APPENDIX

EPA SHOULD IDENTIFY ADDITIONAL MATERIALS AS NON-WASTE FUELS

Under EPA's non-hazardous secondary material (NHSM) rule, "traditional fuels" are not considered non-hazardous secondary materials, while alternative fuels derived from non-hazardous secondary materials are presumed to be wastes when burned for energy recovery. Entities that combust a non-hazardous secondary material can rebut this waste presumption if the combustor can show that the material has not been discarded and it meets the legitimacy criteria for fuels specified in §241.3(d)(1). These criteria are: (1) it has a meaningful heating value; (2) it is handled as a valuable commodity, and (3) it has contaminants at comparable or lower levels than the traditional fuel the combustion unit is designed to fire. In the proposed NHSM rule, EPA is proposing additional categories of non-waste materials, "based on a balancing of the legitimacy criteria and other such relevant factors that the Administrator may identify."[1] EPA has already made non-waste determinations for resinated wood and for scrap tires managed pursuant to established tire collection programs. EPA should also designate the following NHSM as non-wastes when combusted for energy recovery. For the first two fuels (coal refuse and off-spec used oil), EPA can justify the non-waste designation under the current NHSM framework. For the remaining fuels, EPA can easily justify the non-waste designation under the expanded legitimacy framework.

1. Coal Refuse

Coal refuse is generated when coal is mined, and is comprised of non-combustible rock with some attached carbon material that is not easily separated due to its small size. EPA's Coal Refuse Materials Characterization Paper indicates that there are 18 coal refuse plants (Fossil Fuel Electric Power Generation–NAICS 221112), and 13 other plants that use it as a secondary fuel, with bituminous coal as their primary fuel. This paper did not provide an official estimate of the annual volume of coal refuse that is generated, nor the amount that is stored in legacy piles.

In an August 15, 2011 letter to the Anthracite Region Independent Power Producers Association (ARIPPA), EPA addressed industry concerns about whether coal refuse from legacy piles, when used as a fuel in combustion units, would be considered a solid waste under the non-hazardous secondary materials (NHSM) rule. After reaffirming that EPA has determined that currently-generated coal refuse is an alternative fuel, EPA addressed coal refuse from legacy piles. While noting that coal refuse from legacy piles "…has clearly been discarded and is a solid waste unless sufficiently processed into a new legitimate fuel product," EPA also states that it has determined that such refuse is processed no differently than currently generated coal refuse, and therefore meets EPA's requirements for processing under Section 241.2. EPA goes on to declare that post-processed coal refuse from legacy piles meets the first two criteria for treatment as a non-waste fuel when combusted: materials are managed in the same manner, and would have similar heating values, as currently generated coal refuse, which is a traditional fuel.

EPA then addresses the third criterion—whether the material contains contaminants at levels comparable to or lower than traditional fuels. EPA affirms that because currently-generated coal

[1] 76 Fed. Reg. 80452, 80482 (December 23, 2011).

refuse is a traditional fuel, such fuel is the traditional fuel benchmark when comparing contaminant levels with coal refuse found in legacy piles. EPA also notes that since legacy coal refuse is processed in the same manner as currently-generated coal refuse, EPA expects that post-processed coal refuse from legacy piles satisfies EPA's contaminant legitimacy criterion.

Given the conclusions reached in the August 15, 2011 letter to ARIPPA, EPA should designate that when combusted, coal refuse from legacy piles that has been processed using the same methods as currently generated coal refuse, is a non-waste fuel. This clarification will provide regulatory certainty that is not provided by EPA's letter to ARIPPA.

2. Off-Specification Used Oil

The NSHM rule declares on-specification used oil a legitimate non-waste fuel, but incorrectly treats off-specification used oil as a waste. EPA's final NHSM rule preamble contains two incorrect assertions with respect off-specification used oil that resulted in EPA incorrectly defining such oil as a waste when combusted: (a) off-specification used oil should be compared to traditional virgin refined fuel oil for the purpose of the legitimacy contaminant criteria; and (b) Subtitle C of RCRA's regulations pertaining to burning of off-specification used oil provides evidence that such oil is a solid waste. EPA should correct these misstatements in the upcoming new final NSHM rule, and determine that off-specification used oil is a non-waste when used as a fuel in a combustion unit.

Off-Specification Used Oil Should Be Compared to Coal

To reach the conclusion that that off-specification used oil is a waste, in the final NHSM, EPA cited the fact that such oil has higher levels of some contaminants than virgin refined fuel oil: "based on the information received and the record established for this rulemaking, we still consider off-spec used oil to be a solid waste, as off-spec used oil contains contaminants at levels that are not comparable to those in traditional fuels."[2]

As required under 40 CFR 279, off-specification used oil can only be burned in a prescribed set of combustion devices. As a consequence of these Subtitle C regulations, virtually all off-specification used oil is purchased by cement kilns, with some additional purchases made by steel mills and utility boilers. ***All of these entities use coal and coke as their predominant virgin fuel***. Because contaminants in off-specification used oil are equal to or less than those in coal, off-specification used oil meets EPA's legitimacy criteria and should be identified in the proposed NHSM rule as a non-waste when combusted.[3] EPA is not being consistent in its treatment of off-specification used oil and scrap tires. Although off-specification used oil is burned at the same facilities that burn scrap tires, EPA is comparing the contaminants in off-specification used oil to virgin refined fuel oil, but comparing the contaminants in scrap tires to coal.

