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This section of the FEDERAL REGISTER contains notices to the public of the proposed issuance of rules and regulations. The purpose of these notices is to give interested persons an opportunity to participate in the rule making prior to the adoption of the final rules.

ENVIRONMENTAL PROTECTION AGENCY

40 CFR Part 257

[EPA-HQ-RCRA-2008-0329; FRL-8758-5]

RIN 2050-AG44

Identification of Non-Hazardous Materials That Are Solid Waste

AGENCY: Environmental Protection Agency (EPA).

ACTION: Advanced notice of proposed rulemaking (ANPRM).

SUMMARY: The Environmental Protection Agency (EPA or Agency) is seeking comment on which non-hazardous materials are or are not solid waste under the Resource Conservation and Recovery Act (RCRA). The Agency is also seeking comment on a number of specific questions concerning the meaning of "solid waste" under RCRA, as it applies to non-hazardous waste programs. We are issuing this ANPRM to assist the Agency in developing certain standards under sections 112 and 129 of the Clean Air Act (CAA). The meaning of "solid waste" as defined under RCRA is of particular importance since CAA section 129 states that the term "solid waste" shall have the meaning "established by the Administrator pursuant to [RCRA]."

DATES: Comments must be received on or before February 2, 2009.

ADDRESSES: Submit your comments, identified by Docket ID No. EPA-HQ-RCRA-2008-0329, by one of the following methods:

- <http://www.regulations.gov>: Follow the on-line instructions for submitting comments.

- *E-mail*: Comments may be sent by electronic mail (e-mail) to: rcra-docket@epa.gov, Attention Docket ID No. EPA-HQ-RCRA-2008-0329. In contrast to EPA's electronic public docket, EPA's e-mail system is not an "anonymous access" system. If you send an e-mail comment directly to the docket without going through EPA's electronic public docket, EPA's e-mail

system automatically captures your e-mail address. E-mail addresses that are automatically captured by EPA's e-mail system are included as part of the comment that is placed in the official public docket, and made available in EPA's electronic public docket.

- *Fax*: Comments may be faxed to 202-566-9744, Attention Docket ID No. EPA-HQ-RCRA-2008-0329.

- *Mail*: Advanced Notice of Proposed Rulemaking—Identification of Non-Hazardous Materials That Are Solid Waste, Environmental Protection Agency, Mail code: 2822T, 1200 Pennsylvania Ave., NW., Washington, DC 20460. Please include a total of two copies. Attention Docket ID No. EPA-HQ-RCRA-2008-0329.

- *Hand Delivery*: Deliver two copies of your comments to the Advanced Notice of Proposed Rulemaking—Identification of Non-Hazardous Materials That Are Solid Waste, EPA/DC, EPA West, Room 3334, and 1301 Constitution Ave., NW., Washington, DC 20460. Attention Docket ID No. EPA-HQ-RCRA-2008-0329. Such deliveries are only accepted during the docket's normal hours of operation (8:30 a.m. to 4:30 p.m., Monday through Friday, excluding legal holidays), and special arrangements should be made for deliveries of boxed information.

Instructions: Direct your comments to Docket ID No. EPA-HQ-RCRA-2008-0329. EPA's policy is that all comments received will be included in the public docket without change and may be made available online at <http://www.regulations.gov>, including any personal information provided, unless the comment includes information claimed to be Confidential Business Information (CBI) or other information whose disclosure is restricted by statute. Do not submit information that you consider to be CBI or otherwise protected through <http://www.regulations.gov> or e-mail. The <http://www.regulations.gov> Web site is an "anonymous access" system, which means EPA will not know your identity or contact information unless you provide it in the body of your comment. If you send an e-mail comment directly to EPA without going through <http://www.regulations.gov>, your e-mail address will be automatically captured and included as part of the comment that is placed in the public docket and made available on the Internet. If you submit an electronic comment, EPA

recommends that you include your name and other contact information in the body of your comment and with any disk or CD-ROM you submit. If EPA cannot read your comment due to technical difficulties and cannot contact you for clarification, EPA may not be able to consider your comment. Electronic files should avoid the use of special characters, any form of encryption, and be free of any defects or viruses. For additional information about EPA's public docket, visit the EPA Docket Center homepage at <http://www.epa.gov/epahome/dockets.htm>. We also request that interested parties who would like information they previously submitted to EPA to be considered as part of this action, identify the relevant information by docket entry numbers and page numbers.

Docket: All documents in the docket are listed in the <http://www.regulations.gov> index. Although listed in the index, some information is not publicly available, e.g., CBI or other information whose disclosure is restricted by statute. Certain other material, such as copyrighted material, will be publicly available only in hard copy. Publicly available docket materials are available either electronically in <http://www.regulations.gov> or in hard copy at the OSWER Docket, EPA/DC, EPA West, Room 3334, 1301 Constitution Ave., NW., Washington DC. The Public Reading Room is open from 8:30 a.m. to 4:30 p.m., Monday through Friday, excluding legal holidays. The telephone number for the Public Reading Room is (202) 566-1744, and the telephone number for the OSWER Docket is 202-566-0270.

FOR FURTHER INFORMATION CONTACT: For questions regarding the development of this ANPRM, contact Michael Galbraith, Office of Solid Waste (5302P), U.S. Environmental Protection Agency, Ariel Rios Building, 1200 Pennsylvania Avenue, NW., Washington, DC 20460-0002, telephone (703) 605-0567, e-mail address: galbraith.michael@epa.gov.

SUPPLEMENTARY INFORMATION:

I. General Information

A. Does This Action Apply to Me?

Categories and entities potentially affected by this action include:

Generators		Users	
Major generator category	NAICS	Major boiler type and primary industry category	NAICS
Iron and Steel Mills	331111	<i>Industrial Boilers:</i>	
Scrap Tires	N/A	Food Manufacturing	311, 312
Passenger cars and trucks	326290	Pulp and Paper Mills	322
Other rubber product manufacturing		Chemicals and Allied Products	325
Logging	113310	Petroleum Refining	324
Sawmills and Wood Preservation	32111	Metals	331, 332
Veneer, Plywood, and Engineered Wood Product Manufacturing ..	32121	Other Manufacturing	313, 339, 321, 333, 336, 511, 326, 316, 327
Pulp, Paper, and Paperboard Mills	3221	<i>Commercial Boilers:</i>	
Cattle Ranching and Farming	1121	Office	813, 541, 921
Hog and Pig Farming	1122	Warehouse	421, 422
Poultry and Egg Production	1123	Retail	441, 445–454
Sheep and Goat Farming	1124	Education	611
Horses and Other Equine Production	112920	Public Assembly	624,
Crop Production	111	Lodging, Restaurant	721, 722
Support Activities for Crop Production	11511	Health Care Facilities	621
Food Manufacturing	311	Other	922140, others
Beverage and Tobacco Product Manufacturing	312	<i>Common Non-Manufacturing Boilers:</i>	
Construction of Buildings	236	Agriculture (crop & livestock production) ..	111, 112, 115
Site Preparation Contractors	238910	All Mining	212, 211
Landscaping Services	561730	Construction	235
Iron and Steel Mills	331111	<i>Other Boilers:</i>	
Fossil Fuel Electric Power Generation	221112	Electric Utility Boilers	221100
Cement Manufacturing	327310	Non HW Burning Cement Kilns	327310
Bituminous Coal and Lignite Surface Mining	212111		
Bituminous Coal Underground Mining	212112		
Anthracite Mining	212113		
Sewage Treatment Facilities	221320		
Solid Waste Landfill	562212		
Metal-casting industry	3115		
Glass and Glass Product Manufacturing	3272		
Packaging	32611		
Plastic manufacturers	325211		
Electrometallurgical Ferroalloy Product Manufacturing	331112		
Recycling services for degreasing solvents manufacturing	325998		
Solvent dyes manufacturing	325132		
Solvents made in petroleum refineries; and	324110		
Automotive repair and replacement shops	811111		

This table is not intended to be exhaustive, but rather provides a guide for readers regarding entities likely to be 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 preceding **FOR FURTHER INFORMATION CONTACT** section.

B. What Should I Consider as I Prepare My Comments for EPA?

1. *Submitting CBI.* Do not submit this information to EPA through <http://www.regulations.gov> or e-mail. Clearly mark the part or all of the information that you claim to be CBI. For CBI information in a disk or CD ROM that you mail to EPA, mark the outside of the disk or CD ROM as CBI and then identify electronically within the disk or CD ROM the specific information that is claimed as CBI. In addition to one complete version of the comment that includes information claimed as CBI, a copy of the comment that does not contain the information claimed as CBI must be submitted for inclusion in the public docket. Information so marked

will not be disclosed except in accordance with procedures set forth in 40 CFR part 2.

2. *Tips for Preparing Your Comments.* When submitting comments, remember to:

- Identify the rulemaking by docket number and other identifying information (subject heading, **Federal Register** date and page number).
- Follow directions—The agency may ask you to respond to specific questions or organize comments by referencing a Code of Federal Regulations (CFR) part or section number.
- Explain why you agree or disagree, suggest alternatives, and substitute language for your requested changes.

- Describe any assumptions and provide any technical information and/or data that you used.

- If you estimate potential costs or burdens, explain how you arrived at your estimate in sufficient detail to allow for it to be reproduced.

- Provide specific examples to illustrate your concerns, and suggest alternatives.

