 IEC data that will be available in the rule docket.
- c. Total 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. Naphthalene was the only analyte detected in Oct 2015 VOC testing, but this analyte is included in the SVOC group, so is not reflected here.
- e. Cells with the “—” indicate analytes not tested for in treated wood, but these are not expected to be present in treated wood formulation being analyzed based on preservative chemistry and results from previous CTRT testing (*i.e.*, not present in CTRT ties).
- f. Non-detects are indicated by “<” preceding the method reporting limit, not the method detection limit. Therefore, there are many cases where the non-detect value may be greater than another test’s detected value due to analysis-specific RLs being different between individual tests (*i.e.*, differences in tested amount or analyzer calibration range adjustments). If result is less than the method detection limit (MDL), the method reporting limit (MRL), which is always greater than MDL, was used by the lab.
- g. Not expected in the treated wood formulation being tested based on preservative chemistry.
- h. EPA has generally defined “comparable to or lower than” to mean contaminants can be presented in NHSMs within a small acceptable range or at lower levels, relative to the contaminants found in the traditional fuels. Thus, fuels that are produced from nonhazardous secondary materials can have contaminants that are somewhat higher than the traditional fuel that otherwise would be burned and still qualify as being comparable, and would not be considered a solid waste (76 FR 15481).

As indicated, railroad ties treated with copper naphthenate have contaminants that are comparable to or less than those in biomass/untreated wood, fuel oil or coal. Given that these railroad ties are a type of wood biomass material, such ties can be combusted in units designed to burn biomass, biomass and fuel oil, or biomass and coal.

*Copper Naphthenate - Borate*

<b>Contaminant</b>	<b>Copper Naphthenate - Borate Railroad Ties Contaminant Levels <sup>a,f</sup></b>	<b>Biomass/ Untreated Wood <sup>b</sup></b>	<b>Fuel Oil <sup>b</sup></b>	<b>Coal <sup>b</sup></b>
<b>Metal Elements (ppm-dry basis)</b>				
Antimony	ND<1.4	ND - 26	ND - 15.7	0.5 – 10
Arsenic	0.52 - 0.72	ND - 298	ND - 13	0.5 – 174
Beryllium	ND<.67	ND - 10	ND - 19	0.1 – 206
Cadmium	ND - 0.078	ND - 17	ND - 1.4	0.1 – 19
Chromium	0.11 - 0.78	ND - 340	ND - 37	0.5 – 168
Cobalt	ND - 0.74	ND - 213	ND - 8.5	0.5 – 30
Lead	ND - 4.0	ND - 340	ND - 56.8	2 – 148
Manganese	14 - 170	ND - 15,800	ND - 3,200	5 – 512
Mercury	ND<0.15	ND - 1.1	ND - 0.2	0.02 – 3.1
Nickel	0.46 - 2.0	ND - 540	ND - 270	0.5 – 730
Selenium	ND - 0.52	ND - 9.0	ND - 4	0.2 – 74.3
<b>Non-metal Elements (ppm-dry basis)</b>				
Chlorine	ND<100	ND - 5,400	ND - 1,260	ND – 9,080
Fluorine	ND<100	ND - 300	ND - 14	ND – 178
Nitrogen	ND<500	200 - 39,500	42 - 8,950	13,600 – 54,000
Sulfur	140 - 170	ND - 8,700	ND - 57,000	740 – 61,300
<b>Semivolatile Hazardous Air Pollutants (ppm-dry basis)</b>				
Acenaphthene	4.8 - 17	ND - 50	111	--
Acenaphthylene	ND - 0.9	ND - 4	4.1	--
Anthracene	ND - 7.2	0.4 - 87	96	--
Benzo[a]anthracene	ND - 3.7	ND - 62	41 - 1,900	--
Benzo[a]pyrene	ND - 1.4	ND - 28	0.60 - 960	--
Benzo[b]fluoranthene	ND - 3.9	ND - 42	11 - 540	--
Benzo[ghi]perylene	ND<1.2	ND - 9	11.4	--

Contaminant	Copper Naphthenate - Borate Railroad Ties Contaminant Levels <sup>a,f</sup>	Biomass/ Untreated Wood <sup>b</sup>	Fuel Oil <sup>b</sup>	Coal <sup>b</sup>
Benzo[k]fluoranthene	ND - 20	ND - 16 <sup>h</sup>	0.6	--
Chrysene	ND - 6.6	ND - 53	2.2 - 2,700	--
Dibenz [a, h] anthracene	ND<1.2	ND - 3	4.0	--
Fluoranthene	ND - 20	0.6 - 160	31.6 - 240	--
Fluorene	2.2 - 16	ND - 40	3,600	--
Indeno[1,2,3-cd] pyrene	ND<1.2	ND - 12	2.3	--
Naphthalene	5.2 - 82	ND - 38 <sup>h</sup>	34.3 - 4,000	--
Phenanthrene	3.6 - 43	0.9 - 190	0 - 116,000	--
Pyrene	ND - 19	0.2 - 160	23 - 178	--
16-PAH	39 - 145	5 - 921	3,900 - 54,700	6 - 253
PAH (52 extractable)	-- <sup>e</sup>	--	--	14 - 2,090
Pentachlorophenol	ND <sup>g</sup> <28	ND - 1	--	--
Biphenyl	-- <sup>e</sup>	--	1,000 - 1,200	--
<b>Total SVOC <sup>c</sup></b>	<b>66 - 173</b>	<b>5 - 922</b>	<b>4,900 - 54,700</b>	<b>20 - 2,343</b>
<b>Volatile Organic Compound Hazardous Air Pollutants (ppm-dry basis)</b>				
Benzene	ND<0.77	--	ND - 75	ND - 38
Phenol	-- <sup>e</sup>	--	ND - 7,700	--
Styrene	ND<0.77	--	ND - 320	1.0 - 26
Toluene	ND<0.77	--	ND - 380	8.6 - 56
Xylenes	ND<0.77	--	ND - 3,100	4.0 - 28
Cumene	-- <sup>e</sup>	--	6,000 - 8,600	--
Ethyl benzene	ND<0.77	--	22 - 1,270	0.7 - 5.4
Formaldehyde	-- <sup>e</sup>	1.6 - 27	--	--
Hexane	-- <sup>e</sup>	--	50 - 10,000	--
<b>Total VOC <sup>d</sup></b>	<b>ND&lt;3.8</b>	<b>1.6 - 27</b>	<b>6,072 - 19,810</b>	<b>14.3 - 125.4</b>

**Notes:**

- Data provided by Treated Wood Council on April 3, 2013, September 11, 2015 and October 19, 2015.
- Contaminant Concentrations in Traditional Fuels: Tables for Comparison, November 29, 2011, available at <https://www.epa.gov/rcra/contaminant-concentrations-traditional-fuels-tables-comparison>. Contaminant data drawn from various literature sources and from data submitted to USEPA, Office of Air Quality Planning and Standards (OAQPS). SVOC values from 2013 IEC data that will be available in the rule docket.
- Total 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. Naphthalene was the only analyte detected in Oct 2015 VOC testing, but this analyte is included in the SVOC group, so is not reflected here.
- e. Cells with the "--" indicate analytes not tested for in treated wood, but these are not expected to be present in treated wood formulation being analyzed based on preservative chemistry and results from previous CTRT testing (*i.e.*, not present in CTRT ties).
- f. Non-detects are indicated by "<" preceding the method reporting limit, not the method detection limit. Therefore, there are many cases where the non-detect value may be greater than another test's detected value due to analysis-specific RLs being different between individual tests (*i.e.*, differences in tested amount or analyzer calibration range adjustments). If result is less than the method detection limit (MDL), the method reporting limit (MRL), which is always greater than MDL, was used by the lab.
- g. Not expected in the treated wood formulation being tested based on preservative chemistry.
- h. EPA has generally defined "comparable to or lower than" to mean contaminants can be presented in NHSMs within a small acceptable range or at lower levels, relative to the contaminants found in the traditional fuels. Thus, fuels that are produced from nonhazardous secondary materials can have contaminants that are somewhat higher than the traditional fuel that otherwise would be burned and still qualify as being comparable, and would not be considered a solid waste (76 FR 15481).

As indicated, railroad ties treated with copper naphthenate-borate have contaminants that are comparable to or less than those in biomass/untreated wood, fuel oil (see discussion of grouping of SVOCs, 78 FR 9146, February 7, 2013) or coal. Given that these railroad ties are a type of treated wood biomass, such ties can be combusted in units designed to burn biomass, or biomass and fuel oil, or biomass and coal.