[2] 76 Fed. Reg. 15456, 15502 (March 21, 2011).

[3] Note that Table 4 in EPA's final NHSM rule displays incorrect lead contaminant values for coal. EPA needs to replace the incorrect values (0.5–0.9 ppm) with the correct values (3-120 ppm). (See EPA–HQ–RCRA–2008–0329–0799-A and EPA–HQ–RCRA–2008–0329–1273-A1.)

The preamble to the final NHSM rule makes two additional incorrect assertions. First, EPA cites oil-fired space heaters as evidence why off-spec used oil should not be compared to coal:

> "*While data was submitted regarding higher levels of contaminants in coal than in off-spec used oil, coal is not an appropriate comparison for used oil since some combustion units that burn used oil can alternatively only burn fuel oil and not coal (such as space heaters). Thus, used oil should be compared to fuel oil*."[4]

It is not clear why EPA concludes that any single potential combustion practice for an alternative fuel, no matter how rare, should be used to determine the traditional fuel to which it must be compared. In fact, virtually all off-spec used oil is currently processed and sold to industries where coal or coke is by far the predominant virgin fuel being replaced or supplemented (i.e., cement kilns, steel mills, or large utility boilers).[5] Secondly, the space heater example is not a valid argument because EPA has correctly excluded oil-burning space heaters from the section 129 incineration standards due to their low health risk. Therefore, defining off-spec used oil as a solid waste when combusted will have no effect on emissions from this activity.

The second additional incorrect assertion is that EPA set the maximum contaminant levels for off-spec used oil based on levels found in comparable fuel oils: "When EPA created the specification levels set in 40 CFR 279.11, it identified those levels as being comparable to fuel oils."[6] In actuality, EPA included other considerations in setting used oil specification levels, <u>including the contaminant levels found in coal</u>: "We selected a specification level of 4,000 ppm for total halogens based on halogen levels in high chlorine coal."[7]

Therefore, under the current NHSM framework, off-spec used oil should clearly be designated as a non-waste fuel.

RCRA Subtitle C Regulations Do Not Support EPA's Position

As noted in the preamble to the final Subtitle C rule regulating used oil burned for energy recovery in boilers and industrial furnaces, the chief reason why EPA singled-out off-specification used oil was to address the as then current health risks associated with burning of such fuel in nonindustrial boilers:

> "*Today's rule prohibits the burning of hazardous waste and off-specification used oil fuel in nonindustrial boilers (e.g., located in apartment and office buildings, schools, hospitals) and, for the time being, continues to allow burning of such fuels without substantive controls in industrial and utility boilers (and industrial furnaces). As EPA stated at proposal, the rule singles out nonindustrial boilers*

[4] 76 Fed. Reg. 15456, 15505 (March 21, 2011).
[5] Depending on market conditions, many of these facilities also burn other alternative fuels (tires, used oil filters, etc.) to supplement their coal use.
[6] 76 Fed. Reg. 15456, 15505 (March 21, 2011).
[7] It is also notable that at the time that EPA set the specification levels, they acknowledged that "…many boilers burning fuel oil were originally designed to burn coal and were converted to oil burning to meet air emissions standards." (50 Fed. Reg. 49181, November 29, 1985).

because burning hazardous waste fuels and off-specification used oil fuels in these boilers can pose the most significant and immediate health risks."[8]

This risk-based approach was also adopted in 40 CFR 279 via EPA allowing off-specification used oil to be burned in space heaters because EPA concluded that emissions from this activity do not pose a significant health risk.[9] Thus, under 40 CFR 279, EPA applied risk analysis to separately identify where different types of used oil can be burned. Because of the different emissions and locational characteristics of industrial/utility boilers and industrial furnaces relative to nonindustrial boilers, EPA determined that while on-specification oil could be burned in all such boilers/industrial furnaces, off-specification oil could only be burned in industrial/utility boilers and industrial furnaces (as well as hazardous waste incinerators). In making this distinction, EPA specifically pointed to the small size of nonindustrial boilers, noting that they may not achieve complete combustion of toxic organics because of inadequate controls to maintain optimum combustion conditions…" and that "…virtually no nonindustrial boilers are equipped with emission control equipment that would control (at least to some extent) metals emissions, while many industrial furnaces and some industrial boilers are so equipped." EPA also noted that the risks from such boilers are compounded because they "…are typically located in urban areas where sources are frequently clustered closely together."[10]

