

PRE-PUBLICATION COPY NOTICE:

The EPA Administrator signed the following proposed rule on October 19, 2016:

ADDITIONS TO LIST OF SECTION 241.4 CATEGORICAL NON-WASTE FUELS: OTHER TREATED RAILROAD TIES

[RIN 2050-AG83; FRL-9953-38-OLEM]

This is a pre-publication version of the proposed rule that EPA is submitting for publication in the Federal Register. While the Agency has taken steps to ensure the accuracy of this Internet version of the proposed rule, it is not the official version of the proposed rule. Please refer to the official version of the proposed rule that will appear in a forthcoming Federal Register publication. Once the official version of the proposed rule publishes in the Federal Register, the pre-publication version of the proposed rule that appears on the website will be replaced with a link to the proposed rule that appears in the Federal Register publication.

The docket number for this rulemaking is **EPA-HQ-OLEM-2016-0248**.

For further information about the docket, please consult the ADDRESSES section in the front of the proposed rule.

ENVIRONMENTAL PROTECTION AGENCY**40 CFR Part 241****[EPA–HQ–OLEM-2016-0248; FRL-9953-38-OLEM]****RIN 2050-AG83****Additions to List of Section 241.4 Categorical Non-Waste Fuels: Other Treated Railroad Ties****AGENCY:** Environmental Protection Agency (EPA).**ACTION:** Proposed rule.

SUMMARY: The Environmental Protection Agency (EPA or the Agency) is proposing to issue amendments to the Non-Hazardous Secondary Materials rule, initially promulgated on March 21, 2011, and amended on February 7, 2013 and February 8, 2016, under the Resource Conservation and Recovery Act. The Non-Hazardous Secondary Materials rule generally established standards and procedures for identifying whether non-hazardous secondary materials are solid wastes when used as fuels or ingredients in combustion units. In the February 7, 2013 amendments, the EPA listed particular non-hazardous secondary materials as “categorical non-waste fuels” provided certain conditions are met. Persons burning these non-hazardous secondary materials do not need to evaluate them under the general self-implementing case-by-case standards and procedures that would otherwise apply to non-hazardous secondary materials used in combustion units. The February 8, 2016 amendments added three materials including creosote treated railroad ties to the list of categorical non-waste fuels. This action proposes to add other treated railroad ties to the list, which are processed creosote-borate, copper naphthenate and copper naphthenate-borate treated railroad ties, under certain conditions depending on the chemical treatment.

DATES: Comments must be received on or before [INSERT DATE 60 DAYS AFTER DATE OF PUBLICATION IN THE FEDERAL REGISTER].

ADDRESSES: Submit your comments, identified by Docket ID No. EPA-HQ-OLEM-2016-0248, at <http://www.regulations.gov>. Follow the online instructions for submitting comments. Once submitted, comments cannot be edited or removed from Regulations.gov. The EPA may publish any comment received to its public docket. Do not submit electronically any information you consider to be Confidential Business Information (CBI) or other information whose disclosure is restricted by statute. Multimedia submissions (audio, video, etc.) must be accompanied by a written comment. The written comment is considered the official comment and should include discussion of all points you wish to make. The EPA will generally not consider comments or comment contents located outside of the primary submission (i.e. on the web, cloud, or other file sharing system). For additional submission methods, the full EPA public comment policy, information about CBI or multimedia submissions, and general guidance on making effective comments, please visit <https://www.epa.gov/dockets/commenting-epa-dockets>.

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

SUPPLEMENTARY INFORMATION:

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I. General Information

A. List of abbreviations and acronyms used in this proposed rule

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	Cresosote-treated railroad ties
EPA	U.S. Environmental Protection Agency
FR	Federal Register
HAP	Hazardous air pollutant

MACT	Maximum achievable control technology
NAICS	North American Industrial Classification System
ND	Non-detect
NESHAP	National emission standards for hazardous air pollutants
NHSM	Non-hazardous secondary material
OMB	Office of Management and Budget
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 ₂	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 proposed rule?

The EPA is proposing that additional non-hazardous secondary materials (NHSMs) be categorically listed as non-waste fuels in 40 CFR 241.4(a) under the authority of sections 2002(a)(1) and 1004(27) of the Resource Conservation and Recovery Act (RCRA), as amended,

42 U.S.C. 6912(a)(1) and 6903(27). Section 129(a)(1)(D) of the Clean Air Act (CAA) directs the EPA to establish standards for Commercial and Industrial Solid Waste Incinerators (CISWI), which burn solid waste. Section 129(g)(6) of the CAA provides that the term “solid waste” is to be established by the EPA under RCRA (42 U.S.C. 7429(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 proposed rule apply to me?

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

Generators and Potential Users^a of the New Materials Proposed to be Added to the List of Categorical Non-Waste Fuels	
<i>Primary Industry Category or Sub Category</i>	<i>NAICS^b</i>
Utilities	221
Construction of Buildings	236
Site Preparation Contractors	238910
Manufacturing	31, 32, 33
Wood Product Manufacturing	321
Sawmills	321113
Wood Preservation (includes crosstie creosote treating)	321114
Pulp, Paper, and Paper Products	322
Cement manufacturing	32731
Railroads (includes line haul and short line)	482
Scenic and Sightseeing Transportation, Land (Includes: railroad, scenic and sightseeing)	487110
Port and Harbor Operations (Used railroad ties)	488310
Landscaping Services	561730
Solid Waste Collection	562111
Solid Waste Landfill	562212
Solid Waste Combustors and Incinerators	562213
Marinas	713930
^a Includes: Major Source Boilers, Area Source Boilers, and Solid Waste Incinerators	
^b NAICS - North American Industrial Classification System	

This table is not intended to be exhaustive, but rather provides a guide for readers regarding entities potentially impacted by this action. This table lists examples of the types of

entities of which 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 proposed 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. 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 241.¹ This action proposes to amend the Part 241 regulations by adding three NHSMs to the list of categorical non-waste fuels codified in §241.4(a). These new proposed categorical listings are for:

- Creosote-borate railroad ties (and mixtures of creosote, copper naphthenate and copper naphthenate-borate railroad ties) that are processed and then combusted in units designed to burn both biomass and fuel oil. Such combustion must be part of normal operations and not solely as part of start-up or shut-down operations. Also included are units at major source pulp and paper mills or power producers² subject to 40 CFR part 63, subpart DDDDD that combust these types of treated railroad ties and had been designed to burn biomass and fuel oil, but are modified (*e.g.*, oil delivery mechanisms were removed) in order to use natural gas instead of fuel oil. Again, such combustion must be part of normal operations and not solely as part of start-up or shut-down operations. These treated railroad ties may continue to be combusted as product fuel in units that have been modified to use natural gas only if the following conditions are met, which are intended to ensure that these materials are not being discarded:
 - 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

¹ See 40 CFR 241.2 for the definition of non-hazardous secondary material.