*Creosote-Borate*

Contaminant	Creosote - Borate Railroad Ties Contaminant Levels <sup>a,f</sup>	Biomass/ Untreated Wood <sup>b</sup>	Fuel Oil <sup>b</sup>	Coal <sup>b</sup>
<b>Metal Elements (ppm-dry basis)</b>				
Antimony	ND<1.3	ND - 26	ND - 15.7	0.5 – 10
Arsenic	ND - 0.80	ND - 298	ND - 13	0.5 – 174
Beryllium	ND - 0.032	ND - 10	ND - 19	0.1 – 206
Cadmium	0.059 - 0.25	ND - 17	ND - 1.4	0.1 – 19
Chromium	0.10 - 1.1	ND - 340	ND - 37	0.5 – 168
Cobalt	ND - 0.22	ND - 213	ND - 8.5	0.5 – 30
Lead	ND - 1.8	ND - 340	ND - 56.8	2 – 148
Manganese	22 - 140	ND - 15,800	ND - 3,200	5 – 512
Mercury	ND - 0.066	ND - 1.1	ND - 0.2	0.02 – 3.1

Contaminant	Creosote - Borate Railroad Ties Contaminant Levels <sup>a,f</sup>	Biomass/ Untreated Wood <sup>b</sup>	Fuel Oil <sup>b</sup>	Coal <sup>b</sup>
Nickel	0.71 - 1.8	ND - 540	ND - 270	0.5 - 730
Selenium	0.59 - 1.4	ND - 9.0	ND - 4	0.2 - 74.3
<b>Non-metal Elements (ppm-dry basis)</b>				
Chlorine	ND<100	ND - 5,400	ND - 1,260	ND - 9,080
Fluorine	ND<100	ND - 300	ND - 14	ND - 178
Nitrogen	ND<500	200 - 39,500	42 - 8,950	13,600 - 54,000
Sulfur	170 - 180	ND - 8,700	ND - 57,000	740 - 61,300
<b>Semivolatile Hazardous Air Pollutants</b>				
Acenaphthene	600 - 2,200	ND - 50	111	--
Acenaphthylene	17 - 96	ND - 4	4.1	--
Anthracene	350 - 2,000	0.4 - 87	96	--
Benzo[a]anthracene	200 - 1,500	ND - 62	41 - 1,900	--
Benzo[a]pyrene	62 - 500	ND - 28	0.60 - 960	--
Benzo[b]fluoranthene	110 - 960	ND - 42	11 - 540	--
Benzo[ghi]perylene	13 - 170	ND - 9	11.4	--
Benzo[k]fluoranthene	40 - 320	ND - 16	0.6	--
Chrysene	210 - 1,300	ND - 53	2.2 - 2,700	--
Dibenz [a, h] anthracene	ND - 58	ND - 3	4.0	--
Fluoranthene	1,100 - 8,400	0.6 - 160	31.6 - 240	--
Fluorene	500 - 2,200	ND - 40	3,600	--
Indeno[1,2,3-cd] pyrene	14 - 170	ND - 12	2.3	--
Naphthalene	660 - 2,900	ND - 38	34.3 - 4,000	--
Phenanthrene	2,000 - 12,000	0.9 - 190	0 - 116,000	--
Pyrene	780 - 5,200	0.2 - 160	23 - 178	--
16-PAH	6,600 - 38,000	5 - 921	3,900 - 54,700	6 - 253
PAH (52 extractable)	-- <sup>e</sup>	--	--	14 - 2,090
Pentachlorophenol	ND <sup>g</sup> <790	ND - 1	--	--
Biphenyl	137 - 330 <sup>h</sup>	--	1,000-1,200	--
<b>Total SVOC <sup>c</sup></b>	<b>7,200 - 39,000</b>	<b>5 - 922</b>	<b>4,900 - 54,700</b>	<b>20 - 2,343</b>
<b>Volatile Organic Compound Hazardous Air Pollutants (ppm-dry basis)</b>				
Benzene	ND<3.9	--	ND - 75	ND - 38
Phenol	-- <sup>e</sup>	--	ND - 7,700	--
Styrene	ND<3.9	--	ND - 320	1.0 - 26
Toluene	ND<3.9	--	ND - 380	8.6 - 56
Xylenes	ND<3.9	--	ND - 3,100	4.0 - 28

Contaminant	Creosote - Borate Railroad Ties Contaminant Levels <sup>a,f</sup>	Biomass/ Untreated Wood <sup>b</sup>	Fuel Oil <sup>b</sup>	Coal <sup>b</sup>
Cumene	-- <sup>e</sup>	--	6,000 - 8,600	--
Ethyl benzene	ND<3.9	--	22 - 1,270	0.7 – 5.4
Formaldehyde	-- <sup>e</sup>	1.6 - 27	--	--
Hexane	-- <sup>e</sup>	--	50 - 10,000	--
<b>Total VOC <sup>d</sup></b>	ND<20	1.6 - 27	6,072 - 19,810	14.3 – 125.4

**Notes:**

- a. Data provided by Treated Wood Council on September 11, 2015 and October 19, 2015.
- b. Contaminant Concentrations in Traditional Fuels: Tables for Comparison, November 29, 2011, available at <https://www.epa.gov/rcra/contaminant-concentrations-traditional-fuels-tables-comparison>. Contaminant data drawn from various literature sources and from data submitted to USEPA, Office of Air Quality Planning and Standards (OAQPS). SVOC values from 2013 IEC data that will be available in the rule docket.
- c. For SVOC contaminant analyses, grouping of contaminants is appropriate in this case when making contaminant comparisons for purposes of meeting the legitimacy criterion. 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. Note also, total 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. Naphthalene was the only analyte detected in Oct 2015 VOC testing, but this analyte is included in the SVOC group, so is not reflected here.
- e. Cells with the "--" indicate analytes not tested for in treated wood, but these are not expected to be present in treated wood formulation being analyzed based on preservative chemistry and results from previous CTRT testing (*i.e.*, not present in CTRT ties).
- f. Non-detects are indicated by "<" preceding the method reporting limit, not the method detection limit. Therefore, there are many cases where the non-detect value may be greater than another test's detected value due to analysis-specific RLs being different between individual tests (*i.e.*, differences in tested amount or analyzer calibration range adjustments). If result is less than the method detection limit (MDL), the method reporting limit (MRL), which is always greater than MDL, was used by the lab.
- g. Not expected in the treated wood formulation being tested based on preservative chemistry.
- h. Not tested for, but presumptive worst-case value is presented for treated wood type based on data from previous CTRT testing.

In the contaminant comparison, EPA considered two scenarios. In the first scenario, where a combustion unit is designed to only burn biomass or coal, EPA compared contaminant levels in creosote-borate treated railroad ties to contaminant levels in biomass/untreated wood

and coal. In this scenario, the total SVOC levels can reach 39,000 ppm, driven by high levels of polycyclic aromatic hydrocarbons (PAHs).<sup>28</sup> As these compounds are at very low levels in biomass/untreated wood and coal, the contaminants are not comparable to the traditional fuel that the unit was designed to burn.

In the second scenario, a combustion unit is designed to burn both, biomass/untreated wood and fuel oil as well as coal. As previously mentioned, SVOCs are present in creosote-borate railroad ties (up to 39,000 ppm) at levels within the range observed in fuel oil (up to 54,700 ppm). Therefore, creosote-borate railroad ties have comparable contaminant levels as compared to other fuels combusted in units designed to burn both biomass/untreated wood and fuel oil, and as such, meet this criterion if used in facilities that are designed to burn both, biomass/untreated wood and fuel oil.<sup>29</sup> Such facilities designed to burn both biomass and fuel may also burn coal.

As stated in the preamble to the February 7, 2013, NHSM final rule, combustors may burn NHSMs as a product fuel if the contaminants are comparable to or lower than a traditional fuel the unit is designed to burn (78 FR 9149). Combustion units are often designed to burn

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<sup>28</sup> 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.

<sup>29</sup> As 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. The February 8, 2016 final rule (81 FR 6688) differs in several respects from the conclusions in the March 2011 rule. The February 2016 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.

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.

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, February 7, 2013).<sup>30</sup> 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 must also be able to ensure the material is well-mixed and maintain temperatures within unit specifications.