One can only conclude from this rulemaking that the intention was not for 40 CFR 279 to identify off-specification used oil as a waste product (since EPA did not require that all combustion of such oil occur in hazardous waste incinerators which do not recover energy). Instead, EPA decided to continue to treat this fuel similarly to on-specification used oil when burned in industrial boilers/furnaces which do recover energy. However, in the preamble of the final NHSM rule, EPA asserts the following:

"*EPA has determined that off-specification used oil is a solid waste when burned for energy recovery because it has greater contaminant levels than fuel oils and its markets are limited due to this contamination. In particular, 40 CFR part 279 restricts the burning of off-specification used oil to industrial furnaces, industrial boilers, utility boilers, certain used oil-fired space heaters, and hazardous waste incinerators and specifically excludes non-industrial boilers, such as those located in apartment and office buildings, schools, and hospitals. …On-specification used oil, on the other hand, is not a waste because it has contaminant concentrations similar to fuel oils. Due to this, 40 CFR part 279 does not restrict where on-specification used oil can be burned*."[11]

These statements imply that by specifying where off-specification used oil can and cannot be burned, the logical outgrowth of 40 CFR 279 is that off-specification used oil is a waste product. EPA provides no explanation as to why restricting a material to be burned in industrial boilers,

[8] 50 Fed. Reg. 49164, 49191 (November 29, 1985).
[9] EPA did leave open the possibility of including "…regulations for these devices, as deemed necessary, when we propose permit standards for all boilers and industrial furnaces in 1986" 50 Fed. Reg. 49164, 49194 (November 29, 1985).
[10] 50 Fed. Reg. 49164, 49191 (November 29, 1985).
[11] 76 Fed. Reg. 15456, 15503 (March 21, 2011).

and not nonindustrial boilers converts a valuable fuel into a waste. As described above, to the contrary, 40 CFR 279 properly determined that off-specification used oil is a fuel with significant energy recovery benefits, and that such fuel should be treated the same as on-specification used oil with respect to combustion in industrial boilers/furnaces. Given the increased prevalence of emission controls on industrial boilers/furnaces since the Subtitle C regulations were finalized in 1985 (including EPA's recent boiler MACT standard rulemakings), EPA has not provided any reasons for now requiring that such combustion be treated as a waste product subject to the emission standards of waste incinerators.

In addition, we note the 2010 comments of the National Association of Oil Recyclers on the previously proposed NHSM rule:

> "The Agency has also specifically stated that "used oil is a valuable resource because it has lubrication value and heat value....Because it has heat value, it can be burned as fuel. Burning the used oil keeps the heat value from being wasted and saves the virgin heating oil that would have been burned instead....Because virgin oil is a limited resource, properly managing used oil so that its lubrication value and heat value is not wasted is very important." Office of Research and Development, EPA, *Environmental Regulations and Technology: Managing Used Motor Oil* (December 1994), p. 5. In the preamble to the regulations adopting the 1985 used oil management standards EPA explicitly stated that when a fuel is recycled it is not discarded. The value of used oil has long been recognized by both the generator and the collector. John J. Nolan, *et al*., *Used Oil: Disposal Options, Management Practices and Potential Liability* (3rd ed. 1990) pp. 33-38. Collectors generally pay the generators for the used oil and typically have long-term contracts for the sale of the used oil. Fuel processors and re-refiners compete for the generators' used oil." [footnotes removed]

3. Scrap Tires in Stockpiles

The available data indicate that the number of scrap tires in stockpiles have declined significantly over the last few decades. While scrap tire generation increased by 36 percent from 1990 to 2007, the number of tires in stockpiles declined by more than 87 percent, from 1 billion to 128 million. The use of tires for fuel has increased from 24.5 million tires in 1990 to roughly 179.6 million tires in 2007. Since 2001, the amount of scrap tires used for non-combustion applications has been fairly constant, whereas the amount used as fuel has continued to increase (see Exhibit 2 below taken from EPA's Materials Characterization Paper).