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

- Can comprise no more than 40 percent of the fuel that is used on an annual heat input basis.
- Copper naphthenate railroad ties combusted in units designed to burn biomass, or biomass and fuel oil.
- Copper naphthenate-borate railroad ties combusted in units designed to burn biomass, or biomass and fuel oil.

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 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 in combustion units must meet the legitimacy criteria specified in 40 CFR 241.3(d)(1). Application of the legitimacy criteria helps ensure that the fuel product is being legitimately and beneficially used and not simply being discarded through combustion (*i.e.*, via sham recycling). To meet the legitimacy criteria, the NHSM must be managed as a valuable commodity, have a meaningful heating value and be used as a fuel in a combustion unit that recovers energy, and contain contaminants or groups of contaminants at concentrations comparable to (or lower than) those in traditional fuels which the combustion unit is designed to burn.

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

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

In October 2011, the Agency announced it would be initiating a new rulemaking proceeding to revise certain aspects of the NHSM rule.³ On February 7, 2013, the EPA published a final rule, which addressed specific targeted amendments and clarifications to the 40 CFR part 241 regulations (78 FR 9112). These revisions and clarifications were limited to certain issues on which the Agency had received new information, as well as targeted revisions that the Agency believed were appropriate in order to allow implementation of the rule as the EPA originally intended. The amendments modified 40 CFR 241.2 and 241.3, added 40 CFR 241.4, and included the following:⁴

- *Revised Definitions:* The EPA revised three definitions discussed in the proposed rule: (1) “clean cellulosic biomass,” (2) “contaminants,” and (3) “established tire collection programs.” In addition, based on comments received on the proposed rule, the Agency revised the definition of “resinated wood.”
- *Contaminant Legitimacy Criterion for NHSMs Used as Fuels:* The EPA issued revised contaminant legitimacy criterion for NHSMs used as fuels to provide additional details on how contaminant-specific comparisons between NHSMs and traditional fuels may be made.
- *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

³ 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).

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

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

- Scrap tires that are not discarded and are managed under the oversight of established tire collection programs, including tires removed from vehicles and off-specification tires;
 - Resinated wood;
 - Coal refuse that has been recovered from legacy piles and processed in the same manner as currently-generated coal that would have been refuse if mined in the past;
 - Dewatered pulp and paper sludges that are not discarded and are generated and burned on-site by pulp and paper mills that burn a significant portion of such materials where such dewatered residuals are managed in a manner that preserves the meaningful heating value of the materials.
- *Rulemaking Petition Process for Other Categorical Non-Waste Determinations:* EPA made final a process in 40 CFR 241.4(b) that provides persons an opportunity to submit a

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

rulemaking petition to the Administrator, seeking a determination for additional NHSMs to be categorically listed in 40 CFR 241.4(a) as non-waste fuels, if they can demonstrate that the NHSM meets the legitimacy criteria or, after balancing the legitimacy criteria with other relevant factors, EPA determines that the NHSM is not a solid waste when used as a fuel.

The February 8, 2016 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 Proposed Rule

The Agency received a petition from the Treated Wood Council (TWC) in April 2013 requesting that nonhazardous treated wood (including borate and copper naphthenate) be categorically listed as non-waste fuels in 40 CFR 241.4(a). Under the April 2013 petition, nonhazardous treated wood would include: waterborne borate based preservatives; waterborne

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

In the course of EPA's review of the 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,⁶ 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 that the ability to reuse the ties is an important consideration in rail tie purchasing decisions. Information from industry also 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.⁷ The

⁶ 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.

⁷ Railway Tie Association "Frequently Asked Questions" available on <http://www.rta.org/faqs>. Assessed on August 26, 2016.

letter stated that TWC will discuss the remaining treated wood materials with EPA as a separate matter.

The Agency reviewed TWC's information on the three 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, 2015.⁸ Based on that information, we 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. The result is this proposal.

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). While the categorical non-waste determinations in this action are not based on rulemaking petitions, the criteria the EPA used to assess these NHSMs as categorical non-wastes match the criteria to be used by the Administrator to determine whether to grant or deny the categorical non-waste petitions.^{9,10} These determinations follow the criteria set out in 40 CFR 241.4(b)(5) to assess additional categorical non-waste petitions and follow the statutory standards as interpreted by the EPA in the NHSM rule for deciding whether secondary materials are wastes. Those criteria include: (1) Whether each NHSM has not been discarded in the first

⁸ These data submissions and the letter from TWC on August 21, 2015 are included in the docket for this proposed rule.

⁹ For a full discussion regarding the petition process for receiving a categorical non-waste determination, *see* 78 FR 9112, February 7, 2013 (page 9158-9159).

¹⁰ Supplementary information received from by M.A. Energy Resources (February 2013) in support of the crosstie derived fuel was submitted as a categorical petition in accordance 40 CFR 241.4(b).

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.

Based on the information in the rulemaking record, the Agency is proposing to amend 40 CFR 241.4(a) by listing in addition to CTRT, three other types of treated railroad ties as categorical non-wastes. Specific determinations regarding these other treated railroad ties (OTRT), *i.e.*, creosote-borate, copper naphthenate, copper naphthenate-borate and mixtures of creosote, borate and copper naphthenate treated railroad ties, as categorical non-wastes, and how the information was assessed by EPA according to the criteria in 40 CFR 241.4(b)(5), are discussed in detail in section 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 the categorical listings discussed in this rule. However, the principles on which the categorical listings are determined are based on the NHSM rules promulgated over the past few years, as discussed previously. While EPA is not formally including in the record for this rule materials supporting the earlier NHSM rulemaking proceedings, the Agency is nevertheless issuing this rule consistent with the NHSM rule and its supporting documents. This rulemaking proceeding in no way reopens any issues resolved in previous NHSM rulemaking proceedings. It simply responds to a petition in accordance with the standards outlined in the existing NHSM rule.

III. Proposed Categorical Non-Waste Listing Determination for OTRTs

The following sections describe the OTRTs that EPA is proposing to list in section 241.4(a) as categorical non-wastes when burned as a fuel in combustion units.

A. Detailed Description of OTRTs

1. Processing

Industry representatives stated that the removal of OTRTs from service and processing of those ties into a product fuel is analogous to that of CTRTs described in the February 2016 rule.¹¹ OTRTs are typically comprised of North American hardwoods that have been treated with a wood preservative. Most of the energy recovery with OTRTs is conducted through three parties: the generator of the crossties (railroad or utility); the reclamation company that sorts the crossties, and in some cases processes the material received from the generator; 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 combusting facilities. Information submitted to the Agency indicates there are approximately 15 OTRT 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 source¹² indicated that when the crossties

¹¹ 81 FR 6688

¹² M.A. Energy Resources LLC, Petition submitted to Administrator, EPA, February 2013

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, metal is further removed by magnets and may occur in multiple stages. After removal of contaminant metals, 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 reduction process exposes a greater surface area of the particle to the heated gases, thus releasing any moisture more rapidly, and thereby enhancing its heating value.¹³ This step may occur in several phases, including primary and secondary grinding, or in a single phase.