*Mixed Treatments -Creosote, Borate, Copper Naphthenate*

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<sup>30</sup> 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.”

Contaminant	Mixed Railroad Ties (25% C-25% CB- 25% CuN-25% CuNB) Contaminant Levels <sup>a,f</sup>	Biomass/ Untreated Wood <sup>b</sup>	Fuel Oil <sup>b</sup>	Coal <sup>b</sup>
<b>Mixed Elements (ppm-dry basis)</b>				
Antimony	ND<1.4	ND - 26	ND - 15.7	0.5 – 10
Arsenic	ND - 0.81	ND - 298	ND - 13	0.5 – 174
Beryllium	ND<0.70	ND - 10	ND - 19	0.1 – 206
Cadmium	0.15 - 0.38	ND - 17	ND - 1.4	0.1 – 19
Chromium	0.15 - 0.17	ND - 340	ND - 37	0.5 – 168
Cobalt	ND - 0.07	ND - 213	ND - 8.5	0.5 – 30
Lead	0.50 - 0.81	ND - 340	ND - 56.8	2 – 148
Manganese	110 - 190	ND - 15,800	ND - 3,200	5 – 512
Mercury	ND - 0.06	ND - 1.1	ND - 0.2	0.02 – 3.1
Nickel	0.75 - 1.4	ND - 540	ND - 270	0.5 – 730
Selenium	ND - 0.50	ND - 9.0	ND - 4	0.2 – 74.3
<b>Non-metal Elements (ppm-dry basis)</b>				
Chlorine	ND<100	ND - 5,400	ND - 1,260	ND – 9,080
Fluorine	ND<100	ND - 300	ND - 14	ND – 178
Nitrogen	ND<500	200 - 39,500	42 - 8,950	13,600 – 54,000
Sulfur	140 - 210	ND - 8,700	ND - 57,000	740 – 61,300
<b>Semivolatile Hazardous Air Pollutants (ppm-dry basis)</b>				
Acenaphthene	500 - 1,100	ND - 50	111	--
Acenaphthylene	12 - 25	ND - 4	4.1	--
Anthracene	290 - 1,100	0.4 -87	96	--
Benzo[a]anthracene	140 - 350	ND - 62	41 - 1,900	--
Benzo[a]pyrene	47 - 120	ND - 28	0.60 - 960	--
Benzo[b]fluoranthene	83 - 210	ND - 42	11 - 540	--
Benzo[ghi]perylene	9.4 - 23	ND - 9	11.4	--
Benzo[k]fluoranthene	30 - 64	ND - 16	0.6	--
Chrysene	160 - 360	ND - 53	2.2 - 2,700	--
Dibenz [a, h] anthracene	ND - 4.7	ND - 3 <sup>i</sup>	4.0 <sup>i</sup>	--
Fluoranthene	800 - 2,100	0.6 - 160	31.6 - 240	--
Fluorene	350 - 1,000	ND - 40	3,600	--
Indeno[1,2,3-cd] pyrene	10 - 28	ND - 12	2.3	--
Naphthalene	320 - 580	ND - 38	34.3 - 4,000	--
Phenanthrene	1,300 - 3,800	0.9 - 190	0 - 116,000	--
Pyrene	520 - 1,400	0.2 - 160	23 - 178	--
16-PAH	4,500 - 12,000	5 - 921	3,900 - 54,700	6 – 253
PAH (52 extractable)	-- <sup>e</sup>	--	--	14 – 2,090
Pentachlorophenol	ND <sup>g</sup>	ND - 1	--	--

Contaminant	Mixed Railroad Ties (25% C-25% CB- 25% CuN-25% CuNB) Contaminant Levels <sup>a,f</sup>	Biomass/ Untreated Wood <sup>b</sup>	Fuel Oil <sup>b</sup>	Coal <sup>b</sup>
Biphenyl	137 - 330 <sup>h</sup>	--	1,000-1,200	--
<b>Total SVOC <sup>c</sup></b>	<b>4,800 - 13,000</b>	<b>5 - 922</b>	<b>4,900 - 54,700</b>	<b>20 - 2,343</b>
<b>Volatile Organic Compounds (ppm-dry basis)</b>				
Benzene	ND<1.1	--	ND - 75	ND - 38
Phenol	-- <sup>e</sup>	--	ND - 7,700	--
Styrene	ND<1.1	--	ND - 320	1.0 - 26
Toluene	ND<1.1	--	ND - 380	8.6 - 56
Xylenes	ND<1.1	--	ND - 3,100	4.0 - 28
Cumene	-- <sup>e</sup>	--	6,000 - 8,600	--
Ethyl benzene	ND<1.1	--	22 - 1,270	0.7 - 5.4
Formaldehyde	-- <sup>e</sup>	1.6 - 27	--	--
Hexane	-- <sup>e</sup>	--	50 - 10,000	--
<b>Total VOC <sup>d</sup></b>	<b>ND&lt;5.3</b>	<b>1.6 - 27</b>	<b>6,072 - 19,810</b>	<b>14.3 - 125.4</b>

**Notes:**

- a. Data provided by Treated Wood Council on September 11, 2015 and October 19, 2015.
- b. Contaminant Concentrations in Traditional Fuels: Tables for Comparison, November 29, 2011, available at <https://www.epa.gov/rcra/contaminant-concentrations-traditional-fuels-tables-comparison>. Contaminant data drawn from various literature sources and from data submitted to USEPA, Office of Air Quality Planning and Standards (OAQPS). SVOC values from 2013 IECP data that will be available in the rule docket. As units must be designed to burn both fuel oil and biomass, contaminant concentrations in mixed creosote ties must be lower than either fuel oil or biomass to be comparable.
- c. For SVOC contaminant analyses, grouping of contaminants is appropriate in this case when making contaminant comparisons for purposes of meeting the legitimacy criterion. 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. Note also, total 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. Naphthalene was the only analyte detected in Oct 2015 VOC testing, but this analyte is included in the SVOC group, so is not reflected here.
- e. Cells with the "--" indicate analytes not tested for in treated wood, but these are not expected to be present in treated wood formulation being analyzed based on preservative chemistry and results from previous CTRT testing (*i.e.*, not present in CTRT ties).
- f. Non-detects are indicated by "<" preceding the method reporting limit, not the method detection limit. Therefore, there are many cases where the non-detect value may be greater than another test's detected value due to analysis-specific RLs being different between individual tests (*i.e.*, differences in tested amount or analyzer calibration range adjustments). If result is less than the method detection limit (MDL), the method reporting limit (MRL), which is always greater than MDL, was used by the lab.
- g. Not expected in the treated wood formulation being tested based on preservative chemistry.

- h. Not tested for, but presumptive worst-case value is presented for treated wood type based on data from previous CTRT testing.
- i. EPA has generally defined “comparable to or lower than” to mean contaminants can be presented in NHSMs within a small acceptable range or at lower levels, relative to the contaminants found in the traditional fuels. Thus, fuels that are produced from nonhazardous secondary materials can have contaminants that are somewhat higher than the traditional fuel that otherwise would be burned and still qualify as being comparable, and would not be considered a solid waste (76 FR 15481).

Contaminant	Mixed Railroad Ties (56% C-41% CB-1% CuN-2% CuNB) Contaminant Levels <sup>a,f</sup>	Biomass/ Untreated Wood <sup>b</sup>	Fuel Oil <sup>b</sup>	Coal <sup>b</sup>
<b>Metal Elements (ppm-dry basis)</b>				
Antimony	ND	ND – 26	ND - 15.7	0.5 – 10
Arsenic	ND - 0.65	ND – 298	ND - 13	0.5 – 174
Beryllium	ND	ND – 10	ND - 19	0.1 – 206
Cadmium	0.08 - 0.09	ND – 17	ND - 1.4	0.1 – 19
Chromium	0.12 - 0.78	ND – 340	ND - 37	0.5 – 168
Cobalt	ND - 0.18	ND – 213	ND - 8.5	0.5 – 30
Lead	ND - 0.93	ND – 340	ND - 56.8	2 – 148
Manganese	47 - 77	ND - 15,800	ND - 3,200	5 – 512
Mercury	ND - 0.03	ND - 1.1	ND - 0.2	0.02 – 3.1
Nickel	0.50 - 0.99	ND – 540	ND - 270	0.5 – 730
Selenium	0.56 - 0.68	ND - 9.0	ND - 4	0.2 – 74.3
<b>Non-metal elements (ppm-dry basis)</b>				
Chlorine	ND<100	ND - 5,400	ND - 1,260	ND – 9,080
Fluorine	ND<100	ND – 300	ND - 14	ND – 178
Nitrogen	ND<500	200 - 39,500	42 - 8,950	13,600 – 54,000
Sulfur	230 - 280	ND - 8,700	ND - 57,000	740 – 61,300
<b>Semivolatile Hazardous Air Pollutants (ppm-dry basis)</b>				
Acenaphthene	1,500 - 1,800	ND – 50	111	--
Acenaphthylene	31 - 40	ND – 4	4.1	--
Anthracene	760 - 1,100	0.4 – 87	96	--
Benzo[a]anthracene	390 - 490	ND – 62	41 - 1,900	--
Benzo[a]pyrene	150 - 200	ND – 28	0.60 - 960	--
Benzo[b]fluoranthene	230 - 310	ND – 42	11 - 540	--
Benzo[ghi]perylene	28 - 56	ND – 9	11.4	--
Benzo[k]fluoranthene	93 - 130	ND – 16	0.6	--
Chrysene	390 - 520	ND – 53	2.2 - 2,700	--