- Explain your views as clearly as possible, avoiding the use of profanity or personal threats.

- Make sure to submit your comments by the comment period deadline identified.

II. Background

The United States Court of Appeals for the District of Columbia Circuit vacated and remanded two Agency rules promulgated under the CAA—The Commercial and Industrial Solid Waste Incineration (CISWI) definitions rule (“CISWI Definitions Rule”), issued under CAA section 129, and the Industrial Boilers Maximum Achievable Control Technology (MACT) standards rule (“Boilers Rule”), issued under CAA section 112. The court concluded that EPA erred by excluding units that combust solid waste for the purposes of energy recovery from the Definitions Rule and including such units in the Boilers Rule. In response to the court’s decision, EPA is preparing to establish new standards under CAA sections 112 and 129 for the various units subject to each section.

Congress added section 129 to the CAA in 1990 specifically to address emissions from solid waste combustion. CAA section 129 directs EPA to promulgate emission standards for “solid waste incineration units.” 42 U.S.C. 7429(a)(1). The term “solid waste incineration unit” is defined, in pertinent part, to mean “any facility which combusts any solid waste material from commercial or industrial establishments * * *” *Id.* at section 7429(g)(1). However, the CAA excludes the following types of units from classification as solid waste incineration units that are subject to the section 129 standards: (1) Incinerators or other units required to have a permit under section 3005 of RCRA; (2) materials recovery facilities (including primary and secondary smelters) which combust waste for the primary purpose of recovering metals; (3) qualifying small power production facilities, as defined in section 3(17)(C) of the Federal Power Act, or qualifying cogeneration facilities, as defined in section 3(18)(B) of the Federal Power Act, which burn homogeneous waste (such as units which burn tires or used oil, but not

including refuse-derived fuel) for the production of electric energy or in the case of qualifying cogeneration facilities which burn homogeneous waste for the production of electric energy or steam or forms of useful energy (such as heat) which are used for industrial, commercial, heating or cooling purposes, or (4) air curtain incinerators, provided that such incinerators only burn wood wastes, yard wastes and clean lumber and that such air curtain incinerators comply with the opacity limitations to be established by the Administrator by rule. CAA section 129 also 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).¹ RCRA defines the term “solid waste” to mean “* * * any garbage, refuse, sludge from a waste treatment plant, water supply treatment plant, or air pollution control facility and other discarded material including solid, liquid, semisolid, or contained gaseous material resulting from industrial, commercial, mining, and agricultural operations, and from community activities, but does not include solid or dissolved material in domestic sewage, or solid or dissolved materials in irrigation return flows or industrial discharges which are point sources subject to permits under section 402 of the Federal Water Pollution Control Act, as amended (86 Stat. 880), or source, special nuclear, or byproduct material as defined by the Atomic Energy Act of 1954, as amended (68 Stat. 923).” Section 1004 (27).

A. CISWI Rule/CISWI Definitions Rule/Boiler Rule

EPA fulfilled its statutory obligation under CAA section 129 when it promulgated a final rule setting forth performance standards and emission guidelines (EG) for Commercial and Industrial Solid Waste Incineration Units (referred to as the “CISWI Rule”). 65 FR 75338 (December 1, 2000). Under CAA section 129, the New Source Performance Standards (NSPS) and EG adopted for CISWI units must reflect the maximum degree of reduction in emissions of air pollutants that the Administrator determines is achievable, taking into consideration the cost of achieving such emission reduction, and any non-air quality health and environmental impacts and energy requirements. This level of control is commonly referred to as MACT. The Administrator may also distinguish

among classes, types (including mass-burn, refuse-derived fuel, modular and other types of units), and sizes of units within a category in establishing such standards. *Id.* at 7429(a)(2).

NSPS apply to new stationary sources—that is, sources whose construction begins after the NSPS is proposed or sources that are reconstructed or modified on or after a specified date. The EG are similar to the NSPS, except that they apply to existing sources—that is, sources whose construction begins on or before the date the EG are proposed, or sources that are reconstructed or modified before a specified date. Unlike NSPS, the EG are not enforceable until EPA approves a state plan or adopts a federal plan for implementing and enforcing them, and the state or federal plan becomes effective.

The CISWI Rule established emission limitations for new and existing CISWI units for the following pollutants (or surrogates): cadmium, carbon monoxide, dioxins/furans, hydrogen chloride, lead, mercury, oxides of nitrogen (NO_x), particulate matter (PM), sulfur dioxide (SO₂), and opacity. In addition, the rule established certain monitoring and operator training and certification requirements. See 65 FR 75338 for a more detailed discussion of the CISWI Rule.

The CISWI Rule was subject to judicial challenge in *Sierra Club v. EPA* (No. 01–1048) (D.C. Cir.) and a separate petition for reconsideration of the final rule. The petition argued that the final rule was procedurally defective because EPA had failed to provide adequate notice and an opportunity to comment on the definitions adopted in the final rule. Also, after promulgation of the CISWI Rule, the court issued its decision in *Cement Kiln Recycling Coalition v. EPA*, 255 F.3d 855 (D.C. Cir. 2001) (“Cement Kiln”). In this decision, the court rejected certain common elements of EPA’s MACT methodology. As a result, EPA requested a voluntary remand of the CISWI Rule, in order to address concerns related to the issues that were raised by the court in *Cement Kiln*. The court granted the voluntary remand and remanded, without vacatur, the CISWI Rule back to EPA, thereby terminating the case (see Order dated September 6, 2001). Because the CISWI Rule was not vacated, its requirements remain in effect. See *Sierra Club v. EPA*, 374 F. Supp.2d 30, 32–33 (D.D.C. 2005). In addition to taking a voluntary remand of the CISWI Rule, EPA also granted an administrative petition for reconsideration on February 17, 2004 related to the definitions of “solid waste,” “commercial or industrial

¹ CAA section 129 refers to the Solid Waste Disposal Act (SWDA). However, this act, as amended is commonly referred to as RCRA. Thus, the term, “RCRA” is used in place of SWDA in this Notice.

waste” and “commercial and industrial solid waste incineration unit” in the CISWI Rule.

EPA responded to the petition for reconsideration on September 22, 2005, by re-promulgating the definitions of “solid waste,” “commercial or industrial solid waste incineration unit” and “commercial or industrial waste” (the CISWI Definitions Rule). See 70 FR 55568. In the CISWI Definitions Rule, EPA distinguished solid waste incinerators from boilers/furnaces based on the function of the units. Solid waste incinerators included units designed and operated to discard materials through high temperature combustion, but excluded units designed and operated to recover energy for a useful purpose.

The CISWI Definitions Rule was the subject of judicial challenge in *NRDC v. EPA* (489 F.3d 1250 (D.C. Cir. 2007)) where the court vacated the definitions of “commercial or industrial solid waste incineration unit” and “commercial or industrial waste.” The court observed that, although the functional distinction EPA drew between boilers/furnaces and incinerators “may well be reasonable,” the statute unambiguously requires any unit that combusts “any solid waste material at all”—regardless of whether the material is being burned as a fuel—to be regulated as a “solid waste incineration unit.” *Id.* at 1260. The court also vacated and remanded the Boilers Rule, concluding that EPA erred by excluding units that combust solid waste for the purposes of energy recovery from the CISWI Rule and including such units in the Boilers Rule.

Therefore, the critical issue in responding to the court’s decision is for EPA to establish, under RCRA, which non-hazardous secondary materials² constitute “solid waste.” This is necessary because, under the court’s decision, any unit combusting any “solid waste” at all must be regulated as a “solid waste incineration unit,” regardless of the function of the combustion device. If a non-hazardous material is not a “solid waste” under RCRA and such material is burned for fuel value or used as an ingredient in a manufacturing process, then under the court’s decision, the combustion unit would properly be regulated pursuant to CAA section 112. Alternatively, if such

material is a “solid waste” under RCRA and is burned for fuel value or used as an ingredient in a manufacturing process and such ingredient is combusted, then the unit must be regulated under CAA section 129.

B. Sections 112 and 129 of the CAA

CAA section 112 requires EPA to promulgate regulations to control emissions of 187³ hazardous air pollutants (HAP) from major sources⁴ in each source category listed by EPA under section 112(c). The statute requires the regulations to reflect the maximum degree of reduction in emissions of HAP that is achievable taking into consideration the cost of achieving the emission reduction, any non-air quality health and environmental impacts, and energy requirements. As noted previously, this level of control is commonly referred to as MACT.

For new sources, MACT standards cannot be less stringent than the emission control achieved in practice by the best-controlled similar source (see CAA section 112(d)(3)). The MACT standards for existing sources cannot be less stringent than the average emission limitation achieved by the best-performing 12 percent of existing sources for categories and subcategories with 30 or more sources, or the best-performing 5 sources for categories or subcategories with fewer than 30 sources (*Id.*). This level of control is usually referred to as the MACT “floor,” the term used in the Legislative History.