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

¹³ Forest and Agriculture Organization of the United Nations. The Potential Use of Wood Residues for Energy Generation, 2016.

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 OTRTs are then stockpiled prior to combustion, 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 Btu fuel to supplement low (and sometimes wet) Btu biomass to ensure proper combustion, often in lieu of coal or other fossil fuels.¹⁴ 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.

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

¹⁴ American Forest & Paper Association, American Wood Council – Letter to EPA Administrator, December 6, 2012.

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 proposal 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) are the most commonly used. 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 (as elemental copper) 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 kilograms 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.

When dissolved in No. 2 fuel oil, 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) 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 internal treatments using rods or pastes. At higher rates of retention, borates also are used as fire-retardant treatments for wood.

Performance characteristics include activity 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 AWPA 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.

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 species that are relatively difficult to treat, such as spruce. Several pressure treatment facilities in the United States use borate solutions. For refractory 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 AWPA. AWPA 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 HAP, as well as other HAP suggested that creosote-treated wood, including CTRTs, contained contaminants at

levels that are not comparable to or lower than those found in wood or coal, the fuel that creosote-treated wood would replace. In making the assessment, the Agency did not consider fuel oil¹⁵ as a traditional fuel that CTRTs would replace, and concluded at the time that combustion of creosote-treated wood may result in destruction of contaminants contained in those materials. Such destruction is an indication of incineration, a waste activity. Accordingly, creosote-treated wood, including CTRTs when burned, seemed more like a waste than a commodity, and did not meet the contaminant legitimacy criterion. This material, therefore, was considered a solid waste when burned, and units' combusting it would be subject to the CAA section 129 emission standards (40 CFR part 60, subparts CCCC and DDDD).

Regarding borate treated wood, after reviewing data from one commenter which shows 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 rule that such treated-wood meets the legitimacy criterion on the level of contaminants and comparability to traditional fuels. Therefore, under that rule, borate-treated wood could be classified as a non-waste fuel, provided they met the other two legitimacy criteria and provided that 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 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, but data

¹⁵ For the purposes of this proposed 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.

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.

The rule 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).

With regard to wood treated with copper naphthenate, no additional contaminant data was provided for the March 2011 rule that would reverse the position in the January 2010 proposed rule, which considered wood treated with copper naphthenate a solid waste because of concerns of elevated levels of contaminants (76 FR 15484). The rule acknowledged, as in the proposed rule, that the Agency did not have sufficient information on the contaminant levels in wood treated with copper naphthenate. Thus, 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, 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, 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 listing for CTRTs combusted in any

unit.¹⁶ The letter included information regarding the amounts of railroad ties combusted each year and the value of the ties as fuel. The letter also discussed how CTRTs satisfy the legitimacy criteria, including its high Btu value.

While this information was useful, it was not sufficient for the EPA to propose that CTRTs be listed categorically as a non-waste fuel at that time. Therefore, to further inform the Agency as to whether to list CTRTs categorically as a non-waste fuel, 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 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.
- Laboratory analyses for contaminants known or reasonably suspected to be present in creosote-treated railroad ties, and contaminants known to be significant components of

¹⁶ American Forest & Paper Association, American Wood Council – Letter to EPA Administrator, December 6, 2012.

creosote, specifically polycyclic aromatic hydrocarbons (*i.e.*, PAH-16), dibenzofuran, cresols, hexachlorobenzene, 2,4-dinitrotoluene, biphenyl, quinoline, and dioxins.¹⁷

See 81 FR 6723 for detailed responses to those questions.

3. February 2016 NHSM Final Rule

As discussed in section II.B of this preamble, EPA stated in the February 2016 final rule that it had reviewed the information submitted from stakeholders regarding CTRTs and determined that the information received supported a categorical determination for those materials under certain conditions (see 40 CFR 241.4(a)(7)). That rule also indicated that, based on an August 21, 2015 letter to Barnes Johnson, TWC requested that the Agency move forward on a subset of materials that were identified in a previous April 2013 petition. EPA stated in the February 2016 rule, the Agency had reviewed the TWC information on the three treated railroad ties, creosote borate, copper naphthenate, submitted on September 11, 2015 and had requested additional contaminant data. Based on information provided to the Agency at the time, we believed these three 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) regarding those listings in the near future.

C. Scope of the Proposed Categorical Non-Waste Listing for OTRTs

As discussed previously in section II.B of this preamble, TWC submitted letters and supporting documents to EPA seeking a categorical listing for OTRTs. The contaminants found

¹⁷ The Agency requested these analyses based on the limited information previously available concerning the chemical makeup of CTRTs. That limited information included one well-studied sample from 1990 (showing the presence of both PAHs and dibenzofuran), past TCLP results (which showing the presence of cresols, hexachlorobenzene and 2,4-dinitrotoluene), Material Safety Data Sheets for coal tar creosote (which showing the potential presence of biphenyl and quinoline), and the absence of dioxin analyses prior to combustion despite extensive dioxin analyses of post-combustion emissions.

in OTRTs are not materially different from the traditional fuels (fuel oil and/or biomass) that these facilities are designed to burn as fuel. Therefore, the Agency is proposing to list, as categorical non-wastes, processed OTRTs when used as fuels. The rationale for this proposal is discussed in detail in the following sections.

D. Rationale for Proposed Listing

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 the NHSM as to whether it has been sufficiently processed into a material that is legitimately used as a product fuel.

Data 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 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 is reiterating its statement from the February 8, 2016 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) thus

indicating that the material has been discarded and is a solid waste (see also the general discussion of discard at 76 FR 15463 in the March 2011 rule). Regarding any assertion that 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, 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.¹⁸ 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 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:

¹⁸ 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).

- Contaminants (*e.g.*, spikes, plates, transmission wire and insulator bulbs) are removed during initial inspection by the user organization.
- 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) depending on the particular needs of the end-use combustor. The grinding may occur in one or more phases.
- Once the contaminant metals are removed and the OTRTs are ground, there may be additional screening to bring the material to a specified size.

3. Legitimacy Criteria

EPA can list a discarded NHSM categorically as a 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.¹⁹

i. Managed as a Valuable Commodity.

¹⁹ 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)(2)).

Data submitted²⁰ indicates that OTRT processing and subsequent management is analogous to the processing of CTRTs outlined in the February 8, 2016 final categorical rule. 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.

Since the storage of the processed material clearly 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.

²⁰ See section III.D.4. for a description of EPA's review of all data submitted regarding meeting legitimacy criteria.

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.^{21,22} 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.²³ 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 two traditional fuels: biomass, including untreated clean wood, and fuel oil (petitioners did not provide data or request that contaminant comparisons be made to coal). The petitioner's data included samples taken from 15 different used 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

²¹ Letter from Jeff Miller to Barnes Johnson, September 11, 2015; *see* docket for this proposed rule

²² 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.