Contaminant	Mixed Railroad Ties (56% C-41% CB-1% CuN-2% CuNB) Contaminant Levels <sup>a,f</sup>	Biomass/ Untreated Wood <sup>b</sup>	Fuel Oil <sup>b</sup>	Coal <sup>b</sup>
Dibenz [a, h] anthracene	ND<28	ND – 3	4.0	--
Fluoranthene	2,000 - 2,700	0.6 – 160	31.6 - 240	--
Fluorene	1,100 - 1,300	ND – 40	3,600	--
Indeno[1,2,3-cd] pyrene	32 - 52	ND – 12	2.3	--
Naphthalene	890 - 1,200	ND – 38	34.3 - 4,000	--
Phenanthrene	3,600 - 4,500	0.9 – 190	0 - 116,000	--
Pyrene	1,300 - 1,800	0.2 – 160	23 - 178	--
16-PAH	13,000 - 16,000	5 – 921	3,900 - 54,700	6 – 253
PAH (52 extractable)	--	--	--	14 – 2,090
Pentachlorophenol	ND <sup>g</sup>	ND – 1	--	--
Biphenyl	137 - 330 <sup>h</sup>	--	1,000 - 1,200	--
<b>Total SVOC <sup>c</sup></b>	13,000 - 17,000	5 – 922	4,900 - 54,700	20 – 2,343
<b>Volatile Organic Compounds (ppm-dry basis)</b>				
Benzene	ND<2.3	--	ND - 75	ND – 38
Phenol	-- <sup>e</sup>	--	ND - 7,700	--
Styrene	ND<2.3	--	ND - 320	1.0 – 26
Toluene	ND<2.3	--	ND - 380	8.6 – 56
Xylenes	ND<2.3	--	ND - 3,100	4.0 – 28
Cumene	-- <sup>e</sup>	--	6,000 - 8,600	--
Ethyl benzene	ND<2.3	--	22 - 1,270	0.7 – 5.4
Formaldehyde	-- <sup>e</sup>	1.6 – 27	--	--
Hexane	-- <sup>e</sup>	--	50 - 10,000	--
<b>Total VOC <sup>d</sup></b>	ND<12	1.6 – 27	6,072 - 19,810	14.3 – 125.4

**Notes:**

- Data provided by Treated Wood Council on September 11, 2015 and October 19, 2015.
- Contaminant Concentrations in Traditional Fuels: Tables for Comparison, November 29, 2011, available at (insert link) <https://www.epa.gov/rcra/contaminant-concentrations-traditional-fuels-tables-comparison>. Contaminant data drawn from various literature sources and from data submitted to USEPA, Office of Air Quality Planning and Standards (OAQPS). SVOC values from 2013 IEC data that will be available in the rule docket. As units must be designed to burn both fuel oil and biomass, contaminant concentrations in mixed creosote ties must be lower than either fuel oil or biomass to be comparable.

- c. For SVOC contaminant analyses, grouping of contaminants in this case is appropriate when making contaminant comparisons for purposes of meeting the legitimacy criterion. 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. Note also, total 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. Naphthalene was the only analyte detected in Oct 2015 VOC testing, but this analyte is included in the SVOC group, so is not reflected here.
- e. Cells with the "--" indicate analytes not tested for in treated wood, but these are not expected to be present in treated wood formulation being analyzed based on preservative chemistry and results from previous CTRT testing (*i.e.*, not present in CTRT ties).
- f. Non-detects are indicated by "<" preceding the method reporting limit, not the method detection limit. Therefore, there are many cases where the non-detect value may be greater than another test's detected value due to analysis-specific RLs being different between individual tests (*i.e.*, differences in tested amount or analyzer calibration range adjustments). If result is less than the method detection limit (MDL), the method reporting limit (MRL), which is always greater than MDL, was used by the lab.
- g. Not expected in the treated wood formulation being tested based on preservative chemistry.
- h. Not tested for, but presumptive worst-case value is presented for treated wood type based on data from previous CTRT testing.
- i. To be comparable, units must be designed to burn both biomass and fuel oil or have switched from fuel oil to natural gas. Such units may also be designed to burn coal.

In the mixed railroad ties scenarios above, as previously discussed, SVOCs are present (up to 17,000 ppm) at levels well within the range observed in fuel oil (up to 54,700 ppm). Therefore, railroad ties mixed with creosote, borate and copper naphthenate have comparable contaminant levels to biomass and fuel oil, and as such, meet this criterion if used in combustion units that are designed to burn both of those traditional fuels. Such units may also be designed to burn coal.

#### *4. OTRT Sampling and Analysis Data History*

The data collection supporting the OTRT categorical non-waste determination has been based on two rounds of data submittals by TWC, followed by EPA questions and TWC responses on the data provided. The process of developing the data set is described below and all materials provided by TWC are available in the docket to this rulemaking.

The TWC requested a categorical determination that all types of treated wood were non-waste fuels and submitted data on various wood preservative types, specifically, those referred to as OTRTs, in their April 3, 2013 petition letter (see docket EPA-HQ-OLEM-2016-0248-0019). However, the contaminant comparison data presented in the petition were incomplete and not based on established analytical data. The EPA response requested submittal of additional analytical data to determine contaminant concentrations in the OTRT.

In November 2013, TWC responded to EPA's request, submitting laboratory reports on analyses of various<sup>31</sup> preservative wood types and combinations, including OTRTs. The EPA reviewed the laboratory reports and techniques, and determined that there were limited data points available (*i.e.*, one data point per preservative type) and that the analytical techniques for several contaminants (chlorine, nitrogen, sulfur, and fluorine) were not appropriate to provide information on the entire preserved wood sample as combusted, reflecting only a leachable component. Furthermore, EPA questioned the representativeness of the samples being analyzed and the repeatability of the analyses.

In August 2015, TWC performed additional sampling and analyses to address these deficiencies in the data. In response to EPA's concerns, TWC developed a sampling program in which 15 OTRT railroad ties of each preservative type were collected from various geographical areas. These 15 ties were then separated into three 5-tie groups, then processed into a boiler-fuel consistency using commercial processing techniques. A sample of each 5-tie group was then shipped to an independent laboratory for analysis, thereby producing 3 data points for each

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<sup>31</sup> Untreated, copper naphthenate, copper naphthenate and borate, creosote, creosote and borate, combination of C/CB/CuN/CuNB equal mixture C/CB/CuN/CuNB 56/41/1/2 percent mixture FIX

preservative type. TWC also prepared two blends: one with equal portions of creosote, creosote-borate, copper naphthenate, and copper naphthenate-borate to estimate projected future ratios; and the second a weighted blend of these tie types in proportion to current usage ratios of each preservative chemistry. These blends samples were analyzed in triplicate, for a total of 15 samples being analyzed (*i.e.*, three from each tie sample group). Two laboratories were used by TWC to perform the analysis: one laboratory analyzed metals, mercury, semi-volatiles, and heat of combustion; and the other laboratory analyzed volatiles, chlorine, fluorine, and nitrogen. All methods used were EPA or ASTM methods, and were appropriate for the materials being tested. No specific sampling methodology was employed in taking the samples from the 5-ties group.