Like the CAA section 112 standards, the CAA section 129 standards are based on a MACT floor. Also, as with the section 112 standards, above-the-floor standards may be established where EPA determines it is “achievable” taking into account costs and other factors. Although CAA section 129 “establishes emission requirements virtually identical to section [112’s],” *Nat’l Lime Ass’n v. EPA*, 233 F.3d at 631, the two sections differ in three primary respects. First, CAA section 112 requires that MACT standards be established for major sources of HAP emissions, but provides discretionary authority to establish MACT standards for area sources of HAP emissions.⁵ On

the other hand, the CAA section 129 MACT standards apply across the board to all solid waste incineration units in a given category regardless of size. Second, CAA section 129 requires that emission standards be set for specific HAP and certain pollutants that are not classified as CAA section 112 HAP.⁶ Specifically, CAA section 129 requires numeric emission limitations for the following nine pollutants: Cadmium, carbon monoxide, dioxins/furans, hydrogen chloride, lead, mercury, NO_x, particulate matter (total and fine), opacity (as appropriate), and SO₂.⁷ The CAA section 129 pollutants listed above represent the minimum that must be regulated; EPA has the discretion to establish standards for other pollutants as well. Third, CAA section 129 includes requirements for operator training, pre-construction site assessments, and monitoring that are not included in CAA section 112. See CAA section 129(a)(3), (c) and (d). Rather, CAA section 112’s implicit authority and CAA sections 113 and 114’s explicit authority is relied upon to include provisions as necessary to assure compliance with and enforcement of the emission limitations. It is important to note that CAA section 129(h)(2) specifies that no solid waste incineration unit subject to the performance standards under CAA sections 111 and 129 shall be subject to the standards under CAA section 112(d).

III. Beneficial Use of Secondary Materials

A. Introduction

EPA supports exploring regulatory alternatives that achieve the following goals: Maximizing the usefulness of secondary materials in production, reducing or eliminating waste, conserving energy, and reducing harmful air emissions. Such alternatives should ensure protection of human health and the environment, and one alternative would be an integrated management approach that includes emissions and source reduction and

Administrator finds that the sources “presen[t] a threat of adverse effects to human health or the environment (by such sources individually or in the aggregate) warranting regulation under this section.” Section 112(c)(3). Certain categories of area sources must be regulated in accordance with section 112(c)(3) and (k)(3)(B).

⁶ This is in reference to the initial list of 190 HAPs provided by Congress.

⁷ Of these nine pollutants, cadmium, dioxins/furans, hydrogen chloride, lead, and mercury are also regulated HAP pursuant to CAA section 112, and particulate matter and carbon monoxide are commonly used as surrogate emission standards to control specific CAA section 112 HAP (e.g., CAA section 112 HAP metal and organic emissions).

³ EPA has delisted 3 of the 190 HAP initially listed in section 112(b)(1): Methyl ethyl ketone, glycol ethers, and caprolactam.

⁴ A “major source” is any stationary source that emits or has the potential to emit considering controls, in the aggregate, 10 tons per year or more of any HAP or 25 tons per year or more of any combination of HAP. CAA section 112(a)(1).

⁵ An “area source” is any stationary source of HAP that is not a major source. CAA section 112(a)(2). Area sources may be regulated under CAA section 112(d)(2) standards if the

² A secondary material is any material that is not the primary product of a manufacturing or commercial process, and can include post-consumer material, post-industrial material, and scrap. Many types of secondary materials have Btu or material value, and can be reclaimed or reused in industrial processes. For purposes of this notice, the term secondary materials include only non-hazardous secondary materials.

recycling, as well as energy capture and resource recovery from secondary materials. For example, within the context of RCRA,⁸ the Agency seeks to achieve these goals through promotion of the use or reuse of various secondary materials, provided such reuse activity is protective of human health and the environment. EPA seeks to accomplish this in conjunction with our state partners through research, analysis, communication, and outreach.

To help put this discussion into context, the Agency notes that non-hazardous secondary materials are widely used today as fuels or ingredients in industrial processes. We expect this trend will continue with higher prices for energy and materials and advancing technology in secondary material use.

The nature of what constitutes a legitimate fuel or ingredient reflects the availability of natural resources and technology development. The use of materials from a variety of non-traditional sources, including the use of energy-containing secondary materials, may have a significant role to play in our resource conservation efforts.

The use of non-hazardous secondary materials as alternative fuels and ingredients in manufacturing processes using combustion has a long history, and is increasingly becoming an accepted characteristic of the modern industrial economy.⁹ Under conditions in the past, many secondary materials may have been managed as wastes—that is, they were discarded. However, if the cost of fossil fuel increases and technology advances, such materials become comparatively more valuable as an energy source, ingredient, or both. Furthermore, the use of some of these materials is likely to contribute to certain emission reductions and may increase other emissions.¹⁰

The reuse of secondary materials may result in other benefits. First, the use of secondary materials could result in

reduction of imported fuel. Second, using secondary materials for fuel or ingredient value has an additional benefit of reducing the environmental impacts caused by the disposal of such materials, if such disposal has environmental impacts. For example, use of tires as a fuel source means that those tires are no longer accumulated in huge piles where there are known incidents of them catching fire and serving as breeding grounds for disease carrying mosquitoes.^{11 12}

The remainder of this section first presents an overview of the secondary materials and their contribution to improved economic efficiency. Then, we briefly summarize selected materials management programs and successes. Finally, we discuss known use patterns for selected secondary materials and briefly summarize some economic and environmental benefits derived from the use of such materials.

B. Overview of Secondary Materials and Their Contribution to Economic Efficiency

There exists a wide and diverse range of secondary materials used as fuels and/or ingredients, or otherwise beneficially used. Although sometimes referred to as wastes, these secondary materials may, in most cases, be more appropriately defined as “by-products,”¹³ reflecting their inherent resource recovery value in the generation/production of heat, energy, and/or marketable products. This inherent value exists with or without processing, depending upon the material. These secondary materials commonly include, but are not limited to, the following: scrap tires; scrap plastics; the biomass group (pulp and paper residuals, forest derived biomass,¹⁴ agricultural residuals, food scraps, animal manure, gaseous fuels); the construction and demolition material group (building related, disaster debris, and land clearing debris); spent solvents; coal refuse; waste water treatment sludge; used oil; blast furnace slag; cement kiln dust

(CKD); coal combustion products (e.g., fly ash, bottom, ash, boiler slag); foundry sand; silica fume; and secondary glass material. These secondary materials can provide significant and widespread environmental and economic benefits when legitimately used/reused as an effective substitute for, or supplement to, primary materials.

As certain primary materials become costly, the use of secondary materials is likely to become more economical. Managers of manufacturing or energy-production units that use secondary materials as a substitute for primary fuels or ingredients are obviously doing so for their own interests, including short and/or long-term competitive advantage. In general, industry will use secondary materials so long as the final price to the user is equivalent or less than the price for comparable primary material(s), and the product(s) derived from these materials is of equal (or better) quality. Provided industry is able to continue to safely use secondary materials, economic efficiency may be improved. While the issue raised in this ANPRM is whether specific secondary materials are properly considered legitimate products, or RCRA solid wastes, EPA notes that the regulatory status of the fuel or ingredient may, as mentioned above, potentially affect choices made by industrial concerns in selecting raw materials.

C. Materials Management Programs and Successes

EPA, like environmental agencies in other countries, is exploring approaches to waste management that employs the concepts of life cycle assessment¹⁵ and full cost accounting.¹⁶ The life cycle approach has been advanced in the EU where, for the past several years, the EU has been focused on developing a strategy designed to minimize and recycle secondary materials,¹⁷ while recognizing the importance of full life cycle analysis within a comprehensive materials management program. Japan has gone even further, passing ambitious laws and establishing an

⁸ RCRA Section 6901(c)—Materials: The Congress finds with respect to materials, that—(1) Millions of tons of recoverable material which could be used are needlessly buried each year; (2) methods are available to separate usable materials from solid waste; and (3) the recovery and conservation of such materials can reduce the dependence of the United States on foreign resources and reduce the deficit in its balance of payments.

⁹ For example, use of tire-derived fuel in the cement industry began in Japan and Germany in the 1970s. See docket item titled “Scrap Tire Markets in the United States,” RMA, November 2006. Also, the market for woody biomass is strong in Europe, where this material sells for \$100 to \$125 per ton. See docket item titled “Biocycle, Advancing Composting, Organics Recycling and Renewable Energy,” July 2008.

¹⁰ See the Materials Characterization Papers in the docket established for this action for examples of emission comparisons.

¹¹ Although this notice highlights the benefits of using secondary materials as fuels, EPA recognizes that there may be other uses of secondary materials that in some cases are preferable from an energy perspective. For example, re-refining used oil is reported to save more energy content of the used oil than burning for energy recovery.

¹² See docket entry titled “Scrap Tire Cleanup Guidebook, January 2006,” for more discussion on hazards associated with tire piles.

¹³ For purposes of this action, we define by-product as a secondary or incidental material derived from the primary use or production process that has value in the marketplace, or value to the user.

¹⁴ More commonly referred to as scrap wood materials.

¹⁵ Note: The terms, “life cycle analysis” and “life cycle assessment” are commonly used interchangeably. Life cycle assessment is a system-wide analytical technique for assessing the environmental (and sometimes economic) effects of a product, process, or activity across all life stages.

¹⁶ Full cost accounting is an accounting system that incorporates economic, environmental, health, and social costs of a product, action, or decision.

¹⁷ For example, The Closed Substance Cycle and Waste Management Act of 1994 (Germany), the German Auto Recycling Law, Directive 2006/66/EC of the European Parliament (EU battery recycling law).

effective initiative¹⁸ focused on creating a “closed loop” economy.