²³ *See* 76 FR 15541

group was then isolated, mixed together, processed into a fuel-type consistency, and shipped to the laboratory for analysis.

As noted previously, use of these types of ties are relatively new compared to creosote, so few have transitioned to fuel use at this time. To simulate that transition over time, three samples of unevenly-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 tie-derived boiler fuel 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 21 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 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. The results of the analysis of the 2015 and 2013 data are shown in the following tables.²⁴

²⁴ Note for contaminant analyses, when making contaminant comparisons for purposes of meeting the legitimacy criterion, it would be appropriate in this circumstance to find that grouping of contaminants would not result in discard. For example, under the grouping concept, individual SVOC levels may be elevated above that of the traditional fuel, but the contaminant legitimacy criterion will be met as long as total SVOCs is comparable to or less than that of the traditional fuel. Such an approach is standard practice employed by the Agency in developing regulations and is consistent with monitoring standards under CAA sections 112 and 129. *See* 78 FR 9146, February 7, 2013, for further findings that relate to the issue of grouping contaminants for purposes of determining discard.

Copper Naphthenate

Copper Naphthenate			
Contaminant	Copper Naphthenate Railroad Ties Contaminant Levels ^{a,f}	Biomass/ Untreated Wood ^b	Fuel Oil ^b
Metal Elements (ppm – dry basis)			
Antimony	<1.4	ND - 26	ND - 15.7
Arsenic	0.53 - 0.93	ND - 298	ND - 13
Beryllium	<0.60 - 0.05	ND - 10	ND - 19
Cadmium	<0.28 - 0.20	ND - 17	ND - 1.4
Chromium	0.22 - 0.50	ND - 340	ND - 37
Cobalt	<6.0 - 0.81	ND - 213	ND - 8.5
Lead	<0.36 - 3.5	ND - 340	ND - 56.8
Manganese	7.1 - 166	ND - 15,800	ND - 3,200
Mercury	<0.20	ND - 1.1	ND - 0.2
Nickel	0.79 - 1.1	ND - 540	ND - 270
Selenium	0.41 - 0.84	ND - 9.0	ND - 4
Non-metal Elements (ppm – dry basis)			
Chlorine	<100	ND - 5,400	ND - 1,260
Fluorine	<100	ND - 300	ND - 14
Nitrogen	<500	200 - 39,500	42 - 8,950
Sulfur	190 - 240	ND - 8,700	ND - 57,000
Semivolatile Hazardous Pollutants (ppm – dry basis)			
Acenaphthene	3.0 - 95	ND - 50	111
Acenaphthylene	<1.3	ND - 4	4.1
Anthracene	<1.3 - 6.3	0.4 - 87	96
Benzo[a]anthracene	<1.3	ND - 62	41 - 1,900
Benzo[a]pyrene	<1.3	ND - 28	0.60 - 960
Benzo[b]fluoranthene	<1.3	ND - 42	11 - 540
Benzo[ghi]perylene	<1.3	ND - 9	11.4
Benzo[k]fluoranthene	<1.3	ND - 16	0.6
Chrysene	<1.3	ND - 53	2.2 - 2,700
Dibenz[a,h]anthracene	<1.3	ND - 3	4.0
Fluoranthene	<1.3 - 6.5	0.6 - 160	31.6 - 240
Fluorene	4.5 - 53	ND - 40	3,600

Copper Naphthenate			
Contaminant	Copper Naphthenate Railroad Ties Contaminant Levels ^{a,f}	Biomass/ Untreated Wood ^b	Fuel Oil ^b
Indeno[1,2,3-cd]pyrene	<1.3	ND - 12	2.3
Naphthalene	8.2 - 80	ND - 38	34.3 - 4,000
Phenanthrene	8.2 - 77	0.9 - 190	0 - 116,000
Pyrene	<1.3 - 15	0.2 - 160	23 - 178
16-PAH	49 - 298	5 - 921	3,900 - 54,700
Pentachlorophenol	<30 ^g	ND - 1	--
Biphenyl	-- ^e	--	1,000-1,200
Total SVOC ^c	77 - 328	5 - 922	4,900 - 54,700
Volatile Organic Compound (VOC) Hazardous Air Pollutants (ppm – dry basis)			
Benzene	<0.69 --	--	ND - 75
Phenol	-- ^e	--	ND - 7,700
Styrene	<0.69	--	ND - 320
Toluene	<0.69	--	ND - 380
Xylenes	<0.69	--	ND - 3,100
Cumene	-- ^e	--	6,000 - 8,000
Ethyl benzene	<0.69	--	22 - 1,270
Formaldehyde	-- ^e	1.6 - 27	--
Hexane	-- ^e	--	50 - 10,000
Total VOC ^d	<3.4	1.6 - 27	6,072 - 19,810

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 http://www.epa.gov/epawaste/nonhaz/define/pdfs/nhsm_cont_tf.pdf. Contaminant data drawn from various literature sources and from data submitted to USEPA, Office of Air Quality Planning and Standards (OAQPS). 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.

As indicated, railroad ties treated with copper naphthenate have contaminants that are comparable to or less than those in biomass or fuel oil. 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.

Copper Naphthenate - Borate

Copper Naphthenate-Borate			
Contaminant	Copper Naphthenate - Borate Railroad Ties Contaminant Levels ^{a,f}	Biomass/ Untreated Wood ^b	Fuel Oil ^b
Metal Elements (ppm – dry basis)			
Antimony	<1.4	ND - 26	ND - 15.7
Arsenic	0.52 - 0.72	ND - 298	ND - 13
Beryllium	<0.67	ND - 10	ND - 19
Cadmium	<0.31 - 0.078	ND - 17	ND - 1.4
Chromium	0.11 - 0.78	ND - 340	ND - 37
Cobalt	<7.5 - 0.74	ND - 213	ND - 8.5
Lead	<0.38 - 4.0	ND - 340	ND - 56.8
Manganese	14 - 170	ND - 15,800	ND - 3,200
Mercury	<0.15	ND - 1.1	ND - 0.2
Nickel	0.46 - 2.0	ND - 540	ND - 270
Selenium	<0.64 - 0.52	ND - 9.0	ND - 4
Non-metal Elements (ppm – dry basis)			
Chlorine	<100	ND - 5,400	ND - 1,260