The EPA reviewed the 2015 test data, which was provided by TWC on September 11, 2015, and provided TWC with additional follow-up questions and clarifications, including the specific sources of the railroad ties. TWC's response noted the sources of railroad ties for each chemistry and indicated that the railroad ties generally originated in the southeast, but there are also ties from Pennsylvania, South Dakota, and Kentucky represented within the TWC data set. Chlorine is not part of any of the preservative chemistries, and was not detected in any of the samples analyzed.

The EPA also noted some exceptions and flags within the analytical report, such as sample coolers upon receipt at the lab were outside the required temperature criterion; surrogate recoveries for semi-volatile samples (which represent extraction efficiency within a sample matrix) were sometimes lower or higher than those for samples containing creosote-treated wood; and dilution factors (dilution is used when the sample is higher in concentration than can be analyzed) for creosote-treated wood samples were high (up to 800). The laboratory noted these issues in the report narrative, but concluded that there were no corrective actions necessary.

EPA requested further information on these issues noted in the report narrative, as well as supporting quality assurance documentation from the laboratories.

With respect to surrogate recoveries and dilutions, the lab indicated that the high dilutions were required for the creosote-containing matrix to avoid saturation of the detector instrument.<sup>32</sup> Also, the shipping cooler temperature criterion is 4 degrees Celsius and the lab noted the discrepancy in the report as part of laboratory standard operating procedure (see also section III. G. Responses to Comments of this preamble). However, the ties were used and stored after being taken out of service in ambient atmosphere and were not biologically active, therefore, shipping cooler temperatures are not expected to affect contaminant levels in the ties.

#### *E. Copper and Borates Literature Review and other EPA Program Summary*

Neither copper nor borate are currently listed as HAPs under the Clean Air Act, and thus are not defined as contaminants under NHSM regulations section 241.2. or used for contaminant comparison in meeting legitimacy criteria (see 78 FR 9139-9143, February 7, 2013).<sup>33,34</sup> To determine whether those compounds pose human health or ecological risk concerns, outside the requirements of the NHSM legitimacy criteria, and how those concerns might be addressed

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<sup>32</sup> Samples with concentrations exceeding the calibration range must be diluted to fall within the calibration range. The more a sample is diluted, the higher the reporting limit. Sample dilution is required when the concentration of a compound exceeds the amount that produces a full-scale response. At that point the detector becomes saturated and fails to respond to additional target compound(s). Diluting samples to accommodate the high-concentrations can reduce the concentration of the target analytes to levels where they can no longer be detected.

<sup>33</sup> CAA Section 112 requires EPA to promulgate regulations to control emissions of 187 HAPs from sources in source categories listed by EPA under section 112(c), while CAA section 129 CISWI standards include numeric emission limitations for the nine pollutants, plus opacity (as appropriate), that are specified in CAA section 129(a)(4). For the purpose of NHSM standards, the definition of contaminants is limited to HAPs under CAA 112 and CAA 129.

<sup>34</sup> We also note that under the CAA standards for smaller area sources, emission limits are not required for copper, borate (or for HAPs). Standards for area sources focus on tune-ups of the boiler unit (see 40 CFR 40 CFR part 63, Subpart JJJJJ).

under other Agency programs, we conducted a literature review of copper and borate during development of the proposed rule. We also requested comments or any additional information on this topic during proposal. One comment was received on copper emissions which is discussed in section E of this preamble.

Under the Clean Water Act, EPA's Office of Water developed the Lead and Copper Rule which became effective in 1991 (56 FR 26460, June 7, 1991). This rule set a limit of 1.3 ppm copper concentration in 10% of customer taps sampled as an action level for public water systems. Exceedances of this limit require additional treatment steps in order to reduce drinking water corrosivity and prevent leaching of these metals (including copper) from plumbing and distribution systems. EPA's Office of Water also issued a fact sheet for copper under the Clean Water Act section 304(a) titled the Aquatic Life Ambient Freshwater Quality Criteria.<sup>35</sup> This fact sheet explains that copper is an essential nutrient at low concentrations, but is toxic to aquatic organisms at higher concentrations and listed the following industries that contribute to manmade discharges of copper to surface waters: mining, leather and leather products, fabricated metal products, and electric equipment. There are no National Recommended Aquatic Life Criteria for boron or borates.

EPA also investigated whether there were any concerns that copper and borate can react to form polychlorinated dibenzodioxin and dibenzofurans (PCDD/PCDF) during the combustion process. Specific studies evaluating copper involvement in dioxins and furans formation in

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<sup>35</sup> Aquatic life criteria for toxic chemicals are the highest concentration of specific pollutants or parameters in water that are not expected to pose a significant risk to the majority of species in a given environment or a narrative description of the desired conditions of a water body being "free from" certain negative conditions. See <https://www.epa.gov/wqc/aquatic-life-criteria-copper>

municipal or medical waste incinerator flue gas have been conducted.<sup>36</sup> While the exact mechanism and effects of other combustion parameters on PCDD and PCDF formation are still unknown, increased copper chloride (CuCl) and/or cupric chloride (CuCl<sub>2</sub>) on fly ash particles has been shown to increase concentrations of PCDD and PCDF in fly ash. Various researchers conclude that CuCl and/or CuCl<sub>2</sub> are serving either roles as catalysts in dioxin formation or as chlorine sources for subsequent PCDD/PCDF formation reactions (*i.e.*, the CuCl and/or CuCl<sub>2</sub> serve as dechlorination/chlorination catalysts). Overall, results from many studies reviewed indicate that most of the copper ends up in the bottom ash, so fly ash copper content may be minimal. Further, copper entrained on fly ash would be co-controlled or reduced with the use of good particulate matter controls on the combustion device. A high performance fabric filter may be the best control device, although some portion of fine particulate matter may pass through. Cyclone separators and electro-static precipitators have not been shown to be effective in controlling these emissions, and these types of controls may be more prevalent amongst smaller area source boilers.

Generally, borates have a low toxicity and should not be a concern from a health risk perspective.<sup>37</sup> As indicated previously, neither boron nor borates are listed as HAPs under CAA section 112, nor are they considered to be criteria air pollutants subject to any emissions limitations. However, elemental boron has been identified by EPA in the coal combustion

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<sup>36</sup> See memorandum “Literature Review of Copper-related Combustion Emissions Studies” and bibliography available in the docket to this rulemaking for specific studies and further information on the findings from studies of copper compounds in waste incinerators discussed in this section of the preamble.

<sup>37</sup> <https://www.atsdr.cdc.gov/toxprofiles/tp26-c2.pdf>

residuals (CCR) risk analysis<sup>38</sup> to present some potential risks for ecological receptors. As a result of this risk, and boron's ability to move through the subsurface,<sup>39</sup> boron has been included as a constituent in CCR monitoring provisions for coal ash impoundments.

Copper has some acute human health effects, but these exposures appear to be the result of direct drinking water or cooking-related intake. We anticipate the only possible routes that copper releases to the environment could result from burning copper naphthenate treated ties would be stormwater runoff from the ties during storage and deposition from boiler emissions. As mentioned earlier, the majority of copper in combusted material appears to remain in the bottom ash, so human health effects from inhalation of fly ash and environmental effects from deposition of copper-containing fly ash are likely very low. Further, the amount of copper remaining in the railroad tie after its useful life may be greatly reduced from the original content due to weathering, and facilities manage the processed shredded railroad tie material in covered areas to prevent significant moisture swings. Therefore, we do not expect impacts from copper in stormwater runoff from the storage of the copper naphthenate treated ties.

#### *F. Summary of Comments Requested*

The Agency solicited comments in the proposed rule on non-waste fuel categorical determinations as described previously. The Agency also specifically requested comments on the following:

- Whether railroad ties with *de minimis* levels of creosote should be allowed to be combusted in biomass only units;

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<sup>38</sup> Human and Ecological Risk Assessment of Coal Combustion Residuals, EPA, December 2014.

<sup>39</sup> See 80 FR 21302, April 17, 2015.

- Should a particular *de minimis* level should be designated and on what should this level be based;
- Whether these OTRTs are combusted in units designed to burn coal in lieu of, or in addition to biomass and fuel oil, and whether the contaminant comparisons to meet legitimacy criteria should include comparisons to coal;
- In light of the data and sampling history described above, whether the quality of data is adequate to support the proposed determination;
- Additional data that should be considered in making the comparability determinations for OTRT.
- Additional information on the copper borate literature review.

#### *G. Responses to Comments*

Summaries of comments received in response to solicitations listed above are presented below, along with EPA's responses to the comments. All additional comments received are addressed in EPA's Response to Comments document, located in the docket EPA-HQ-OLEM-2016-0248.