Exhibit 2: Summary of Scrap Tire Uses from 1990 to 2007

Millions of Tires Used									
Scrap Tire Use	**1990**	**1992**	**1994**	**1996**	**1998**	**2001**	**2003**	**2005**	**2007[1]**
Tires Used as fuel (whole and shredded)	**24.5**	**57.0**	**101.0**	**115.0**	**114.0**	**115.0**	**129.7**	**155.1**	**179.6**
Cement Kilns	6.0	7.0	37.0	34.0	38.0	53.0	53.0	58.0	48.4
Pulp/paper Mills	13.0	14.0	27.0	26.0	20.0	19.0	26.0	39.0	77.1
Industrial Boilers	0.0	6.0	10.0	16.0	15.0	11.0	17.0	21.0	14.5
Utility Boilers	1.0	15.0	12.0	23.0	25.0	18.0	23.7	27.0	24.9
Non-Fuel Uses	**0.0**	**11.0**	**37.5**	**49.5**	**63.5**	**103.0**	**103.6**	**104.0**	**94.9**
Civil Engineering	N/A	5.0	9.0	10.0	20.0	40.0	56.4	49.2	43.1
Ground Rubber	0.0	5.0	1.5	7.5	7.0	21.0	18.2	30.1	43.0
Export	0.0	0.0	12.5	15.0	15.0	15.0	9	6.9	6.3
Cut/Punched/Stamped	N/A	N/A	8.0	8.0	8.0	8.0	6.5	6.1	0.1
Miscellaneous/Agriculture	N/A	1.0	3.5	4.0	5.5	7.0	3.0	3.0	0.5
Electric Arc Furnaces	N/A	N/A	N/A	N/A	N/A	N/A	0.5	1.3	1.9
Rubber Modified Asphalt[2]	N/A	N/A	3.0	5.0	8.0	12.0	10.0	7.4	-
Scrap Tires in Stockpiles	**1000.0**	**1,000.0**	**800.0**	**500.0**	**400.0**	**300.0**	**275.0**	**188.0**	**128.4**

Sources:
Data for 1990 through 2005 are from RMA 2006, and data for 2007 are from RMA 2009.

Notes:
1. RMA 2009 includes figures only in weight for 2005 and 2007, as well as percent change between 2005 and 2007. To approximate 2007 figures in terms of the quantity of tires, in order to demonstrate how various uses have changed over time, we applied the percent change in weight between 2005 and 2007 to the 2005 quantity figures. However, the 2007 stockpile figure was given in quantity of tires.
2. Rubber modified asphalt was not separated out as a category in RMA 2009.
3. The tire derived fuel (TDF) total includes dedicated tires to energy.

This trend reflects the high fuel value of tires. The increased acceptance of tires as a legitimate fuel has led to the success in reduction of tire piles. With the increases in fuel prices since 2001, beneficial use of tires as fuel has become a more attractive management option than other beneficial use applications. Most states, like EPA, encourage the use of tires as fuel. Some states have formally determined, under state law, that combustion of tires does not involve waste management, but represents a beneficial use of resources.

In the final NHSM rule, EPA determined that scrap tires removed from vehicles and managed pursuant to established tire collection programs are not considered a solid waste. EPA established that these scrap tires meet all legitimacy criteria—for example, having meaningful heating value (scrap tires' heating value is the highest of all non-hazardous secondary materials except used oil). However, EPA designated tires in tire piles as discarded, and therefore a solid waste, unless they undergo sufficient processing, and sufficient processing was based on an ASTM standard that was inapplicable to tire combustion in cement kilns. Therefore, EPA is treating the same material as a non-waste in one context, but a waste in another if processing is less than "sufficient". EPA's reasoning for this illogical outcome is the following:

1. Scrap tires in stockpiles "…are clearly wastes because they have been disposed for a long time;"
2. Discarded materials can be reclassified as non-wastes if they undergo a "sufficient level of processing;" and

3. In the context of discarded tires, EPA requires that these tires "…have been made into tire-derived fuel (shredded/chipped, sized, sorted, and with a significant portion of the metal belts or wire removed, at a level appropriate for the unit) to meet EPA's definition of 'sufficient processing'."[12] [We believe this is suitable for use in boilers, but does not properly address cement kiln use.]

In support of the processing requirements described under #3, EPA cites ASTM Standard D 6700 "Standard Practice for use of Scrap Tire-Derived Fuel" which provides guidelines on the composition of tire-derived fuel (TDF) to optimize combustion, including the appropriate amount of wire removal for different combustion unit types: "Thus, to be considered sufficiently processed, there has to be metal removed and, it should be at the level of wire removal that is specific to the combustion unit as mentioned above" (above referring to discussion of ASTM Standard D 6700).[13]

With this restrictive definition, EPA fails to acknowledge that scrap tires do not need to be processed into TDF to be beneficially used in a cement kiln. More specifically, EPA fails to differentiate the application of the ASTM standard for cement kilns from other types of combustion units. Per Section 5.1 of ASTM 6700-01: "TDF's wire removal is determined by production process capabilities. Some combustion units such as cement kilns can tolerate all inherent wire, so no removal is necessary."