Copper Naphthenate-Borate			
Contaminant	Copper Naphthenate - Borate Railroad Ties Contaminant Levels ^{a,f}	Biomass/ Untreated Wood ^b	Fuel Oil ^b
Fluorine	<100	ND - 300	ND - 14
Nitrogen	<500	200 - 39,500	42 - 8,950
Sulfur	140 - 170	ND - 8,700	ND - 57,000
Semivolatile Hazardous Pollutants (ppm – dry basis)			
Acenaphthene	4.8 - 17	ND - 50	111
Acenaphthylene	<1.2 - 0.9	ND - 4	4.1
Anthracene	<1.2 - 7.2	0.4 - 87	96
Benzo[a]anthracene	<1.2 - 3.7	ND - 62	41 - 1,900
Benzo[a]pyrene	<1.2 - 1.4	ND - 28	0.60 - 960
Benzo[b]fluoranthene	<1.2 - 3.9	ND - 42	11 - 540
Benzo[ghi]perylene	<1.2	ND - 9	11.4
Benzo[k]fluoranthene	<1.2 - 20	ND - 16	0.6
Chrysene	<1.2 - 6.6	ND - 53	2.2 - 2,700
Dibenz[a,h]anthracene	<1.2	ND - 3	4.0
Fluoranthene	<1.2 - 20	0.6 - 160	31.6 - 240
Fluorene	2.2 - 16	ND - 40	3,600
Indeno[1,2,3-cd]pyrene	<1.2	ND - 12	2.3
Naphthalene	5.2 - 82	ND - 38	34.3 - 4,000
Phenanthrene	3.6 - 43	0.9 - 190	0 - 116,000
Pyrene	<1.3 - 19	0.2 - 160	23 - 178
16-PAH	39 - 145	5 - 921	3,900 - 54,700
Pentachlorophenol	<28 ^g	ND - 1	--
Biphenyl	-- ^e	--	1,000 - 1,200
Total SVOC ^c	66 - 173	5 - 922	4,900 - 54,700
Volatile Organic Compound (VOC) Hazardous Air Pollutants (ppm – dry basis)			
Benzene	<0.77 --	--	ND - 75
Phenol	-- ^e	--	ND - 7,700
Styrene	<0.77	--	ND - 320
Toluene	<0.77	--	ND - 380
Xylenes	<0.77	--	ND - 3,100

Copper Naphthenate-Borate			
Contaminant	Copper Naphthenate - Borate Railroad Ties Contaminant Levels ^{a,f}	Biomass/ Untreated Wood ^b	Fuel Oil ^b
Cumene	-- ^e	--	6,000 - 8,000
Ethyl benzene	<0.77	--	22 - 1,270
Formaldehyde	-- ^e	1.6 - 27	--
Hexane	-- ^e	--	50 - 10,000
Total VOC ^d	<3.8	1.6 - 27	6,072 - 19,810

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 http://www.epa.gov/epawaste/nonhaz/define/pdfs/nhsm_cont_tf.pdf. Contaminant data drawn from various literature sources and from data submitted to USEPA, Office of Air Quality Planning and Standards (OAQPS). 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.

As indicated, railroad ties treated with copper naphthenate-borate have contaminants that are comparable to or less than those in biomass or fuel oil. 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.

Creosote-Borate

Creosote-Borate			
Contaminant	Creosote - Borate Railroad Ties Contaminant Levels ^{a,f}	Biomass/ Untreated Wood ^b	Fuel Oil ^b
Metal Elements (ppm – dry basis)			
Antimony	<1.3	ND - 26	ND - 15.7
Arsenic	<1.3 - 0.80	ND - 298	ND - 13
Beryllium	<0.60 - 0.032	ND - 10	ND - 19
Cadmium	0.059 - 0.25	ND - 17	ND - 1.4
Chromium	0.10 - 1.1	ND - 340	ND - 37
Cobalt	<6.0 - 0.22	ND - 213	ND - 8.5
Lead	<0.37 - 1.8	ND - 340	ND - 56.8
Manganese	22 - 140	ND - 15,800	ND - 3,200
Mercury	<0.15 - 0.066	ND - 1.1	ND - 0.2
Nickel	0.71 - 1.8	ND - 540	ND - 270
Selenium	0.59 - 1.4	ND - 9.0	ND - 4
Non-metal Elements (ppm – dry basis)			
Chlorine	<100	ND - 5,400	ND - 1,260
Fluorine	<100	ND - 300	ND - 14
Nitrogen	<500	200 - 39,500	42 - 8,950
Sulfur	170 - 180	ND - 8,700	ND - 57,000
Semivolatile Hazardous Pollutants (ppm – dry basis)			
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

Creosote-Borate			
Contaminant	Creosote - Borate Railroad Ties Contaminant Levels ^{a,f}	Biomass/ Untreated Wood ^b	Fuel Oil ^b
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	<21 - 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
Pentachlorophenol	<790 ^g	ND - 1	--
Biphenyl	137 - 330 ^h	--	1,000-1,200
Total SVOC ^c	7,200 - 39,000	5 - 922	4,900 - 54,700
Volatile Organic Compound (VOC) Hazardous Air Pollutants (ppm – dry basis)			
Benzene	<3.9 --	--	ND - 75
Phenol	-- ^e	--	ND - 7,700
Styrene	<3.9	--	ND - 320
Toluene	<3.9	--	ND - 380
Xylenes	<3.9	--	ND - 3,100
Cumene	-- ^e	--	6,000 - 8,000
Ethyl benzene	<3.9	--	22 - 1,270
Formaldehyde	-- ^e	1.6 - 27	--
Hexane	-- ^e	--	50 - 10,000
Total VOC ^d	<20	1.6 - 27	6,072 - 19,810

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 http://www.epa.gov/epawaste/nonhaz/define/pdfs/nhsm_cont_tf.pdf. Contaminant data drawn from various literature sources and from data submitted to USEPA, Office of Air Quality Planning and Standards (OAQPS). 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. Not tested for, but presumptive worst-case value is presented for treated wood type based on data from previous CTRT testing.

Semi-volatile organic compound (SVOC) levels in creosote-borate processed railroad ties are not comparable to biomass. Given that creosote-borate railroad ties are a type of treated wood biomass, and any unit burning these ties typically burns untreated wood, the EPA considered two scenarios.

In the first scenario, where a combustion unit is designed to only burn biomass, EPA compared contaminant levels in creosote-borate to contaminant levels in biomass. In this scenario, the total SVOC levels can reach 39,000 ppm, driven by high levels of polycyclic

aromatic hydrocarbons (PAHs).²⁵ These compounds are very low levels in clean wood and biomass, and the contaminants are therefore not comparable in this instance. In fact, they are present at orders of magnitude higher than found in clean wood and biomass.

In the second scenario, a combustion unit is designed to burn biomass and fuel oil. As previously mentioned, SVOCs are present in CTRTs (up to 39,000 ppm) at levels well within the range observed in fuel oil (up to 54,700 ppm). Therefore, creosote-borate railroad ties have comparable contaminant levels to other fuels combusted in units designed to burn both biomass and fuel oil, and as such, meet this criterion if used in facilities that are designed to burn both biomass and fuel oil.²⁶

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

²⁵ 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.

²⁶As 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 2016 final rule 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.