##### *1. De minimis levels of creosote*

For purposes of contaminant comparisons under NHSM, contaminants in railroad ties treated with creosote-borate and mixtures of creosote, copper naphthenate and copper naphthenate-borate treated railroad ties are not comparable to those contaminants found in biomass. Contaminants in such railroad ties would, however, be comparable to contaminants in fuel oil. Accordingly, such ties are categorical non-wastes fuels only when they are processed and then combusted in: (i) units designed to burn both biomass and fuel oil and (ii) units at major

source pulp and paper mills or power producers that had been designed to burn biomass and fuel oil, but are modified in order to use natural gas instead of fuel oil. Mixtures of treated railroad ties containing creosote cannot be combusted in biomass only units. The Agency requested comment as to whether OTRTs used as fuel containing de minimis levels of creosote, should be allowed to be combusted in biomass only units, and if so, what should the level be based on.

*Comments:* One commenter supported a de minimis exception, but did not propose any specific levels that the exception would be based on. The commenter stated that there was no practical method for establishing with certainty the minimal amount of creosote that will be present after processing and cited previous determinations discussed above. Another commenter opposed a de minimis exception stating that the Agency has proposed no rationale for such an action and it is unclear what statute or requirements that the Agency was requesting an exception from. The commenter also cited court decisions that emphasized that a unit burning any solid waste was a solid waste incineration unit (see *NRDC v EPA*, 489 F. 3d 1250, 1257-60 (D.C. Cir. 2007)).

*Response:* De minimis contaminant levels have been addressed in previous NHSM rules. The 2011 final rule stated that C&D wood that has been processed to remove contaminants prior to burning (e.g. lead-painted wood, and treated wood containing contaminants such as arsenic and chromium, metals and other non-wood materials), likely meets the processing standard and legitimacy criteria, and can be combusted as a non-waste fuel. The 2011 rule further stated that such C&D wood may contain de minimis amounts of contaminants and other materials after processing provided it meets the legitimacy criteria for contaminant level comparison. The February 2016 final rule specifically codified a de minimis approach for removal of painted wood from C&D wood stating that all painted wood must be excluded to the extent that only de

de minimis quantities inherent to the processing limitations may remain from the final product fuel (81 FR 6743, February 8, 2016).

De minimis levels for OTRTs when combusted with creosote treated railroad ties (CTRTs) were also addressed in the February 2016 final NHSM rule (81 FR 6738, February 8, 2016). As discussed in the preamble, TWC had requested that the Agency move forward on a subset of materials (i.e., OTRTs) that were identified in their original April 2013 petition. As these treatments were just coming into use, concern was expressed that the presence of small amounts of OTRTs, which were not categorically listed non-waste fuels, that may have been processed with CTRTs would render all of that material solid wastes since OTRTs are not included in the February 2016 categorical determination. The Agency concluded that, consistent with the determination in the March 2011 rule (76 FR 15486), small (de minimis) amounts of OTRTs would not result in determinations that the CTRTs being combusted are solid wastes.

The processing of OTRTs is similar to CTRTs (e.g. removal of contaminant metals using magnets, improvement of fuel characteristics through grindings or shredding) and is conducted by the approximately 15 treated wood reclamation companies in North America. These systems that may process mixtures of both CTRT and OTRT may result in the presence of de minimis levels of creosote in processed railroad ties treated with copper naphthenate and copper-naphthenate borate.

Regarding a definition for de minimis amounts of contaminants remaining in OTRT, the agency stated in the February 2013 NHSM rule that it was not appropriate to identify specific

concentration levels. Rather, the agency interprets *de minimis* as that term is commonly understood; (i.e., insignificant or negligible amounts of contamination such as small wood sliver containing lead paint<sup>40</sup>).

Based on the factors discussed above, the Agency has concluded, that OTRT containing *de minimis* levels (i.e., insignificant or negligible amounts) of creosote railroad ties, in mixture combinations with the other ORTS, can be combusted in biomass only units provided it meets the legitimacy criteria for contaminant levels (i.e., concentration levels of contaminants in the processed OTRT are comparable to or less than the levels in biomass).

## *2. Inclusion of coal*

*Comment:* Regarding whether the OTRTs considered in this rulemaking are combusted in units designed to burn coal (in lieu of or in addition to biomass and fuel oil), one commenter indicated that, although they were unaware of any cement kilns currently combusting OTRTs, cement kilns have burned OTRTs, and cement kilns can burn a range of materials, including biomass and coal. Another commenter requested that EPA include comparisons to the traditional fuel in its analysis. The commenter reported that contaminant comparisons to coal would show that the categorical non-waste fuel definition of OTRTs should be expanded to include OTRTs burned in units designed to burn coal or units designed to burn coal and fuel oil.

Specifically, the commenter noted the following:

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<sup>40</sup> See 78 FR 9139, February 7, 2013

- For the copper naphthenate treated ties, the maximum contaminant levels in coal are higher for all contaminants except naphthalene and 16-PAHs. However, the semi-volatile organic compound (SVOC) grouping level (which includes naphthalene and 16-PAHs) is higher for coal than copper naphthenate treated ties.
- For the copper naphthenate-borate treated ties, the contaminant levels in coal are higher for all contaminants except naphthalene. However, the SVOC grouping level (which includes naphthalene) is higher for coal than copper naphthenate-borate treated ties.
- For the creosote-borate treated ties, the contaminant levels in coal are higher for all contaminants except naphthalene, biphenyl, 16-PAHs, and the SVOC grouping overall. However, the SVOC grouping contaminant level is higher for fuel oil than creosote-borate treated ties.

The commenter requested that EPA expand the proposed non-waste fuel definition, based on these results, to include copper naphthenate and copper naphthenate-borate treated ties combusted in units designed to burn coal during normal operations. The commenter further requested that EPA include creosote-borate treated ties combusted in units designed to burn coal and fuel oil during normal operations.

*Response:* EPA has added coal to the contaminant comparisons of OTRTs to traditional fuels as well as adding specific regulatory language. Specifically, contaminants in OTRTs are presented in comparison to those in coal and other traditional fuels in the tables in section III.D.3.iii of this preamble, and wording has been added to the regulatory language in § 241.4(a)(8)-(10).

Thus, EPA is listing the following OTRTs as categorical non-waste fuels:

- Copper naphthenate treated railroad ties combusted in units designed to burn biomass only, biomass and fuel oil, or biomass and coal.
- Copper naphthenate-borate treated railroad ties combusted in units designed to burn biomass only, biomass and fuel oil or biomass and coal.
- Creosote-borate treated railroad ties (and mixtures of creosote, borate and copper naphthenate treated railroad ties) combusted only in units designed to burn both biomass and fuel oil, or units that have switched to natural gas from fuel oil; and where such units may also be designed to burn coal.

### *3. Sampling and data quality concerns.*

*Comment:* Regarding the data used to support these non-waste determinations, one commenter stated that the data were insufficient. The commenter argued that only three data points were used and that statistical techniques to address variability were not applied.

*Response:* EPA disagrees with the commenter that the data were insufficient. A total of 18 grab samples were analyzed, and sample ties were comingled with ties originating from numerous manufacturing locations in multiple states in order to represent actual processing. All data and sampling procedures exceptions were addressed by the company and were within normal operating and analytical parameters (i.e., no corrective actions were deemed necessary to validate the data). Thus, EPA agrees that the sampling results submitted were appropriate for use in comparing contaminant levels with those in comparable traditional fuels.

To address the commenter's concerns regarding variability, EPA has reviewed the TWC 2015 data presented in the petition and calculated the 90, 95, and 99 percent upper prediction limits (UPLs) for contaminants listed in the comparison charts to see how they compare with the TWC's data. EPA calculated UPLs for metals, sulfur, naphthalene, and 16-

PAH.<sup>41</sup> The UPL calculation methodology and results are presented in the memo “Contaminant Data UPL Calculations for Other Treated Railroad Ties (OTRTs)” found in the docket for this rulemaking. For copper naphthenate and copper naphthenate-borate treated ties, contaminant levels at the 99 percent UPL fell within the corresponding contaminant ranges for biomass and fuel oil. For creosote-borate treated ties, SVOCs (naphthalene and 16-PAH) are the only contaminants at the 99 percent UPL that does not fall within the range of SVOC concentrations found in biomass or fuel oil. At the 95 percent UPL, all three OTRTs are within the biomass and fuel oil contaminant ranges. EPA therefore believes that variability in the data has been sufficiently accounted for in the contaminant comparisons.