EPA’s materials management approach is focused on the three R’s: Reduce, reuse, and recycle.¹⁹ This approach helps ensure more efficient resource and material use through the integration of both environmental and economic components in the management of materials. In 2002, EPA initiated the Resource Conservation Challenge (RCC). This program was designed to help implement the Agency’s approach to materials management. The RCC Program is currently focused on four specific material groups: Municipal solid waste; green initiatives, such as electronics; industrial materials; and priority and toxic chemicals. The Agency also has materials management programs focused specifically on used oil and scrap tires.²⁰ Other more broadly focused EPA programs include the Office of Solid Waste’s (OSW’s) Product Stewardship Program and the Comprehensive Procurement Guidelines. In addition, several states have also established life cycle approaches to materials management (e.g., California, Minnesota, Washington, and Vermont).

The Agency has an interest in understanding the environmental and economic tradeoffs associated with life cycle implications of our materials management programs. For example, we have conducted preliminary life-cycle analyses of beneficial impacts associated with recycling of foundry sand and selected coal combustion products.²¹ It is also one of our mandates under RCRA Subtitle F—Federal Responsibilities, which states the “Administrator shall provide information on the technical and economic aspects of developing integrated resource conservation or recovery systems * * *” (Sec. 6003). For the examples cited above, the Agency used a rigorous analytical approach to evaluate the environmental

and economic benefits associated with the management of those materials. This rigorous analytical approach to the development of materials management programs helps to ensure that we are not promoting economically or environmentally inefficient programs. Where we have evaluated the benefits of secondary materials management programs, such as the RCC’s Program as described above for uses of foundry sand and selected coal combustion products, our analyses have shown those programs provide benefits.

We believe that it is critical to interpret which secondary materials are not “solid wastes” pursuant to RCRA to ensure the continued legitimate use of secondary materials in combustion processes. This, in turn, will maintain the continued environmental and economic benefits from these programs.

D. Secondary Materials Use and Benefits

This part builds on the discussion in part “B” of this section and provides greater detail on some of the non-hazardous secondary materials that are commonly used by the industrial community. We summarize key information that is available on the known generation, use, and benefits of these secondary materials. The purpose of this part is to describe the Agency’s understanding regarding the wide-scale acceptance, use, and value of these secondary materials in U.S. industrial markets. More detailed information on a wide array of secondary materials potentially affected by this action is presented in the Materials Characterization Papers, which can be found in the Docket established for today’s action.

The Materials Characterization Papers outline publicly and readily available information concerning material characteristics relevant to this ANPRM. Specifically, for each material group, the papers endeavor to: (a) Provide a clear definition of the material; (b) identify annual quantities generated and used; (c) outline current combustion and non-combustion uses, along with current quantities landfilled or otherwise stored; (d) discuss management and combustion processes utilized; and (e) summarize potential environmental and economic impacts from the use of each material. The available information across these components of each paper and the individual materials is often limited or uncertain. Thus, these papers represent our initial effort to gather and present relevant data. The Agency seeks comment on additional data sources that may enhance its understanding and knowledge of these materials.

Non-hazardous secondary materials are widely used as fuels and/or ingredients in virtually all types of boilers (e.g., industrial, commercial, institutional), cement kilns, lightweight aggregate kilns (LWAKs), and other industrial furnaces (e.g., glass furnaces). These facilities burn or otherwise use in the production process hundreds of millions of tons of secondary materials each year. The total number of facilities using secondary materials each year as a substitute for primary fuels and/or ingredients is unknown, but our best estimate indicates that approximately 200,000 units use secondary materials as a substitute for primary fuels and/or ingredients.²²

The manner in which non-hazardous secondary materials are processed, the nature of the materials, and the ways in which they are used or recycled generally establishes whether such materials are wastes or “by-products.” Based on our research for the Materials Characterization Papers, we have identified eight non-hazardous secondary material fuels or fuel groups and six non-hazardous ingredients, or ingredient groups. The eight fuel source materials are: The biomass group (pulp and paper residuals, forest derived biomass, agricultural residues, food scraps, animal manure, gaseous fuels); construction and demolition materials (building related, disaster debris, and land clearing debris); scrap tires; scrap plastics; spent solvents; coal refuse; waste water treatment sludge, and used oil. The six secondary material ingredients are: Blast furnace slag; CKD; coal combustion product group (fly ash, bottom ash, and boiler slag); foundry sand; silica fume; and secondary glass material.

Based on publicly available information, we believe that these materials account for the vast majority of all non-hazardous secondary materials used as fuels and/or ingredients in the U.S. However, the Agency solicits comment on whether there are other non-hazardous secondary materials that are also used as a fuel or ingredient that we have not identified, either in this notice or in the Materials Characterization Papers. If so, the Agency requests that commenters provide information on such materials, including the composition or characteristics of such materials, how much of the secondary material is produced and utilized, how it is utilized—that is, is it a fuel or an

¹⁸ The Japanese law Promoting the Utilization of Recyclable Resources, 1991, the Japanese Recycling Law, 2001 (the world’s first “take back” law), and The Ecofactory initiative (Ministry of International Trade and Industry).

¹⁹ See: <http://www.epa.gov/epawaste/rcc/basic.htm>.

²⁰ See: <http://www.epa.gov/waste/conserves/materials/usedoil/index.htm>, and, <http://www.epa.gov/waste/conserves/materials/tires/index.htm>.

²¹ See docket items titled “Waste and Materials-Flow Benchmark Sector Report: Beneficial Use of Secondary Materials—Coal Combustion Products, Final Report,” USEPA, February 12, 2008 and “Waste and Materials-Flow Benchmark Sector Report: Beneficial Use of Secondary Materials—Foundry Sand, Final Report,” USEPA, February 12, 2008.

²² Identification of Non-Hazardous Materials That Are Solid Waste. EPA Exhibit 1: Preliminary Estimate of Total Nonhazardous Secondary Materials Used Annually in Boilers and Kilns. Sept. 24, 2008.

ingredient, and how it is generally handled. Detailed information will be the most useful as we move forward in the rulemaking effort.

The annual use patterns, quantities, and benefits associated with some of these secondary materials are well established, while less is known about other secondary materials. Presented below are brief summaries of the documented usage, trends in usage, and benefits associated with some of these widely used secondary materials. As mentioned above, the Materials Characterization Papers, available in the docket established for today's action, present more detailed information on the quantities and use patterns, characteristics, composition, management and benefits associated with all eight secondary fuel materials/groups and the six secondary ingredient materials/groups we have identified.

Biomass²³—When used as a secondary material fuel, biomass consists primarily of pulp and paper mill residuals, forest derived biomass, agricultural residuals, food scraps, animal manure, and gaseous fuels. Sectors that generate and/or use these valuable biomass commodities include: Crop production; support activities for crop production; food manufacturing; beverage and tobacco product manufacturing; logging; pulp, paper, and paperboard mills; sawmills and wood preservation; veneer, plywood, and engineered wood product manufacturing; cattle ranching and farming; hog and pig farming; poultry and egg production; sheep and goat farming; horses and other equine production; and, sewage treatment facilities.

Timber harvesting and the manufacture of lumber generate large amounts of forest-derived biomass used as secondary material fuels. These woody materials may originate directly from the forest as logging residues (e.g., tree limbs, tops, needles, leaves), or from timber processing mills (e.g., clean and unadulterated bark, sawdust, trim, screenings, tree harvesting residuals). Logging and other forest harvesting removal residues are estimated to range from 62 million tons per year (tpy) to 103 million tpy, with an estimated 42 to 93 million tpy available for recovery and beneficial use. Total primary mill²⁴ residue production is estimated to range from 87 to 91 million tpy. Experts predict that by 2050, logging and other

forest harvesting removal residues will increase by 23 million tpy and availability of secondary mill residues (i.e., residues such as board, trim and breakage from the manufacture of reconstituted wood/panel products) will increase by 16 million tpy.

Available information indicates that logging residues, although a good potential source for secondary material fuel, are not currently collected for use as a fuel on any large scale. Primary mill residues, however, are highly valuable as feedstocks in combustion, as well as for non-combustion purposes.²⁵ Approximately 42 percent of all primary mill residues are used as a fuel, including 76 percent of bark residues, 12 percent of coarse residues, and 56 percent of fine residues. These materials are burned in a variety of boilers, including Dutch ovens, fuel cell ovens, spreader stokers, suspension-fired boilers, and fluidized bed combustion boilers. Forest-derived materials may also be co-fired with other fuels, primarily solid fuels such as coal. Logging and primary milling residues may be chipped or sorted before being used, but otherwise generally undergo minimal processing. The use of forest-derived materials has been found to result in generally higher PM emissions than natural gas or distillate oil, but lower PM emissions than coal or residual oil systems. Estimated NO_x emissions associated with the use of wood are similar to those associated with distillate and lower than the NO_x emissions for other conventional fuels, while wood combustion results in lower SO₂ emissions than most conventional fuels. Finally, the use of forest-derived materials results in reduced fuel costs to the user and may provide environmental benefits associated with avoided virgin material²⁶ extraction and, in some cases, avoided transportation.