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).²⁷ 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

Mix 1-1-1-1			
Contaminant	Mixed Railroad Ties (25%C-25%CB- 25%CuN-25%CuNB) Contaminant Levels^{a,f}	Biomass/ Untreated Wood^b	Fuel Oil^b
Metal Elements (ppm – dry basis)			
Antimony	<1.4	ND - 26	ND - 15.7
Arsenic	<1.5 - 0.81	ND - 298	ND - 13
Beryllium	<0.70	ND - 10	ND - 19
Cadmium	0.15 - 0.38	ND - 17	ND - 1.4
Chromium	0.15 - 0.17	ND - 340	ND - 37
Cobalt	<7.0 - 0.07	ND - 213	ND - 8.5

²⁷ 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.”

Mix 1-1-1-1			
Contaminant	Mixed Railroad Ties (25%C-25%CB- 25%CuN-25%CuNB) Contaminant Levels ^{a,f}	Biomass/ Untreated Wood ^b	Fuel Oil ^b
Lead	0.50 - 0.81	ND - 340	ND - 56.8
Manganese	110 - 190	ND - 15,800	ND - 3,200
Mercury	<0.15 - 0.06	ND - 1.1	ND - 0.2
Nickel	0.75 - 1.4	ND - 540	ND - 270
Selenium	<0.66 - 0.50	ND - 9.0	ND - 4
Non-metal Elements (ppm – dry basis)			
Chlorine	<100	ND - 5,400	ND - 1,260
Fluorine	<100	ND - 300	ND - 14
Nitrogen	<500	200 - 39,500	42 - 8,950
Sulfur	140 - 210	ND - 8,700	ND - 57,000
Semivolatile Hazardous Pollutants (ppm – dry basis)			
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	<7.2 - 4.7	ND - 3	4.0
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
Pentachlorophenol	<330 ^g	ND - 1	--
Biphenyl	137 - 330 ^h	--	1,000-1,200
Total SVOC ^c	4,800 - 13,000	5 - 922	4,900 - 54,700

Mix 1-1-1-1			
Contaminant	Mixed Railroad Ties (25%C-25%CB- 25%CuN-25%CuNB) Contaminant Levels ^{a,f}	Biomass/ Untreated Wood ^b	Fuel Oil ^b
Volatile Organic Compound (VOC) Hazardous Air Pollutants (ppm – dry basis)			
Benzene	<1.1 --	--	ND - 75
Phenol	-- ^e	--	ND - 7,700
Styrene	<1.1	--	ND - 320
Toluene	<1.1	--	ND - 380
Xylenes	<1.1	--	ND - 3,100
Cumene	-- ^e	--	6,000 - 8,000
Ethyl benzene	<1.1	--	22 - 1,270
Formaldehyde	-- ^e	1.6 - 27	--
Hexane	-- ^e	--	50 - 10,000
Total VOC ^d	<5.3	1.6 - 27	6,072 - 19,810

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 http://www.epa.gov/epawaste/nonhaz/define/pdfs/nhsm_cont_tf.pdf. Contaminant data drawn from various literature sources and from data submitted to USEPA, Office of Air Quality Planning and Standards (OAQPS). 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. Not tested for, but presumptive worst-case value is presented for treated wood type based on data from previous CTRT testing.

Mix 56-41-1-2			
Contaminant	Mixed Railroad Ties (56%C-41%CB- 1%CuN-2%CuNB) Contaminant Levels ^{a,f}	Biomass/ Untreated Wood ^b	Fuel Oil ^b
Metal Elements (ppm - dry basis)			
Antimony	<1.4	ND – 26	ND - 15.7
Arsenic	<1.4 - 0.65	ND – 298	ND - 13
Beryllium	<0.68	ND – 10	ND - 19
Cadmium	0.08 - 0.09	ND – 17	ND - 1.4
Chromium	0.12 - 0.78	ND – 340	ND - 37
Cobalt	<6.8 - 0.18	ND – 213	ND - 8.5
Lead	<0.44 - 0.93	ND – 340	ND - 56.8
Manganese	47 - 77	ND - 15,800	ND - 3,200
Mercury	<0.13 - 0.03	ND - 1.1	ND - 0.2
Nickel	0.50 - 0.99	ND – 540	ND - 270
Selenium	0.56 - 0.68	ND - 9.0	ND - 4
Non-metal Elements (ppm - dry basis)			
Chlorine	<100	ND - 5,400	ND - 1,260
Fluorine	<100	ND – 300	ND - 14
Nitrogen	<500	200 - 39,500	42 - 8,950
Sulfur	230 - 280	ND - 8,700	ND - 57,000
Semivolatile Hazardous Pollutants (ppm – dry basis)			
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
Dibenz[a,h]anthracene	<28	ND – 3	4.0

Mix 56-41-1-2			
Contaminant	Mixed Railroad Ties (56%C-41%CB- 1%CuN-2%CuNB) Contaminant Levels^{a,f}	Biomass/ Untreated Wood^b	Fuel Oil^b
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
Pentachlorophenol	<630 ^g	ND – 1	--
Biphenyl	137 - 330 ^h	--	1,000 - 1,200
Total SVOC^c	13,000 - 17,000	5 – 922	4,900 - 54,700
Volatile Organic Compound (VOC) Hazardous Air Pollutants (ppm – dry basis)			
Benzene	<2.3 --	--	ND - 75
Phenol	-- ^e	--	ND - 7,700
Styrene	<2.3	--	ND - 320
Toluene	<2.3	--	ND - 380
Xylenes	<2.3	--	ND - 3,100
Cumene	-- ^e	--	6,000 - 8,000
Ethyl benzene	<2.3	--	22 - 1,270
Formaldehyde	-- ^e	1.6 – 27	--
Hexane	-- ^e	--	50 - 10,000
Total VOC^d	<12	1.6 – 27	6,072 - 19,810

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 http://www.epa.gov/epawaste/nonhaz/define/pdfs/nhsm_cont_tf.pdf. Contaminant data drawn from various literature sources and from data submitted to USEPA, Office of Air Quality Planning and Standards (OAQPS). 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. Not tested for, but presumptive worst-case value is presented for treated wood type based on data from previous CTRT testing.

In the mixed treated wood 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, mixed railroad ties with creosote, borate and copper naphthenate have comparable contaminant levels to other fuels combusted in units designed to burn both biomass and fuel oil, and as such, meet this criterion if used in facilities that are designed to burn both biomass and fuel oil.

4. OTRT Sampling and Analysis Data History

The data collection supporting the OTRT non-waste determination has been based on several rounds of data submittals by TWC followed by EPA questions and comments on the data provided. We have described the process of forming the OTRT data set, and all materials provided by TWC are available in the docket to this rulemaking.

The TWC submitted data on various wood preservative types, including those referred to as OTRTs, in their April 3, 2013 petition letter requesting a categorical determination that all

preserved wood types were non-waste fuels. However, the contaminant comparison data presented in the petition were incomplete and not based on established analytical data. The EPA response to TWC requested submittal of analytical data to determine contaminant concentrations in the OTRT wood.