*Comment:* One commenter stated that more sensitive testing should have been done to determine if pentachlorophenol was present in the cases where it was tested for but results were below method detection limit (MDL). The commenter noted that if high enough, pentachlorophenol levels could render discarded railroad ties hazardous waste, which would require a facility combusting the material to be regulated as a hazardous waste combustor.

*Response:* EPA has evaluated the comment against the data available, and does not agree that more sensitive testing for pentachlorophenol is necessary for the three OTRTs and mixtures analyzed and discussed in the proposal. As noted in the proposal, pentachlorophenol is a distinct preservative type used by the industry; it is not one of the preservatives being presented in the data of the proposal, nor is it expected to be present in any of the preservative types being considered under the OTRT rulemaking. Pentachlorophenol has a distinctly different chemical

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<sup>41</sup> Cl, F and N were not detected in any of the analyses, so with equal detection limits for each data point, no UPL value could be calculated for these three contaminants.

structure than any of the preservatives being currently considered under the OTRT rulemaking. First, none of the preservatives being considered contain chlorine as part of the chemical structure. Pentachlorophenol, as the name suggests, contains 5 chlorine atoms attached to a phenolic base. In the case of the OTRT samples, chlorine, in addition to pentachlorophenol, was found to be non-detect at a level of 100 ppm (dry basis), which is at the lower range of chlorine content values found in untreated wood.

Second, as also discussed in the proposed rulemaking preamble, the dilution amounts used for semivolatile (which behave similarly to pentachlorophenol) was necessarily larger for the creosote-containing preservative mixes, which influenced the detection levels for semivolatile analytes. The detection levels for pentachlorophenol follow this trend, where the copper naphthenate and copper naphthenate-borate pentachlorophenol method reporting limits are 30 and 28 ppm, respectively, and the mixtures with creosote being an order of magnitude higher. This increase in the method reporting limit for these creosote-containing samples is not an indication that pentachlorophenol is present in the creosote-containing samples, but more of procedural necessity due to the method and the equipment used for the analysis, as the laboratory pointed out in their results narrative.

#### *4. Additional Data for Copper and Borates Literature Review*

As discussed in the OTRT proposal, direct stormwater runoff from material storage and deposition from boiler emissions are expected to be the only paths for copper to be released to the environment from burning copper naphthenate treated ties. Additionally, there is evidence that copper in the presence of chlorine could lead to polychlorinated dioxin/furan (PCDD/PCDF) through a reaction pathway involving  $\text{CuCl}$  and  $\text{CuCl}_2$ . EPA stated in the proposal that copper

emissions from units burning these ties would be controlled in the units' air pollution control devices.

*Comment:* Area sources may not have any PM control requirements under the area source boilers rule. Emission limits for copper, borate, or HAPs are not required under CAA standards for smaller area sources (standards for area sources focus on tune-ups of the boiler unit).

*Response:* EPA stated in the proposal that copper emissions from units burning these ties would be controlled in the units' air pollution control devices. While such controls are required for major sources of HAPs, EPA agrees with the commenter that emission controls for area source are not required. However, as stated previously, copper is not a HAPs and is therefore not subject to regulation under CAA sections 112 (nor is it a pollutant listed under CAA section 129). NHSM rule limits the definition of "contaminant" to the HAPs covered under CAA 112 and 129. CAA 112 lists 187 HAPs from sources in source categories, and CAA section 129 CISWI standards include numeric emission limitations for the nine pollutants, plus opacity (as appropriate), that are specified in CAA section 129(a)(4).

#### **IV. Effect of This Final 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 (76 FR 15456), as amended on February 7, 2013 (78 FR 9138)

and February 8, 2016 (81 FR 6688). Refer to section VIII of the preamble to the March 21, 2011 NHSM final rule<sup>42</sup> for the discussion on the effect of the NHSM rule on other programs.

## **V. 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 rule<sup>43</sup> 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 final 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. 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 made in this document will be incorporated (or possibly adopted by authorized state air programs) consistent with the state’s laws and administrative procedures.

## **VI. Costs and Benefits**

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<sup>42</sup> 76 FR 15456, March 21, 2011 (page 15545)

<sup>43</sup> 76 FR 15456, March 21, 2011 (page 15546)

As discussed in previous sections, this final rulemaking establishes a categorical non-waste determination for OTRT. The determination allows OTRTs to be combusted as a product fuel in units subject to the CAA section 112 emission standards (provided the conditions of the categorical listing are met) without being subject to a detailed case-by-case analysis of the material by individual combustion facilities. The rule provides additional clarity and direction for generators, potential users and owners or operators of combustion facilities.

The proposed OTRT rule stated that the action was definitional in nature, and any costs or benefits accrued to the corresponding Clean Air Act rules. In accordance with the Office of Management and Budget (OMB) Circular A-4 requirement that EPA analyze the costs and benefits of regulations, EPA prepared an economic assessment (EA) document<sup>44</sup> for the proposal that examined the scope of indirect impacts for both costs and benefits.

Based on public comments, information from stakeholders and the Executive Order 13771 signed January 30, 2017, the Agency has expanded the EA for the final rule to take into account additional cost savings. In considering this information, EPA determined that the final OTRT rule EA should consider the potential aggregate cost savings to industry when these materials are regulated as non-waste fuels (because of this rulemaking), rather than as solid waste. In addition,

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<sup>44</sup> U.S. EPA, Office of Resource Conservation and Recovery, “Assessment of the Potential Costs, Benefits and Other Impacts for the Proposed Rule: Categorical Non-Waste Determination for Selected Non-Hazardous Secondary Materials (NHSMs) Creosote Borate Treated Railroad Ties, Copper Naphthenate Treated Railroad Ties and Copper Naphthenate-Borate Treated Railroad Ties” EPA Docket Number: EPA-HQ-OLEM-2016-0248.

the Agency is ensuring that its cost benefit analysis is consistent with the OMB guidance for E.O. 13771. To do that, we made necessary adjustments to the final OTRT rule EA.<sup>45</sup>

For purposes of the final rule EA, combustion facilities that wish to add OTRT to their fuel mix now or in the future are assumed to operate under CAA 112 standards. OTRTs currently represent a small fraction of treated railroad ties combusted for fuel, but that amount will increase over time. The EA concludes that absent the final categorical rule, OTRT would be considered a solid waste and combustion facilities that wish to add OTRT to their fuel mix would have to incur the costs associated with upgrading to section 129.

The EA concludes that the categorical rule, which designates OTRT as non-wastes under certain conditions, results in a cost savings from these avoided costs of section 129 upgrades for facilities adding OTRT to the fuel mix. The unit-level cost savings were estimated, on average, to be approximately \$266,000 per year. EPA estimates that industry-wide undiscounted costs savings from not having to operate under CAA Section 129 regulations when combusting these OTRTs for energy on the magnitude of between \$3.1 million and \$24 million annually over the next 20 years. In addition, the assessment indicated that the increased regulatory clarity associated with the action could stimulate increased product fuel use for one or more of these NHSMs, potentially resulting in upstream life cycle benefits associated with reduced extraction of selected virgin materials.

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<sup>45</sup> 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) Creosote Borate Treated Railroad Ties, Copper Naphthenate Treated Railroad Ties and Copper Naphthenate-Borate Treated Railroad Ties” EPA Docket Number: EPA-HQ-OLEM-2016-0248

Another, more likely scenario is also addressed in the EA, where, absent a categorical non-waste fuel determination for OTRTs, combustors decide not to combust OTRTs and do not perform any air pollution control upgrades to meet section 129 standards. In this scenario, OTRTs are instead disposed of in landfills and virgin biomass is purchased by the combustor to make up for the additional heat content that OTRTs would provide. EPA estimates that the undiscounted costs avoided by the final rule of landfilling the OTRT, is between \$190,000 and \$1.4 million annually over the next 20 years. Looking at these two scenarios and applying a 7% discount rate, EPA estimates that the present value range of cost savings for this rule over 20 years are approximately \$6.9 million on the low end (landfilling) and approximately \$110 million on the high end (avoided air pollution control upgrades).

## **VII. Statutory and Executive Order Reviews**

Additional information about these statutes and Executive Orders can be found at <https://www.epa.gov/laws-regulations/laws-and-executive-orders>.