The forest products industry generates large quantities of secondary material biomass fuels in the form of pulp and paper residues, including sludges and black liquor.²⁷ However, black liquors that are reclaimed in a pulping liquor recovery furnace and then reused in the pulping process are excluded from the definition of solid waste under Subtitle C of RCRA, unless speculatively accumulated, as defined in 261.1(c), or

reclaimed in another manner. Pulp and paper mills produce the dry biomass equivalent of between 4.2 and 5.8 million tons of wastewater treatment sludges. In 2002, approximately 22 percent of all pulp and paper mill sludges were used in hog fuel boilers as a supplementary or stand-alone fuel. An undetermined amount was used as a cement kiln feedstock and as a fuel pellet ingredient. Anaerobic sludge production also generates methane. Sludges typically undergo mechanical dewatering before being combusted. The use of mill sludges in onsite boilers results in reduced fuel costs for the facility, and may provide environmental benefits associated with avoided virgin material extraction and transportation.

Agricultural residuals include crop residues remaining in the fields after harvest (primary residues) and processing residues generated from the harvested portions of crops during food, feed, and fiber production (secondary residues). Current annual production of agricultural residues from major crops is estimated to be around 500 million dry tpy. These primary biomass crops include barley, canola, corn, cotton, dry beans, flax, oats, peanuts, peas, potatoes, rice, rye, safflower, sorghum, soybeans, sugarcane, sunflowers, and wheat. Anywhere from 113 million tpy to 173 million tpy is estimated to be available for removal from the fields in a sustainable manner (i.e., while maintaining cropland fertility and quality). However, the total quantity of agricultural residues actually used for fuel on an annual basis is difficult to determine from the available literature. Total primary agricultural residue production fluctuates with the amount of U.S. land in crop production and the relative proportion of crops on this land. In 2007, we estimate that approximately 6.0 million tons of agricultural residues were burned, 92 percent of which [on a British thermal unit (Btu) basis] provided useful thermal output. The remaining 8 percent was used to produce electricity. Around 71 percent of total agricultural residues burned (Btu basis) were secondary residues used in the food processing industry, mostly sugarcane bagasse at sugar mills. The remaining 29 percent was used in the Agriculture, Forestry, and Mining, and the Paper and Allied Products industries. Corn stover and other agricultural residues can be used as a heat and power source for the production of corn and cellulosic ethanol. Agricultural residues are generally burned as fuel in fuel cells, horseshoe boilers, and spreader stoker boilers. Aside from occasionally drying,

²³ Source: Materials Characterization Paper in Support of the Advanced Notice of Proposed Rulemaking: Identification of Non-Hazardous Materials That Are Solid Waste—Biomass.

²⁴ Lumber and veneer mills.

²⁵ Primary mill residues tend to be clean, uniform, concentrated, and with a low-moisture content. As a result, these materials generally require little processing.

²⁶ The term "Virgin material," as used in this Notice means resources extracted from nature in their raw form, such as timber, metal ore, coal, petroleum, etc.

²⁷ See 40 CFR 261.4(a)(6).

agricultural residues do not generally require processing prior to being utilized as a fuel. The use of agricultural residues as a substitute for coal in an existing power plant reduces SO₂, NO_x, and other emissions and eliminates the environmental impacts associated with the extraction and processing of the traditional fuels.

Food scraps are generated at all stages of the food production system, including farming, storage, processing, wholesaling, retail, and consumption. Food scraps, broadly defined, include both the portion of harvested crops and livestock that does not enter the retail market and the portion of food discarded by retailers and consumers. This ANPRM is concerned only with industrial food scraps; food scraps generated by retailers and consumers are not considered because they enter the waste stream as municipal solid waste. The total quantity of industrial food scraps produced on an annual basis is not readily accessible from publically available information. Industrial food scraps are known to be burned in lodging and restaurant boilers. However, the annual quantities burned and the distribution of this use is unknown. The use of food scraps with meaningful fuel value in lodging and restaurant boilers eliminates the environmental impacts associated with the extraction and processing of the traditional fuels.

Animal manure is the excrement of livestock reared in agricultural operations. Animal manure may also include straw, sawdust, and other residues used as animal bedding. Gaseous fuels may be derived from landfills (landfill gas) or from animal manure and solid biomass (biogas), such as crop silage. Biogas is generated via anaerobic digestion, a multi-stage process whereby bacteria convert carbohydrates, fats, and proteins to methane. Domestic livestock production generates over a billion tons of manure annually, which if used to produce biogas would yield approximately 19.4 million tons of methane. Anaerobic digestion of current manure production managed in ponds, anaerobic lagoons, and holding tanks could yield a maximum of about 2.4 million tpy of methane. Current production, however, is about 0.07 million tons from 111 operating digesters.

We estimate that about 35 million dry tons of current manure production could be used for bioenergy purposes. Livestock production has become increasingly concentrated in recent years, facilitating the collection of manure for bioenergy purposes. As bioenergy conversion technologies

improve, the opportunity for utilizing animal manure for bioenergy production may likely increase. Biogas produced on dairy farms is typically used to heat water for purposes of cleaning and sanitizing milking pipelines and equipment in dairy operations. Biogas generated on farms is typically burned on-site directly in boilers and, to a lesser extent, is burned in space heating. Biogas benefits include displacement of fossil fuels, primarily natural gas. Furthermore, the use of biogas as a replacement for natural gas avoids the emissions associated with the extraction and processing of natural gas.

*Scrap tires*²⁸—Scrap tires are used tires that are recycled when they can no longer be used as tires. This may occur because of normal tread wear, punctures, destruction in accidents, or any number of other reasons. Scrap tires are generated from the replacement of tires on passenger and commercial vehicles. Consumers and industry in the U.S. generated 299.6 million tires in 2005; this represents approximately 4.9 million tons of tires, assuming an average of 33 pounds per tire. Approximately 52 percent of the total number of scrap tires generated in 2005 went for tire-derived fuel (TDF).²⁹ Although energy recovery is the most common use of scrap tires, there are many non-fuel uses for scrap tires, including: Civil engineering (i.e., construction of landfills and roads); cut/punched/stamped into other products (i.e., floor mats); and, rubber modified asphalt. While some facilities are capable of burning whole tires, a large percentage of tires are sent to processors where they are shredded or chipped prior to being sent to plants for use as TDF. Facilities that burn whole tires often charge a tipping fee for acceptance of these tires, while chipped tires must be purchased. TDF is used in a variety of units, including boilers and industrial furnaces, such as kilns. It can be used to supplement and/or replace a wide range of fuels including coal, coke, fuel oil, natural gas, and wood. The use of tires for fuel has increased from 24.5 million tires in 1990 to 155.1 million tires in 2005. During this same period, the number of tires in stockpiles declined by nearly 82 percent, going from approximately one billion tires to just under 200 million, a significant environmental accomplishment. The majority of tires that have been removed from these piles have been used in

²⁸ Source: Materials Characterization Paper in Support of the Advanced Notice of Proposed Rulemaking: Identification of Non-Hazardous Materials That Are Solid Waste—Scrap Tires.

²⁹ TDF has a heating value of around 13,000 to 16,000 Btu/lb.

industrial boilers and kilns for energy recovery. This trend may increase if the cost of conventional fossil fuels increases.

Emissions test data compiled by EPA in 1997 suggest that substituting scrap tires for coal in electric utility boilers may lead to reductions in NO_x and particulate matter emissions,³⁰ but show no clear pattern for SO_x and zinc emissions.³¹ Studies indicate that there is an increase in zinc emissions when TDF is used at industrial boilers and pulp and paper mills, while zinc emission data are inconclusive for cement kilns and utility boilers. Finally, as referenced above, the use of TDF as a replacement for traditional primary fuels eliminates the environmental impacts associated with the extraction and processing of the traditional fuels.

*Used Oil*³²—Used oil is defined as petroleum-based or synthetic oil that has been used and has been contaminated from use (see 40 CFR 279.1 for the specific definition). To meet EPA's regulatory definition, contamination includes residues and contaminants generated from the handling, storing, use, and processing of oil.³³ Physical contaminants from use include metal shavings, high water content, or dirt, while chemical contaminants from use include solvents, halogens, or lead. To meet EPA's regulatory definition, used oil must have been refined from crude oil or made from synthetic materials; animal and vegetable oils are excluded from EPA's regulatory definition of used oil. Generators of used oil include businesses that handle oil through commercial or industrial operations or from the maintenance of vehicles and equipment. The oil may have been used as a lubricant, hydraulic fluid, heat transfer fluid, buoyant, and for other similar purposes.

³⁰ United States Environmental Protection Agency (EPA), 1997, "Air Emissions from Scrap Tire Combustion".

³¹ See also the Nebraska Department of Environmental Quality, Applicability Determination for Combusting Tire Derived Fuel in Humboldt Wedag Kiln (Kiln #2), indicates that emissions of SO₂, NO_x, and CO decreased while TDF was used. (see: <http://www.deq.state.ne.us/Press.nsf/pages/AGFactsheet1>)

³² Source: Materials Characterization Paper in Support of the Advanced Notice of Proposed Rulemaking: Identification of Non-Hazardous Materials That Are Solid Waste—Used Oil.

³³ Used oil processing is defined as a chemical or physical operation designed to produce from used oil, or to make used oil more amenable for production of fuel oils, lubricants, or other used oil-derived products. Processing includes, but is not limited to: blending used oil with primary petroleum products, blending used oils to meet the fuel specification, filtration, simple distillation, chemical or physical separation and re-refining.