In November 2013, TWC responded to EPA's request, submitting laboratory reports on analyses of the various preservative wood types, including OTRTs. The EPA reviewed the laboratory reports and techniques, and determined that there were limited data points available (*i.e.*, one 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 on previous data, and as described previously, 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 preservative type. TWC also prepared two blends: one with equal portions of creosote, creosote-borate, copper naphthenate, and copper naphthenate-borate; 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 18 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, semivolatiles, 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 ties. TWC's response noted the sources of ties for each chemistry and indicated that the ties generally originated in the southeast, but there are also ties from Pennsylvania, South Dakota, and Kentucky represented within the TWC data set. 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 semivolatile 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.

Finally, 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.²⁸ Also, the shipping cooler temperature criterion of 4 degrees Celsius, which EPA views as standard practice, is not wholly applicable in this case due to the nature of the samples. Since the ties were used and stored after being taken out of service in ambient atmosphere and are not biologically active, the 4 degree Celsius receipt condition is not necessary, but was noted in the report as part of laboratory standard operating procedure.

E. Summary and Request for Comment

EPA believes it has sufficient information to propose to list OTRTs categorically as non-waste fuels. For units combusting copper-naphthenate-borate and/or copper naphthenate railroad ties, such materials could be combusted in units designed to burn biomass or biomass and fuel oil. For units combusting railroad ties containing cresosote, including creosote-borate or any mixtures of ties containing cresosote, borate and copper naphthenate, such materials must be burned in combustion units that are designed to burn both biomass and fuel oil. The Agency would consider 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.

Consistent with the approach for CTRTs outlined in the February 2016 rule, the Agency is also proposing that units combusting railroad ties treated with cresosote-borate (or other mixtures of treated 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

²⁸ 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.

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.

The standard would be applicable to existing units burning creosote-borate, and mixtures of creosote, copper naphthenate and borate treated railroad ties that had been designed to burn fuel oil and biomass and have been modified to burn natural gas. The standard will also apply if an existing unit designed to burn fuel oil and biomass is modified at some point in the future.

The approach addresses only the circumstance where contaminants in these railroad ties are comparable to or less than the traditional fuels the unit was originally designed to burn (both fuel oil and biomass) but that design was modified in order to combust natural gas. The approach is not a general means to circumvent the contaminant legitimacy criterion by allowing combustion of any NHSM with elevated contaminant levels, *i.e.*, levels not comparable to the traditional fuel the unit is currently designed to burn. The particular facilities in this case had used these ties and would clearly be in compliance with the legitimacy criteria if they did not switch to the cleaner natural gas fuel. Information indicating that these ties are an important part of the fuel mix due to the consistently lower moisture content and higher Btu value, as well as

the benefits of drier more consistent fuel to combustion units with significant swings in steam demand, further suggest that discard is not occurring. Therefore, EPA believes it appropriate to balance other relevant factors in this categorical non-waste determination and for the Agency to decide that the switching to the cleaner natural gas would not render these materials a waste fuel.

This case is no different from the Agency's determination in the February 2016 rule with respect to CTRTs. This determination is accepted Agency policy and is appropriately applied to the case of other treated railway ties in this proceeding. This determination, as discussed in the February 2016 rule, is based on the historical usage 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).

The Agency solicits comments on the proposed non-waste categorical determination as described previously. The Agency is also specifically requesting comment on the following:

- Whether railroad ties with de minimis levels of creosote should be allowed to be combusted in biomass only units;
- Should a particular de minimus 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 OTRTs.

F. Copper and Borates Literature Review and other EPA Program Review Summary

Neither copper nor borate are hazardous air pollutants (HAP), and thus are not contaminants under NHSM standards.^{29,30} To determine whether those compounds pose health risk concerns not directly covered by the NHSM standards, and how those concerns may be addressed under other Agency programs, we conducted a literature review on copper and borate and the rules these constituents and their compounds.

Under the Clean Water Act, EPA's Office of Water developed the Lead and Copper Rule which became effective in 1991 (56 FR 26460). This rule set a limit of 1.3 ppm copper concentration in 10% of tap action level for public water. Exceedances of this limit require additional treatment steps in order to reduce waste 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.³¹ This fact sheet explains that copper is an essential nutrient at low concentrations, but is toxic to aquatic organisms at higher concentrations. The fact sheet listed the following industries that contribute to manmade discharges of copper to

²⁹ CAA Section 112 requires EPA to promulgate regulations to control emissions of 187 HAP 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 HAP under CAA 112 and CAA 129.

³⁰We note also 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).

³¹ 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.

surface waters: mining, leather and leather products, fabricated metal products, and electric equipment. No mention was made of deposition from combustion sources, such as area source boilers that may not have robust particulate matter control devices installed on them. By comparison, 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 municipal or medical waste incinerator flue gas have been conducted.³² 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 (CuCl₂) on fly ash particles has been shown to increase concentrations of PCDD and PCDF in fly ash. Various researchers conclude that CuCl and/or CuCl₂ 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 CuCl₂ serve as dechlorination/chlorination catalysts). Copper emissions from fly ash are reduced with good particulate matter controls. 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. Overall, results from many studies indicate that most of the copper ends up in the bottom ash.

Generally, borates have a low toxicity, and should not be a concern from a health risk perspective. As indicated previously, neither boron nor borates are listed as HAP under CAA

³² See technical memorandum on copper-related programs and emission studies available in the docket to this rulemaking.

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 residuals (CCR) risk analysis³³ to present some potential risks for ecological receptors. As a result of this risk, and boron's ability to move through the subsurface,³⁴ boron has been included as a monitored constituent in CCR monitoring provisions for coal ash impoundments.

Copper has some acute toxicity, but these exposures appear to be the result of direct drinking water or cooking-related intake. We anticipate the only routes that copper releases to the environment could result from burning copper naphthenate treated ties would be stormwater runoff from the ties and deposition from boiler emissions. The amount of copper remaining in the tie after its useful life, however, may be greatly reduced from the original content, and facilities manage the shredded tie material in covered areas to prevent significant moisture swings, therefore, we do not expect impacts from copper-containing runoff. Due to the high vaporization temperature, copper will exist in solid phase after it leaves the furnace, and would therefore be controlled in the air pollution control device operated to control particulate emissions from the boiler.

EPA solicits comment and seeks any additional information (e.g. preservative leaching rates) that would help further inform the determinations outlined above regarding management and combustion of borate and copper treated railroad ties and impacts to surface water, drinking water or air not addressed under the NHSM standards.

IV. Effect of This Proposal on Other Programs

³³ Human and Ecological Risk Assessment of Coal Combustion Residuals, EPA, December 2014.

³⁴ See 80 FR 21302, April 17, 2015.

Beyond expanding the list of NHSMs that categorically qualify as non-waste fuels, this rule does not change the effect of the NHSM regulations on other programs as described in the March 21, 2011 NHSM final rule, as amended on February 7, 2013 (78 FR 9138) and February 8, 2016 (81 FR 6688). Refer to section VIII of the preamble to the March 21, 2011 NHSM final rule³⁵ for the discussion on the effect of the NHSM rule on other programs.