### *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 policy issues. 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): Creosote-Borate Treated Railroad Ties, Copper Naphthenate Treated

Railroad Ties, and Copper Naphthenate-Borate Treated Railroad Ties,” is available in the docket. Interested persons were asked to submit comments on this document but none were received.

*B. Executive Order 13771: Reducing Regulations and Controlling Regulatory Costs*

This action is considered an Executive Order 13771 deregulatory action. Details on the estimated cost savings of this final rule can be found in EPA’s analysis of the potential costs and benefits associated with this action.

*C. Paperwork Reduction Act (PRA)*

This action does not impose any new information collection burden under the PRA as this action only adds three new categorical non-waste fuels to the NHSM regulations. OMB has previously approved the information collection activities contained in the existing regulations and has assigned OMB control number 2050-0205.

*D. Regulatory Flexibility Act (RFA)*

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 three NHSMs to the list of categorical non-waste fuels is expected to 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 action will relieve regulatory burden for all directly regulated small entities.

*E. Unfunded Mandates Reform Act (UMRA)*

This action contains no Federal mandates as described in UMRA, 2 U.S.C. 1531-1538, and does not significantly or uniquely affect small governments. UMRA generally excludes from the definition of “Federal intergovernmental mandate” duties that arise from participation in a voluntary Federal program. Affected entities are not required to manage the final additional NHSMs as non-waste fuels. As a result, this action may be considered voluntary under UMRA. Therefore, this action is not subject to the requirements of section 202 or 205 of the UMRA

This action is also not subject to the requirements of section 203 of UMRA because it contains no regulatory requirements that might significantly or uniquely affect small governments. In addition, this proposal will not impose direct compliance costs on small governments.

*F. 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.

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

This action does not have tribal implications as specified in Executive Order 13175. It will neither impose substantial direct compliance costs on tribal governments, nor preempt Tribal law. Potential aspects associated with the categorical non-waste fuel determinations under this final rule may invoke minor indirect tribal 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. Thus, Executive Order 13175 does not apply to this action.

*H. 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 the 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 following discussion, the Agency found that 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.

The final rule, in conjunction with the corresponding CAA rules, may indirectly stimulate the increased fuel use of one or more 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, which is assumed to be landscape use or being sent to landfills. Some crossties may also go to CISWI units. Any corresponding disproportionate impacts among children would depend upon whether children make up a disproportionate share of the population living near the affected units. Therefore, to assess the potential 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 construction and demolition (C&D) landfills for the Major and Area Source Boilers rules and the CISWI rule.<sup>46</sup> We assessed the share of the population under the age of 18 living

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<sup>46</sup> The extremely large number of area source boilers and a lack of site-specific coordinates prevented us from assessing the demographics of populations located near area sources. In addition, we did not assess child population percentages surrounding cement kilns that may use CTRTs/OTRTs for their thermal value.

within a three-mile (approximately five kilometers) radius of these facilities. Three miles has been used often in other demographic analyses focused on areas around industrial sources.<sup>47</sup>

For major source boilers, our findings indicate that the percentage of the population in these areas under age 18 years is generally the same as the national average.<sup>48</sup> 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 would remain subject to the protective 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 landfills that may experience diversions of one 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, transportation, discharges, or other negative activity potentially affecting low-income (children) populations living near these units are likely to be reduced.

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<sup>47</sup> The following publications which have provided demographic information using a 3-mile or 5- kilometer circle around a facility:

\* U.S. GAO (Government Accountability Office). *Demographics of People Living Near Waste Facilities*. Washington DC: Government Printing Office 1995.

\* Mohai P, Saha R. "Reassessing Racial and Socio-economic Disparities in Environmental Justice Research". *Demography*. 2006;43(2): 383–399.

\* Mennis, Jeremy "Using Geographic Information Systems to Create and Analyze Statistical Surfaces of Population and Risk for Environmental Justice Analysis" *Social Science Quarterly*, 2002, 83(1):281-297.

\* Bullard RD, Mohai P, Wright B, Saha R et al. *Toxic Wastes and Race at Twenty, 1987-2007*, March 2007. 5 CICWI Rule and Major Source Boilers Rule.

<sup>48</sup> 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.

Finally, transportation emissions associated with the diversion of some of this material away from landfills to boilers are likely to be generally unchanged.

*I. 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.

*J. National Technology Transfer and Advancement Act (NTTAA)*

This rulemaking does not involve technical standards.

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

The EPA believes that this action does not have disproportionately high and adverse human health or environmental effects on minority populations, low-income populations and/or indigenous peoples, as specified in Executive Order 12898 (59 FR 7629, February 16, 1994). This is because the overall level of emissions, or the emissions mix from boilers, are not expected to change significantly because the three NHSMs categorically listed as non-waste fuels are generally comparable to the types of fuels that these combustors would otherwise burn. Furthermore, these units remain subject to the protective standards established under CAA section 112.

Our environmental justice demographics assessment conducted for the prior rulemaking<sup>49</sup> remains relevant to this action. This assessment reviewed the distributions of minority and low-income groups living near potentially affected sources using U.S. Census blocks. A three-mile radius (approximately five kilometers) was examined in order to determine the demographic composition (*e.g.*, race, income, etc.) of these blocks for comparison to the corresponding national compositions. Findings from this analysis indicated that populations living within three miles of major source boilers represent areas with minority and low-income populations that are higher than the national averages. In these areas, the minority share<sup>50</sup> of the population was 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) was higher than the national average (13 percent).

In addition to the demographics assessment described previously, 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 may 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.

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<sup>49</sup> 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.

<sup>50</sup> This figure is for overall population minus white population and does not include the Census group defined as “White Hispanic.”

- **Alternative materials transport patterns:** Transportation emissions associated with NHSMs diverted from landfills to combustion units are likely to be similar.
- **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 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.

*L. 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, Non-hazardous secondary materials,  
Waste treatment and disposal.

Dated: January 26, 2018.

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E. Scott Pruitt,  
Administrator.

For the reasons stated in the preamble, EPA is amending title 40, chapter I, of the Code of Federal Regulations 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.

2. Section 241.2 is amended by adding in alphabetical order the definitions “Copper naphthenate treated railroad ties”, “Copper naphthenate-borate treated railroad ties”, and “Creosote-borate treated railroad ties” to read as follows:

**§ 241.2 Definitions.**

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*Copper naphthenate treated railroad ties* means railroad ties treated with copper naphthenate made from naphthenic acid and copper salt.

*Copper naphthenate-borate treated railroad ties* means railroad ties treated with copper naphthenate and borate, including borate made from disodium octaborate tetrahydrate.

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*Creosote-borate treated railroad ties* means railroad ties treated with a wood preservative containing creosols and phenols and made from coal tar oil and borate, including borate made from disodium octaborate tetrahydrate.

\* \* \* \* \*

3. Section 241.4 is amended by adding paragraphs (a)(8) through (10) to read as follows:

**§ 241.4 Non-Waste Determinations for Specific Non-Hazardous Secondary Materials When Used as a Fuel.**

(a) \* \* \*

(8) Creosote-borate treated railroad ties, and mixtures of creosote, borate and/or copper naphthenate 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, designed to burn biomass and fuel oil as part of normal operations and not solely as part of start-up or shut-down operations, but are modified (*e.g.*, oil delivery mechanisms are removed) in order to use natural gas instead of fuel oil, The creosote-borate and mixed creosote, borate and copper naphthenate treated railroad ties may continue to be combusted as product fuel under this subparagraph only if the following conditions are met, which are intended to ensure that such railroad ties are not being discarded:

(A) Creosote-borate and mixed creosote, borate and copper naphthenate treated railroad ties 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) Creosote-borate and mixed creosote, borate and copper naphthenate treated railroad ties can comprise no more than 40 percent of the fuel that is used on an annual heat input basis.

(iii) Units meeting requirements in paragraph (a)(8)(i) or (ii) of this section that are also designed to burn coal.

(9) Copper naphthenate treated railroad ties that are processed and then combusted in units designed to burn biomass, biomass and fuel oil, or biomass and coal. Processing must include at a minimum, metal removal, and shredding or grinding.

(10) Copper naphthenate-borate treated railroad ties that are processed and then combusted in units designed to burn biomass, biomass and fuel oil, or biomass and coal.

Processing must include at a minimum, metal removal, and shredding or grinding.

\* \* \* \* \*

[FR Doc. 2018-02337 Filed: 2/6/2018 8:45 am; Publication Date: 2/7/2018]