Recent estimates indicate that approximately 1.35 billion gallons of used oil are collected each year. Depending upon the year, our estimates indicate that as much as 90 percent of all collected used oil is burned for energy recovery. Both on-specification and off-specification³⁴ used oil may be used as a source of fuel in combustion units. However, off-specification used oil may only be burned in the following types of boilers: industrial boilers located at facilities that are engaged in a manufacturing process where substances are transformed into new products; utility boilers used to produce electric power, steam, heated or cooled air or other gases or fluids for sale; used oil-fired space heaters provided that the burner meets the provisions of 40 CFR 279.23; and hazardous waste incinerators subject to regulation under 40 CFR subpart O of parts 264 or 265. National information on the distribution between on-specification and off-specification used oil used as a fuel is not readily available. However, asphalt plants appear to be the largest users of used oil, followed by space heaters, and industrial boilers. We estimate that approximately 73 percent of all used oil generated and used each year is on-specification.

The long-term trend in used oil generation is undetermined. However, during the 1997–2005 time period, the recycling rate for used oil generated by service stations increased from 66 percent to almost 100 percent.

The principal environmental benefits of burning used oil for energy recovery are associated with upstream production offsets and include substantial reductions of NO_x and carbon monoxide (CO) emissions. In terms of combustion-specific emissions, use of used oil results in notably lower NO_x emissions, in particular when compared to residual fuel oil. However, PM and lead emissions may be higher than for primary fuel oil, depending upon the extent of processing.

*Coal Fly Ash*³⁵—Exhaust gases leaving the combustion chamber of a

power plant entrain particles during the coal combustion process. Fly ash is the finest of coal ash particles. To prevent this fly ash from entering the atmosphere, power plants use various collection devices to remove it from the gases that are leaving the stack. The coal-fired power industry is the largest generator of coal fly ash in the U.S. and other industries that use coal as a fuel, such as commercial boilers and mineral and grain processors, also produce coal fly ash. In 2006, the coal-fueled electric power industry generated approximately 72.4 million tons of fly ash. This figure was estimated at 70.8 million tons for 2004 and 71.7 million tons for 2007.³⁶ Electricity demand is projected to increase in coming years.³⁷ Because coal is expected to continue to be an important fuel source, it is likely that the quantity of coal fly ash generated will also remain significant.

Coal fly ash can be added to the raw material feed in clinker manufacturing to contribute specific required elements, such as silica, alumina, and calcium, in the final cement composition. Coal fly ash with relatively high unburned carbon content can also be re-burned in cement kilns for energy recovery at the same time as it provides ingredient value. The use of coal fly ash as an ingredient in cement kilns does not require processing. However, levels of key metals in coal fly ash must be carefully calibrated with other ingredients to ensure that the final cement product has the correct mineral and metal content. In clinker manufacture, coal fly ash partially offsets the need for raw materials, such as silica, iron, and alumina sources. Thus, using coal fly ash in the cement kiln can reduce the unit consumption of raw feed stock materials, which results in reduced emissions of certain pollutants.³⁸ Furthermore, when coal fly ash with relatively high unburned carbon content is introduced to the cement kiln during clinker manufacture,

the primary fuel supply may be reduced to accommodate the additional energy provided by the carbon in the fly ash.

*Cement Kiln Dust (CKD)*³⁹—Generated by the cement manufacturing industry, CKD is a fine-grained, solid, highly alkaline low organic content material removed from the cement kiln exhaust gas by scrubbers. Much of the material comprising CKD is incompletely reacted raw material, including a raw mix at various stages of burning, and particles of clinker. There is an estimated 13 to 17 million short tons of CKD generated per year in the U.S. CKD can be directly reused in a closed-loop process back into the cement kiln as an ingredient for clinker manufacture. The cement industry is estimated to recycle more than 75 percent of its CKD each year. Significant increases in U.S. clinker capacity are expected over the 2008 to 2012 period resulting in an anticipated increase in CKD production and usage. In clinker manufacture, CKD partially offsets the need for raw material feed, such as limestone and natural constituents (rock), thus avoiding the energy usage and emissions related to their extraction and processing.

*Coal Refuse*⁴⁰—Coal refuse refers to any by-product of coal mining or coal cleaning operations. Coal refuse is generally defined by a minimum ash content combined with a maximum heating value, measured on a dry basis. Coal refuse consists primarily of non-combustible rock with attached coal that could not be effectively separated in the era in which it was mined. Coal refuse includes mining rejects and recovered landfill ash. Coal mine rejects are generated by bituminous coal and lignite surface mining, bituminous coal underground mining, and anthracite mining. Recovered landfill ash is generated by fossil fuel electric power generation facilities. Specific data on the quantity of mining rejects generated is not available. However, we estimate that up to 1,145 million tons of coal refuse may have been generated⁴¹ in 2007. Generation of mining rejects, as well as the availability of recoverable

³⁴ The Agency makes a distinction between on-specification and off-specification used oil. Only certain contaminants in used oil pose a significant threat to human health or the environment. As a result, EPA has established maximum concentration limits for these constituents of concern. These limits are set such that the emissions resulting from the burning of used oil containing these contaminants, at or below established “on-spec” limits, will pose no more threat to human health or the environment than the emissions resulting from the burning of virgin oil or diesel. See 68 FR 44662 (July 30, 2003). Also see Section V.A.4. for more discussion of used oil.

³⁵ *Source* (unless otherwise noted): Materials Characterization Paper in Support of the Advanced Notice of Proposed Rulemaking: Identification of

Non-Hazardous Materials That Are Solid Waste—Coal Combustion Products—Includes Coal Fly Ash, Bottom Ash, and Boiler Slag.

³⁶ ACAA. 2004 and 2007 Coal Combustion Product (CCP) Production and Use Survey Results (Revised for 2007).

³⁷ See United States Department of Energy, Energy Information Administration (EIA). 2008, “Annual Energy Outlook 2008 with Projections to 2030,” Publication DOE/EIA-0383 (2008), June 2008.

³⁸ For more detailed information on the benefits of using coal fly ash and other recovered mineral components in manufacturing processes, please see: “Study on Increasing the Usage of Recovered Mineral Components in Federally Funded Projects Involving Procurement of Cement or Concrete to Address the Safe, Accountable, Flexible, Efficient Transportation Equity Act: A Legacy for Users.” June 23, 2008. (EPA530-R-08-007)

³⁹ *Source* (unless otherwise noted): Materials Characterization Paper in Support of the Advanced Notice of Proposed Rulemaking: Identification of Non-Hazardous Materials That Are Solid Waste—Cement Kiln Dust (CKD).

⁴⁰ *Source* (unless otherwise noted): Materials Characterization Paper in Support of the Advanced Notice of Proposed Rulemaking: Identification of Non-Hazardous Materials That Are Solid Waste—Coal Refuse.

⁴¹ The term “generated” in this context refers to the quantity of coal mining rejects produced from the total quantity of U.S. coal mined in 2007. (Please see the coal refuse Materials Characterization Paper for a more detailed discussion.)

landfill ash, correlates with the production and use of coal. Coal production is projected to increase in the coming decades in response to increased demand for electricity. Increasing coal use for electricity generation at existing plants and projected construction of new coal-fired plants is estimated to lead to coal production increases that average 1.1 percent per year from 2005 to 2015, with 1.8 percent annual growth projected over the 2015 to 2030 period. Based on our review of publicly available information, circulating fluidized bed (CFB) combustion units and pulverized coal power plants are currently the units that use coal refuse.

CFB is an integrated technology for reducing SO₂ and NO_x emissions during the combustion of coal. In addition to reduced SO₂ and NO_x emissions, use of coal refuse as a replacement for traditional primary fuels eliminates the environmental impacts associated with the extraction and processing of traditional fuels, and reduces the environmental impacts that may be associated with the piles of coal refuse (e.g., potential fire hazards and sources of surface and groundwater pollution).

The Agency seeks comment, with supporting data, on the secondary materials information provided in this ANPRM and in the Materials Characterization Papers. We also request comment, with supporting data, on any unidentified non-hazardous secondary fuel and/or ingredient materials used in combustion units.

IV. What Is the History of the Definition of Solid Waste Rules?

A. Statutory Definition of Solid Waste

RCRA defines “solid waste” as “* * * any garbage, refuse, sludge from a waste treatment plant, water supply treatment plant, or air pollution control facility and *other discarded material* * * * resulting from industrial, commercial, mining, and agricultural operations, and from community activities * * *” (RCRA section 1004 (27) (emphasis added)). The key concept is that of “discard” and, in fact, this definition turns on the meaning of the phrase, “other discarded material,” since this term encompasses all other examples provided in the definition.

B. Solid Waste Program, RCRA Subtitle D

The regulations that pertain to non-hazardous solid waste (RCRA Subtitle D) contain five definitions of the term “solid waste.” (See 40 CFR 240.101(y); 40 CFR 243.101(y); 40 CFR 246.101(bb); 40 CFR 257.2; and 40 CFR 258.2.) These

regulatory definitions largely mirror the statutory definition of solid waste with some clarifications applicable to the specific regulatory section. The RCRA statutory definition of solid waste has also been repeated in the CAA emission guidelines for other solid waste incineration units (e.g., see 40 CFR 60.2977 and 60.3078).