In the cement kiln context, if a previously stockpiled tire were sufficiently processed according to the final rule, the processed TDF could be injected into the kiln as a fuel, along with the metal removed from the tire during processing, since the metal is an ingredient of cement manufacturing. While confirming their requirement for significant processing of discarded tires to be treated as a non-waste fuel in cement kilns, EPA acknowledges that such processing serves no environmental purpose:

> *If the scrap tires were discarded (i.e., recovered from a tire dump), they would need to be processed into TDF chips with some removal of the metal wire (per the processing specifications described in a response to comments below) in order to be a non-waste fuel. Based on the comments, we recognize that this is more important for handling, than for emissions. We would also note that the steel wire in the whole tires used in cement kilns is regarded differently since it is needed to become part of the cement. That is, if the noncombustible ingredient in feedstocks that are necessary (e.g., iron) for clinker production are no longer used, those materials must be replaced.*[14]

This echoes the conclusion described in the June 2010 proposed NSHM rule: "We note that most cement kilns use whole tires as fuels, as opposed to TDF chips, because their process does not require the TDF to be in the form of small chips to use it as a fuel, and does not require removal of the metal (since they use the metal as an ingredient)."[15]

[12] 76 Fed. Reg. 15456, 15499 (March 21, 2011).
[13] 76 Fed. Reg. 15456, 15498 (March 21, 2011).
[14] 76 Fed. Reg. 15456, 15493-15494 (March 21, 2011).
[15] 75 Fed. Reg. 31844, 31877 (June 4, 2010).

In this example, the only difference between allowing a whole previously stockpiled scrap tire to be considered a fuel and requiring the tire to be processed into TDF chips, with a significant portion of the metal wire removed, is the energy required to process the tire. From an environmental perspective, this approach is less protective, since the additional energy used to process the scrap tire would cause additional air emissions. Thus, the NHSM Rule imposes an unnecessarily burdensome reclamation requirement on scrap tires, when the reuse of such materials is no less legitimate than the use of tires obtained from tire collection systems.

EPA has provided no policy reason as to why the same exact material should, in the one case (i.e., handled outside the parameters of an established tire collection program), have to undergo significant processing for use as a non-waste fuel, while no processing is required in the other case (i.e., handled within an established collection program). EPA is not constrained by statute, the NRDC decision, or other case law as to how a material that has been discarded can attain non-waste status for combustion. EPA acknowledges that "… there is no direct case on point in which a court has opined on how a material may lose its status as a waste."[16] EPA has acknowledged that EPA "policy", and not "law" was the basis for the sufficient processing determination. In the case of the use of non-discarded scrap tires in cement kilns, EPA has already correctly determined that such tires can be used without any processing. To insist that tires' previous discard status requires that they be significantly processed fails any common sense test, and sets an unnecessary hurdle to the beneficial reuse of non-hazardous materials.[17] Given the incontrovertible fact no one claims that the burning of stockpiled scrap tires in a cement kiln represents "sham recycling," EPA should designate that, when combusted in cement kilns, whole tires (without metal removal or shredding) recovered from stockpiles or any other location are non-wastes under § 241.4(a).

4. **Treated Wood (Rail Ties and Utility Poles)**

Non-hazardous treated wood material has been widely used as a fuel for decades. Creosote is a derivative of coal, and a traditional fuel under the NHSM rule. Therefore, creosote-treated wood is simply a combination of two traditional fuels. Available data indicate that 13 million wooden crossties are removed from railroad service each year, and that 1 to 2 million wooden utility poles are replaced each year. Creosote-treated wood is in demand for combustion due to their low moisture content and high Btu content (in fact, higher than virgin wood). Information on the proportion of these treated wood products that are combusted is limited. URS Corporation used an estimate of 550,000 tons of rail ties for the forest products industry in developing an estimated cost of replacing these ties with natural gas ($57.6 million). EPA's Materials Characterization Paper estimates that more than half of scrap railroad ties are reused in landscaping, fencing, construction, retaining walls and as fuel for utilities and other plants.

Creosote-treated wood has a meaningful heating value—an estimate of 6,000 Btu/lb was reported in comments supplied to EPA on the Advanced Notice of Proposed Rulemaking (ANPRM). Because most crossties are creosote-treated, the chips allow boilers to burn at a

[16] 76 Fed. Reg. 15456, 15497 (March 21, 2011).

[17] In the final NHSM rule, EPA "recognizes that some states have systems in place where materials lose the waste status if beneficially used according to the state's standards." [(76 Fed. Reg. 15456, 15497 (March 21, 2011)].

higher temperature than they would with untreated wood chips. The creosote in the ties increases the combustion temperature, resulting in a more complete combustion of some organics such as benzene, formaldehyde, and dioxins.

A draft of the comment letter to be submitted by the Treated Wood Council (TWC) on the December 2011 proposed NHSM rule explains that a Pennsylvania cogeneration plant was specifically constructed to burn creosote-treated railroad ties and utility poles as a fuel.[18] TWC further states that this facility, which has combusted 2.3 million tons of treated wood since 1989, has 89 customers that contractually furnish treated wood for energy recovery, and that the receipt and combustion of these materials are an intrinsic part of its process for generating electricity. Cogeneration plants preferentially choose to burn creosote rail ties and penta poles because of their favorable characteristics, according to TWC.[19]