V. State Authority

A. Relationship to State Programs

This proposal 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 rule³⁶ 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 proposed 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 proposed rule are included in this rulemaking action under RCRA subtitle D. Although the EPA does promulgate criteria for solid waste landfills and approves state municipal solid waste landfill permitting programs, RCRA does not provide the EPA with authority to approve state programs beyond those landfill permitting programs. While states are not required to adopt regulations promulgated under RCRA subtitle D, some states incorporate federal regulations by reference or have specific state

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

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

statutory requirements that their state program can be no more stringent than the federal regulations. In those cases, the EPA anticipates that, if required by state law, the changes being proposed in this document, if finalized, will be incorporated (or possibly adopted by authorized state air programs) consistent with the state's laws and administrative procedures.

VI. Cost and Benefits

The value of any regulatory action is traditionally measured by the net change in social welfare that it generates. This rulemaking, as proposed, establishes a categorical non-waste listing for selected NHSMs under RCRA. This categorical non-waste determination allows these materials to be combusted as a product fuel in units, subject to the CAA section 112 emission standards, without being subject to a detailed case-by-case analysis of the material(s) by individual combustion facilities, provided they meet the conditions of the categorical listing. The proposal establishes no direct standards or requirements relative to how these materials are managed or combusted. As a result, this action alone does not directly invoke any costs³⁷ or benefits. Rather, this RCRA proposal is being developed to simplify the rules for identifying which NHSMs are not solid wastes and to provide additional clarity and direction for owners or operators of combustion facilities. In this regard, this proposal provides a procedural benefit to the regulated community, as well as the states through the establishment of regulatory clarity and enhanced materials management certainty.

Because this RCRA action is definitional only, any costs or benefits indirectly associated with this action would not occur without the corresponding implementation of the relevant CAA

³⁷ Excluding minor administrative burden/cost (*e.g.*, rule familiarization).

rules. However, in an effort to ensure rulemaking transparency, the EPA prepared an assessment in support of this action that examines the scope and direction of these indirect impacts, for both costs and benefits.³⁸ This document is available in the docket for review and comment. Finally, we recognize that this action would indirectly affect various materials management programs and policies, and we are sensitive to these concerns. The Agency encourages comment on these effects.

The assessment document, as mentioned previously, finds that facilities operating under CAA section 129 standards that are currently burning CTRTs, and no other solid wastes, and who had planned to continue burning these materials, may experience cost savings associated with the potential modification and operational adjustments of their affected units. In this case, the unit-level cost savings are estimated, on average, to be approximately \$266,000 per year. In addition, the increased regulatory clarity and certainty associated with this action may 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.

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

³⁸ 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*” May XX, 2016.

This action is not a significant regulatory action. The Office of Management and Budget (OMB) waived review. 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 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”, is available in the docket. Interested persons are encouraged to read and comment on this document.

B. Paperwork Reduction Act (PRA)

This action does not impose any new information collection burden under the PRA as this action only proposes to add 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.

C. 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 proposed 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. We continue to be interested in the potential impacts of the proposed rule on small entities and welcome comments on issues related to such impacts.

D. 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 proposed 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.

E. Executive Order 13132: Federalism

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

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

This action 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 proposed 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.

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

This action is not subject to Executive Order 13045 because it is not economically significant as defined in 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 proposed rule, in conjunction with the corresponding CAA rules, may indirectly stimulate the increased fuel use of one of 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. 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 an indirect disproportionate effect on children, we conducted a demographic analysis for this population group surrounding CAA section 112 major source boilers, municipal solid waste landfills, and construction and demolition (C&D) landfills for the Major and Area Source

Boilers rules and the CISWI rule.³⁹ We assessed the share of the population under the age of 18 living 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.⁴⁰

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.⁴¹ 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 facilities 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

³⁹ The extremely large number of area source boilers and the absence of site-specific coordinates prevented us from assessing the demographics of populations located near these sources. In addition, we did not assess child population percentages surrounding cement kilns that may use some out-of-service railroad crossties for their thermal value.

⁴⁰ 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*.

⁴¹ 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.

landfill-related emissions, discharges, or other negative activity potentially affecting low-income (children) populations living near these units are likely to be reduced. Finally, transportation emissions associated with the diversion of some of this material away from landfills to boilers are likely to be generally unchanged, while these emissions are likely to be reduced for on-site generators of paper recycling residuals that would reduce off-site shipments.

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

This action is not subject to Executive Order 13211, because it is not a significant regulatory action under Executive Order 12866.

I. National Technology Transfer and Advancement Act (NTTAA)

This rulemaking does not involve technical standards.

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

The EPA believes that it is not feasible to determine whether this action has disproportionately high and adverse effects on minority populations, low-income populations, and/or indigenous peoples as specified in Executive Order 12898 (59 FR 7629, February 16, 1994). However, the overall level of emissions, or the emissions mix from affected boilers are not expected to change significantly because the three NHSMs proposed to be 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 rulemaking⁴² 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 share⁴³ 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.

⁴² 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.

⁴³ 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 boilers are likely to be similar, except for on-site paper recycling residuals, where the potential for less off-site transport to landfills may result in reduced truck traffic and emissions where such transport patterns may pass through minority or low-income communities.
- **Change in emissions from baseline management units:** The diversion of some of these NHSMs away from disposal in landfills may result in a marginal decrease in activity at these facilities. This may include non-adverse impacts, such as marginally reduced emissions, odors, groundwater and surface water impacts, noise pollution, and reduced maintenance cost to local infrastructure. Because municipal solid waste and C&D landfills were found to be located in areas where minority and low-income populations are disproportionately high relative to the national average, any reduction in activity and emissions around these facilities is likely to benefit the citizens living near these facilities.

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

As previously discussed, this RCRA proposed action alone does not directly require any change in the management of these materials. Thus, any potential materials management changes stimulated by this action, and corresponding impacts to minority and low-income communities,

are considered to be indirect impacts, and would only occur in conjunction with the corresponding CAA rules.

List of Subjects in 40 CFR part 241

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

Dated: _____

Gina McCarthy,

Administrator.

For the reasons stated in the preamble, EPA proposes to amend Title 40, chapter I, of the Code of Federal Regulations:

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.

* * * * *

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 made from disodium octaborate tetrahydrate.

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 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 copper naphthenate treated railroad ties that are processed (which must include at a minimum, metal removal and shredding or grinding) and then combusted in the following types of units:

(i) Units designed to burn both biomass and fuel oil as part of normal operations and not solely as part of start-up or shut-down operations, and

(ii) Units at major source pulp and paper mills or power producers subject to 40 CFR part 63, subpart DDDDD that combust creosote-borate treated railroad ties and mixed creosote, borate and copper naphthenate treated railroad 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. 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.

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

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