EPA has not focused on the specific parameters of the definition of solid waste as it applies to non-hazardous solid waste programs under RCRA Subtitle D primarily because while, under RCRA Subtitle D, EPA promulgates criteria for municipal solid waste landfills and approves state solid waste landfill permitting programs, it is the states that fully implement those programs. EPA does not have the same role in these programs as it does in the hazardous waste programs established under RCRA Subtitle C. As a result, EPA has not promulgated detailed regulations of what is included in the definition of solid waste for the Subtitle D (non-hazardous) programs. States have promulgated their own laws and regulations regarding what constitutes solid waste and have interpreted those laws and regulations to determine what types of secondary materials management activities constitute discard (and therefore involve the management of a solid waste). However, EPA now needs to articulate which non-hazardous secondary materials constitute solid wastes under RCRA Subtitle D so that EPA can establish appropriate standards under CAA sections 112 and 129 for units that combust secondary materials for the purposes of energy recovery or when used as an ingredient. We envision that a Subtitle D definition of solid waste that could result from this rulemaking effort would not impact/affect any other types of management activities for these materials, such as landfilling, composting, etc., and as such, would have no impact at the Federal level on the Subtitle D program.

C. Hazardous Waste Program, RCRA Subtitle C

The RCRA Subtitle C hazardous waste federal program has a long regulatory history in defining “solid waste” for purposes of the hazardous waste regulations. However, the 40 CFR 261.2 definition of solid waste explicitly applies only to wastes that also are hazardous for purposes of the Subtitle C regulations (see 40 CFR 261.1(b)(1)).

EPA emphasizes that it is not requesting comment on any of its Subtitle C regulations or on any of the issues involved in its hazardous waste regulations regarding whether

secondary materials are hazardous wastes for purposes of its RCRA Subtitle C regulations. The Agency is not reopening its hazardous waste regulations in any way whatsoever; EPA does not intend to respond to any comments directed to its hazardous waste regulations.

The following discussion provides the context in which EPA’s hazardous waste regulations exclude certain materials that would otherwise be hazardous waste from the definition of solid waste. In 40 CFR 261.2, EPA defines solid waste for purpose of the hazardous waste regulations as “any discarded material that is not excluded * * *” by other provisions of Part 261.

For context, however, the Agency describes its hazardous waste regulations and the exclusions, themselves. First, a “discarded material” is defined in relevant part as a hazardous material which is abandoned, recycled, or considered inherently waste-like. A hazardous material is considered to be “abandoned” if it is disposed of, burned or incinerated, or accumulated, stored, or treated before or in lieu of being disposed of, burned, or incinerated. A hazardous material is considered to be a solid waste when recycled (or when accumulated, stored or treated prior to recycling) if it is: (a) Used in a manner constituting disposal (i.e., placed on the land or used to produce products that are placed on the land); (b) burned for energy recovery or used to produce a fuel;⁴² (c) reclaimed; or (d) accumulated speculatively.

While 40 CFR 261.2 sets out the basic regulatory definition of solid waste as it applies to hazardous waste, the regulations also exclude a number of specific hazardous secondary materials from the 40 CFR 261.2 definition of solid waste, and therefore, from the hazardous waste regulations. In general, these exclusions involve hazardous secondary materials that are products, co-products, or intermediates or other hazardous secondary materials that are reused/recycled/returned to the original process or hazardous secondary materials that meet fuel specifications. For example, hazardous secondary materials are not solid waste when used or reused as ingredients to make a product (provided the material is not reclaimed), used or reused as effective substitutes for commercial products, or are returned to the original process

⁴² Commercial chemical products listed in 40 CFR 261.33 are not solid wastes if they themselves are fuels. Also, all commercial chemical products that are fuels are not solid waste, regardless of whether they are listed as a hazardous waste (see 50 FR 14219, April 11, 1985).

without first being reclaimed (40 CFR 261.2(e)(1)). In addition, EPA has developed many case-specific solid waste exclusions (see 40 CFR 261.4(a)). For example, hazardous secondary materials that are comparable fuels or comparable syngas fuels are excluded even when recycled by being burned for energy recovery. (See 40 CFR 261.4(a)(16).) Also, EPA has recently finalized revisions to the definition of solid waste specifying that hazardous secondary materials being reclaimed under the control of the generator and hazardous secondary materials being transferred for reclamation are not solid wastes, provided certain restrictions and conditions are met.⁴³

D. Case Law on Definition of Solid Waste

Partly because the interpretation of the definition of solid waste is the foundation of the hazardous waste regulatory program, there has been a great deal of litigation over the meaning of “solid waste” under RCRA Subtitle C. From these cases, a few key principles emerge which guide our thinking on the definition of solid waste.

First, the ordinary plain-English meaning of the term “discard” controls. See *American Mining Congress v. EPA*, 824 F.2d 1177 (D.C. Cir. 1987) (“AMC I”). The ordinary plain-English meaning of the term discarded means “disposed of,” “thrown away,” or “abandoned.” The court specifically rejected a more expansive meaning for discard that would encompass any materials “no longer useful in their original capacity” even if they were not destined for disposal. 824 F.2d at 1185–87. The Court further held that the term “discarded materials” could not include materials “* * * destined for beneficial reuse or recycling in a continuous process by the generating industry itself.” (824 F.2d at 1190).

Subsequent to AMC I, the court discussed the meaning of discard in particular cases. In *American Petroleum Institute v. EPA*, 906 F.2d 729 (D.C. Cir. 1990) (“API I”), the court rejected EPA’s decision not to regulate recycled air pollution control equipment slag based on an Agency determination that waste “ceases to be a ‘solid waste’ when it arrives at a metals reclamation facility because at that point it is no longer ‘discarded material.’” 906 F.2d at 740. Instead, the materials were part of a mandatory waste treatment plan for hazardous wastes prescribed by EPA and continued to be wastes even if

recycled. 906 F.2d at 741. Further, a material is a solid waste regardless of whether it “may” be reused at some time in the future. *American Mining Congress v. EPA*, 907 F.2d 1179 (D.C. Cir. 1990) (“AMC II”).

One of the more important holdings of a number of court decisions is that simply because a waste has, or may have, value does not mean the material loses its status as a solid waste. See *API I*, 906 F.2d at 741 n.16; *United States v. ILCO Inc.*, 996 F.2d 1126, 1131–32 (11th Cir. 1993); *Owen Steel v. Browner*, 37 F.3d 146, 150 (4th Cir. 1994). *ILCO* and *Owen Steel*, however, seem to recognize that products made from wastes are, themselves, products and not wastes.

Association of Battery Recyclers v. EPA, 208 F.3d 1047 (D.C. Cir. 2000) (“ABR”) reiterated the concepts discussed in the previous cases. The Court held that it had already resolved the issue presented in ABR in its opinion in AMC I, where it found that “* * * Congress unambiguously expressed its intent that ‘solid waste’ (and therefore EPA’s regulatory authority) be limited to materials that are ‘discarded’ by virtue of being disposed of, abandoned, or thrown away” (208 F.2d at 1051). It repeated that materials reused within an ongoing industrial process are neither disposed of nor abandoned (208 F.3d at 1051–52). It explained that the intervening API I and AMC II decisions had not narrowed the holding in AMC I (208 F.3d at 1054–1056).

Notably, the Court did not hold that storage before reclamation automatically makes materials “discarded.” Rather, it held that “* * * at least some of the secondary material EPA seeks to regulate as solid waste (in the mineral processing rule) is destined for reuse as part of a continuous industrial process and thus is not abandoned or thrown away” (208 F.3d at 1056). In this regard, the court criticized all parties in the case—industry as well as EPA—because they “presented this aspect of the case in broad abstraction, providing little detail about the many processes throughout the industry that generate residual material of the sort EPA is attempting to regulate * * *.” (Ibid).

American Petroleum Institute v. EPA, 216 F.3d 50, 55 (D.C. Cir. 2000) (“API II”), decided shortly after ABR and considered by the court at the same time, provides further guidance for defining solid waste, but in the context of two specific waste streams in the petroleum refining industry. The court overturned EPA’s determination that certain recycled oil bearing wastewaters are wastes (216 F.3d at 55–58) and upheld conditions imposed by the

Agency in excluding petrochemical recovered oil from the definition of solid waste (216 F.3d at 58–59). In the case of oil-bearing wastewaters, EPA had determined that the first phase of treatment, primary treatment, results in a waste being created. 216 F.3d at 55. The court overturned this decision and remanded it to EPA for a better explanation, neither accepting EPA’s view nor the contrary industry view. The court noted that the ultimate determination that had to be made was whether primary treatment is simply a step in the act of discarding? Or is it the last step in a production process before discard? 213 F.3d at 57. In particular, the court rejected EPA’s argument that primary treatment was required by regulation, instead stating that the Agency needed to “set forth why it has concluded that the compliance motivation predominates over the reclamation motivation” and “why that conclusion, even if validly reached, compels the further conclusion that the wastewater has been discarded.” 213 F.3d at 58.

The court also considered whether material is discarded in *Safe Food and Fertilizer v. EPA*, 350 F.3d 1263 (D.C. Cir. 2003) (“Safe Food”). In that case, among other things, the court rejected the argument that, as a matter of plain meaning, recycled material destined for immediate reuse within an ongoing industrial process is never considered “discarded,” whereas material that is transferred to another firm or industry for subsequent recycling must always be solid wastes. 350 F.3d at 1268. Instead, the court evaluated “whether the agency’s interpretation of * * * ‘discarded’ * * * is, reasonable and consistent with the statutory purpose. * * *” *Id.* Thus, EPA has the discretion to determine if material is not a solid waste, even if it is transferred between industries.