Most of the facilities that utilize creosote to treat wood, and also the facilities that produce the wood products to be treated, use biomass as their primary fuel source. Comments supplied for EPA's ANPRM indicate that many facilities that treat wood with creosote also have permits to burn creosote-treated wood as a fuel. EPA Materials Characterization paper noted that the following states were known to have approved the use of railroad ties as fuel: Maryland, Pennsylvania, Iowa, Michigan, and North Dakota. Public comments submitted from the Railway Tie Association on the ANPRM state that creosote-treated wood does not contain contaminants that are significantly higher in concentration than those in traditional fuels. In the final NHSM rule, EPA cites the presence of hexachlorobenzene (a Section 112 hazardous air pollutant [HAP]), as well as other HAPs in creosote-treated lumber as evidence that creosote-treated wood includes contaminants at levels that are not comparable to those found in the fuels that creosote-treated wood would replace (i.e., wood or coal).

In keeping with its treatment of resinated wood, EPA should specify that treated wood is a non-waste fuel when combusted based on a "balancing of the legitimacy criteria and other relevant factors. This policy is warranted given that it is clear that this material is not being burned to discard contaminants, (especially given that other recycling uses are available for these products), has a meaningful heating value, and is handled as a valuable product. With regard to the contamination issue, the situation with treated wood is analogous to that of resinated wood, for which EPA is proposing classification as a non-waste fuel:

> *While we acknowledge that these [formaldehyde contaminant] levels [in resinated wood] may not always meet the contaminant legitimacy criterion in every situation, in today's action, we are proposing a categorical non-waste determination for resinated wood that is used as fuel. We are proposing to codify this determination, balancing the legitimacy criteria and other relevant factors based on the fact that resinated wood residuals that are used as fuels represents [sic] an integral component to the wood manufacturing process and, as such, resinated wood residuals are not being discarded when burned as fuels. That is, the purpose of burning these wood residuals (including the resins that they contain, which themselves contribute to the heating value of the material) is not to*

[18] TWC NHSM draft comment letter dated February 13, 2012.
[19] TWC NHSM letter to OMB dated November 18, 2011.

destroy or discard them, as they are clearly considered and managed as a valuable commodity to the wood manufacturing process.[20]

As with resinated wood, treated wood is managed as a desirable fuel for its higher Btu levels due to low moisture content and the extra heat potential of preservative chemicals, as in creosote. Also like resinated wood, the high commercial value of treated wood and its established market, clearly demonstrate that it is handled as a valuable product whether under control of the generator or not. As is the case with resinated wood, nonhazardous treated wood's contaminants are low in concentration, contribute to heating value, and are not among the chemicals of concern listed in the proposed rule.[21] And like the facilities that depend on resinated wood for their economical operation, the loss of treated wood as a fuel feedstock would cause severe disruption in the operation of plants dependent on using these materials. All of these factors ensure that, just as EPA concluded after "balancing" the key considerations for resinated wood, NHSM treated wood is not being discarded when used as fuel.

5. <u>Dried Animal Manure</u>

Dried animal manure should also be proposed as a non-waste with the other fuels in §241.4(a). Despite the fact that animal manure has been used for combustion, EPA stated two objections to the non-waste designation in the final NHSM rule: the contamination issue and "sufficient processing".[22] First, there is no evidence that any animal manure is discarded, let alone sent to landfills. Manure is generally used as fertilizer on fields, although an important secondary purpose is for energy recovery/generation. Second, there are several known instances of additional plans for animal manure energy projects that are designed specifically to recover energy, including government funded projects,. Clearly, these projects are designed for energy recovery, and not "sham recycling." After processing (drying), animal manure has a meaningful Btu value equal to or above that of other biomass that EPA has determined to be a non-waste fuel (e.g., bagasse). We cannot identify any reason why drying alone is insufficient for "sufficient processing", and EPA has already indicated that the "sufficient processing" requirement is a "policy" call. After drying, manure has similar Btu value to other valuable materials used for combustion, as cited in the USDA comments. Third, USDA informs us that there are contracts in place for livestock and poultry producers to supply manure to the combustor. Fourth, the amount of contaminants is limited because the vast majority of applicable contaminants are directly related to the contaminants contained in the biomass consumed by the animals. EPA has not presented any evidence that facilities are combusting manure in order to discard chlorine or nitrogen, the two contaminants identified by EPA. As USDA points out, these concentrated contaminants are no different than what occurs in the production of "byproducts of ethanol natural fermentation processes", which EPA is now proposing to include in the definition of "clean cellulosic biomass". Based on a "balancing of the legitimacy criteria and other such relevant factors," EPA's new standard, animal manure should be included in the §241.4(a) fuels list, along with resinated woods and scrap tires.

[20] 76 Fed. Reg. 80452, 80483 (December 23, 2011).
[21] 76 Fed. Reg. 80452, 80471 (December 23, 2011).
[22] Sufficient processing is required because EPA regards the manure as being discarded in the first place, although the validity of this presumption appears unclear, since we are not aware of any evidence in the record that manure is not used beneficially.

Alternatively, EPA could decide that processing of animal manure by drying, constitutes "sufficient processing", such that previously discarded manure could be considered recovered for energy recovery, just like scrap tires could be processed and burned as a non-waste, in the scrap tire section above.

6. Pulp and Paper Sludges

Pulp and paper sludges are produced from wastewater treatment of process effluents. Primary sludges originate from primary wastewater treatment operations (i.e., sedimentation or primary clarification operations) and consist of wood fiber and inorganic materials, while secondary sludges come from secondary, biological treatment operations and are composed largely of microbial biomass.

EPA estimates annual generation of pulp and paper sludges at 4.2 to 5.8 million tons. In 2002, approximately 22 percent of pulp and paper mill sludges were combusted as fuel, suggesting 0.9 to 1.3 million tons combusted annually. Undetermined fractions of sludges were used as a cement kiln feedstock and as a fuel pellet ingredient. URS estimated the cost of landfilling and replacing pulp and paper sludges with natural gas at $159 million per year (based on an estimated 1.34 million tons combusted annually). Industry estimates the mean heating value of these sludges at 5,800 Btu/lb, which is above EPA's current criterion threshold for meaningful heating value.

Industry also recently provided EPA with average contaminant values for wastewater treatment residuals. When the levels of these 10 contaminants are compared to the range of untreated wood levels reported in EPA's Materials Characterization Paper, the industry values all fall within the reported ranges (e.g., chlorine – EPA untreated wood range = 0-11,890 ppm; AF&PA average sludge value = 361 ppm). When compared to coal, only two contaminants appear higher in pulp and paper sludges – manganese: coal = 25.977 ppm and sludge = 381 ppm; and nickel – coal = 15.363 ppm and sludge = 23.08 ppm.

In the NHSM proposal, EPA states that it already believes that pulp and paper sludges "meet the legitimacy criteria and can be burned as a non-waste fuel provided such combustion units are within the control of the generator."[23] It further shows that its own examination of the contamination levels are comparable to levels found in coal and untreated wood, the two traditional fuels burned in pulp and paper mills. However, it provides no explanation as to why the off-site sludges are handled any differently than the on-site sludges which it believes are burned for energy recovery. EPA provides no evidence that combusting NHSM (including pulp and paper sludges) for energy recovery is "sham" recycling. The legitimacy criteria are sufficient for ensuring that combustion of NHSM is not destruction regardless of whether it is combusted within the control of the generator or by a third party.

Wastewater treatment sludges from pulp and paper mills have a long history of use as fuels, and their use has been increasing as technical advances make recovering their heating value more cost effective. These sludges are handled as valuable materials and are dewatered/otherwise

[23] 76 Fed. Reg. 80452, 80485 (December 23, 2011).

treated to enhance their heating value before being burned. This results in the delivery of a material to the boiler that is ready to burn according to the specifications of the mill's biomass boilers which are uniquely designed to handle a wide range of fuel qualities and moisture contents. When they are not immediately used as fuels, the treated product is stored in piles like other biomass materials such as bark and hog fuel. Because of their similar properties, sludges are blended with other fuels to obtain the optimum overall fuel properties and consistency prior to introduction into the boiler to produce stable combustion conditions. Sludges, and related other fuels, are delivered to the boiler in the same manner as other biomass fuels primarily via conveyor belt, but often using a front end loader. In most instances storage is minimized and the fuel is prepared, conveyed, blended with other fuels and burned in a continuous or semi-continuous process. The way that pulp and paper sludges are processed for fuel use and stored provides clear evidence that this material meets EPA's legitimacy criterion as being handled as a valuable commodity.

Boiler operators at mills can plan for that portion of the Btu needs that comes from sludges when determining the mix of fuels to use at any given time (hog fuel, other biomass residuals, or fossil fuels). Relative amounts of sludges, hog fuel, and other fuels feeding a given boiler depend on the particular site equipment scenario of the mill: dewatering equipment, sludge properties, and boiler design. For all the above reasons, pulp and paper sludges are a reliable and valued source of fuel. In fact, these sludges are used as the primary fuel (and in some cases as the only fuel) in fluidized bed combustors in the U.S., and one of the best performing boilers used to set the MACT floor for carbon monoxide from fluidized bed combustors burns only wastewater treatment sludges.

Based on a balancing of legitimacy criteria with other relevant factors, EPA should designate pulp and paper sludges as a non-waste in the proposed NHSM rule. In addition to meeting EPA legitimacy criteria for meaningful heating value and handling as a valuable commodity, there is no evidence that these sludges are being combusted to dispose of contaminants. In addition to these characteristics, industry plants have been designed to specifically utilize these sludges as a valuable fuel byproduct. Therefore, pulp and paper sludges are directly analogous to resinated wood. In the proposed NHSM, EPA is codifying a non-waste determination for resinated wood burned as fuel "…based on our belief that the use of resinated wood as fuel represents an integral component to the wood manufacturing process and, as such, resinated wood is not being discarded, and therefore not solid waste, when burned as fuel."[24] As with resinated wood, all available information provides support that pulp and paper sludges are combusted as a legitimate fuel, and as such, EPA should classify these sludges as a non-waste fuel when combusted. Since EPA has already found that the on-site use should be categorically designated, it is a small step given the lack of any evidence of discard, to proposing the same determination for off-site use. Presumably, the reason for off-site use is determined entirely by economics, capacity of dewatering equipment at a given site, need for additional fuel, and other factors. There is no evidence that the off-site use presents any evidence of discard.

[24] 76 Fed. Reg. 80452, 80472 (December 23, 2011).

7. Pulp and Paper Recycling Process Residuals[25]

There has been a long-standing industry practice of using residuals from recycling paper and paper products as a fuel. These residuals have meaningful heating value, are handled as a valuable commodity, and have emissions comparable to those from burning traditional biomass. URS Corporation developed the following pulp and paper recycling process residuals estimates:[26]

Material	# of Mills	# of Boilers	2005 Volume (tons)	Cost to Landfill and Replace with Natural Gas
Recycling Process Residuals	11	14	172,200	$24.2 million

Note: These values are likely to be understated as there are more than 100 mills that recycle.

The American Forest & Paper Association (AF&PA) estimates that the heat content for these residuals ranges from 7,430 to 11,860 Btu/lb, with a mean value of 9,399 Btu/lb. This range is comparable to that of traditional solid fuels fired by forest product facilities as this value falls between the mean value of 7,756 and 12,371 Btu/lb for bark and coal, respectively. The range of heat contents for residuals is also higher than the 5,000 Btu/lb heating value threshold identified in the final NHSM rule. Therefore, residuals from recycling paper and paper products meets EPA's current legitimacy criterion for meaningful heating value.

Pulp and paper recycling process residuals result from the extensive processing of materials being recycled into new paper products. These residuals are clearly handled as a valuable commodity given that the reprocessing activity is specifically designed to yield a useful fuel product.

EPA asked the following questions in the proposal to enable it to make a final determination for this category:

(1) Documentation of how the use of pulp and paper sludges that are used as a fuel are integrated into the industrial production process and the steps taken industry-wide to ensure that this NHSM is consistently used as a legitimate fuel and is not discarded, including when transferred to a different person for use as a fuel, (2) documentation on the amount of pulp and paper sludges burned as a fuel (whether within the control of the generator or outside the control of the generator), and what determines which pulp and paper sludges are burned as a fuel, as opposed to being land applied or disposed, (3) additional data regarding the contaminant levels of the various HAP, such as chlorine and metals, and what steps the industry has taken to ensure the quality of these sludges when used as a fuel are consistent with that of fuel product, (4) information on standard practices used to ensure that these sludges have a meaningful heating value, including the types of dewatering and other processing steps that these sludges are subject

[25] This category is sometimes referred to as old corrugated cardboard (OCC) rejects.
[26] URS Corporation, "Cumulative Cost Burden Analysis of Air Regulations Potentially Impacting the Forest Products Industry," updated July 2011.

to, as well as information on whether any pulp and paper sludges that are burned as a fuel are done so without any processing.

We understand that AF&PA will provide further details on these questions which will support the non-waste determination in its comments on the proposed NSHM rule.

The final NSHM rule required that contaminants [i.e., pollutants listed in Clean Air Act sections 112(b) and 129(a)(4)] in the NHSM be present at levels comparable to or lower than those in the traditional fuel in which the combustion unit is designed to burn. Recent information compiled by AF&PA indicate that chlorine levels will likely be higher in recycling process residuals than levels found in coal and/or bark, which are the most likely traditional fuels.

EPA should specify that pulp and paper recycling process residuals are a non-waste fuel based on a balancing of legitimacy criteria with other relevant factors. The combustion of recycling process residuals is a long-established industry practice that turns unusable paper fibers with good Btu value into a valuable fuel. Like resinated woods, there is no evidence that the pulp mills are combusting these materials to discard the chlorine content, any more than the same mills are combusting resinated wood to discard the formaldehyde. It is also likely that the pulp and paper mills are configured to burn recycling process residuals, another relevant factor identified by EPA. By not identifying these fuels as non-wastes under the NHSM rule, EPA will be subjecting this valuable product to the CISWI standards. Industry estimates the compliance costs for these standards as three times higher than costs associated with the Boiler standards. Given the stigma of being a waste incinerator and these higher costs, hundreds of thousands of tons of these materials will likely be land-filled and replaced with fossil fuels. This result is contrary to the Administration's stated policy of encouraging carbon neutral biomass as an alternative fuel. Given the potential outcomes resulting from solid waste status, EPA should designate pulp and paper recycling process residuals as a non-waste when combusted as fuel.