We also note that the Ninth Circuit has specifically found that non-hazardous secondary materials may, under certain circumstances, be burned and not constitute a solid waste under RCRA. See *Safe Air For Everyone v. Waynemeyer* (“Safe Air”), 373 F.3d 1035 (9th Cir., 2004) (Kentucky bluegrass stubble may be burned to return nutrients to the soil and not be a solid waste).

E. Regulatory Interpretations Regarding the Recycling of Hazardous Secondary Materials and the Concept of Legitimacy

As over twenty-five years of experience in implementing the hazardous waste regulations has demonstrated, drawing the line between materials that are part of a

⁴³ See “Revisions to the Definition of Solid Waste,” Final Rule, October 30, 2008, at 73 FR 64667.

manufacturing process or are more commodity-like rather than waste-like (and therefore not discarded) from those that are discarded (and therefore are being disposed) is a difficult one and depends on a number of factors, including how the materials are managed.

For example, it is clear that the distillation of hazardous waste solvents or the neutralization of contaminated acids (while the hazardous secondary material itself may be regulated under the RCRA hazardous waste regulations) can produce products which are not considered wastes. Similarly, under 40 CFR 260.31(c), EPA may grant a variance from classifying as a solid waste those hazardous secondary materials that have been reclaimed, but must be reclaimed further. In order for such a variance to be granted, the resulting material must be commodity-like (even though it may not be a commercial product) based on a series of specific factors. Under one such variance, World Resources Company (WRC) accepts shipments of metal bearing sludges (principally sludges from electroplating operations, a listed hazardous waste under RCRA), and then dries and blends the sludges with other shipments to achieve concentrates that meet the contractual specifications of its customers (smelters that recover metals contained in the concentrates). Under the variance, the incoming electroplating sludges are regulated as hazardous waste until they are processed, but the resulting product is no longer a solid waste, and it can be shipped to smelters for further reclamation as a product in commerce and not as a waste. EPA is aware that several authorized states have made comparable determinations, as part of the state authorized RCRA hazardous waste program.

An important element under the RCRA Subtitle C definition of solid waste is the concept of legitimate recycling, including the legitimate use of hazardous secondary materials. Under RCRA Subtitle C, some hazardous secondary materials that would otherwise be subject to regulation under RCRA's "cradle to grave" system are not considered solid wastes if they are "legitimately recycled" or legitimately used as an ingredient or substitute for a commercial product. The principal reasoning behind this construct is that use or recycling of such materials often closely resembles normal industrial production, rather than waste management. However, since there can be considerable economic incentive to manage recyclable materials outside of the RCRA hazardous waste

regulatory system, there is a clear potential for and historical evidence of some handlers claiming they are recycling, when in fact they are conducting waste treatment and/or disposal in the guise of recycling. EPA considers such "sham" recycling to be, in fact, discard and materials being sham recycled to be solid wastes.

To guard against hazardous secondary materials being discarded in the guise of recycling, EPA has long articulated the need to distinguish between "legitimate" (i.e., true) recycling and "sham" (i.e., fake) recycling, beginning with the preamble to the 1985 hazardous waste regulations that first established the definition of solid waste under RCRA Subtitle C (50 FR 638; January 4, 1985). A similar discussion that addressed legitimacy as it pertains to burning hazardous secondary materials for energy recovery (considered a form of recycling under RCRA Subtitle C) was presented in the January 9, 1988 proposed amendments to the definition of solid waste (53 FR 522). On April 26, 1989, the Office of Solid Waste issued a memorandum that consolidated the various preamble and other statements concerning legitimate recycling into a list of questions to be considered in evaluating the legitimacy of a hazardous secondary materials recycling process (OSWER directive 9441.1989(19)). This memorandum (known to many as the "Lowrance Memo") has been a primary source of information for the regulated community and for overseeing agencies in distinguishing between legitimate and sham recycling.

As discussed above, on October 30, 2008, EPA finalized several exclusions from the definition of solid waste for hazardous secondary materials being reclaimed and a non-waste determination process for persons to receive a formal determination that their hazardous secondary materials are not solid wastes when legitimately reclaimed. As part of that final rule, EPA codified a legitimate recycling provision specifically as a condition of these exclusions and the non-waste determination process.

As discussed earlier, EPA emphasizes that it is not requesting comment on any Subtitle C regulation or any of the issues involved in its hazardous waste regulations. EPA does not intend to respond to any comments directed to its hazardous waste regulations.

However, because the concept of legitimacy is a useful one in determining when a secondary material is genuinely recycled and not discarded under the guise of recycling, the Agency is including the following discussion in

today's preamble to provide the context in which EPA has integrated the concept of legitimacy into the latest hazardous waste exclusions from the definition of solid waste.

The legitimacy provision in the October 2008 final rule, which applies specifically to the hazardous secondary materials excluded under the rule, has two parts. The first part includes two factors: (1) The hazardous secondary materials being recycled must provide a useful contribution to the recycling process or to the product or intermediate of the recycling process, and (2) the product or intermediate produced by the recycling process must be valuable. These two legitimacy factors make up the core of legitimacy, and, therefore, a process that does not conform to them cannot be a legitimate recycling process, but would be considered sham recycling.

The second part of the legitimacy provision consists of two factors that must be considered when determining if a particular hazardous secondary material recycling process is legitimate for the purposes of the exclusion. These two factors are: (1) The generator and the recycler should manage the hazardous secondary material as a valuable commodity, and (2) the product of the recycling process does not contain significant concentrations of hazardous constituents that are not in analogous products. EPA believes these two factors are important in determining legitimacy, but has not made them factors that must be met because the Agency is aware that a legitimate recycling process may not conform to one or both of these two factors. In making a determination that a hazardous secondary material is legitimately recycled, persons must evaluate all factors and consider legitimacy as a whole. If, after careful evaluation of these other considerations, one or both of the non-mandatory factors are not met, then this fact may be an indication that the material is not legitimately recycled. To evaluate the extent to which these factors are met and in determining the legitimacy of a recycling process that does not meet one or both of these factors, persons can consider the protectiveness of the storage methods, exposure from toxics in the product, the bioavailability of the toxics in the product, and other relevant considerations.

EPA stated in the preamble to the October 2008 final rule that, although the Agency was only codifying the legitimacy provision as part of the new hazardous secondary materials recycling exclusions and non-waste determination process, it was stressing that EPA

retains its long-standing policy that all recycling of hazardous secondary materials must be legitimate and that the four legitimacy factors codified at 40 CFR 260.43 are substantively the same as the existing legitimacy policy, as stated in the 1989 Lowrance Memo and in various definitions of the solid waste rulemakings.

The same principle of "legitimacy" is likewise an important element in the recycling of non-hazardous secondary materials. That is, the concept of legitimate recycling is crucial to determining whether a non-hazardous secondary material being recycled is truly being recycled or is, in fact, being discarded through sham recycling. In this notice, the Agency is addressing the same basic concept of legitimate recycling by discussing when a non-hazardous secondary material that is not discarded is legitimately recycled or is a legitimate ingredient in an industrial process. Obviously, a secondary material that is not discarded and is combusted can only be a fuel or ingredient, and not a solid waste, if the material is being legitimately used as a fuel or ingredient.

Consequently, the Agency is seeking comment on the appropriate construct for determining when non-hazardous secondary materials are legitimately burned as fuel or used as a legitimate ingredient in an industrial process. This is explained in detail in the following Section V: Preliminary EPA Approach to Determine if Materials Are Considered Solid Wastes.

V. Preliminary EPA Approach To Determine if Materials Are Considered Solid Wastes

A. Materials That Are Not Solid Wastes

EPA is providing advanced notice of its intent to develop a definition of the term "solid waste" under RCRA for non-hazardous secondary materials that are used as a fuel or ingredient in a manufacturing process. As noted previously, the purpose of this notice is to assist EPA in developing emissions standards under sections 112 and 129 of the CAA, because the CAA states that the term "solid waste" shall have the meaning "established by the Administrator pursuant to [RCRA]." 42 U.S.C. 7429(g)(6). The Agency is considering various usage of secondary materials (e.g., as fuels or ingredients) and whether these materials should be considered solid wastes under RCRA when used in combustion devices, such that burning these materials would be subject to regulation under CAA section 129, rather than potentially subject to CAA section 112. EPA has

identified several cases where we believe secondary materials are not solid wastes when combusted. These include:

- Traditional fuels;
- Secondary materials used as legitimate "alternative" fuels that have not been previously discarded;
- Secondary materials used as legitimate "alternative fuels" resulting from processing of discarded secondary materials;
- Secondary materials used as legitimate ingredients; and
- Hazardous secondary materials that may be excluded from the definition of solid waste under RCRA Subtitle C because they are more like commodities than wastes.

1. Traditional Fuels

Fossil fuels (e.g., coal, oil, natural gas), and their derivatives (e.g., petroleum coke, bituminous coke, coal tar oil, refinery gas, synthetic fuel, heavy recycle, asphalts, blast furnace gas, recovered gaseous butane, coke oven gas), as well as cellulosic biomass (e.g., wood) are traditional fuels which have been burned historically as fuels and have been managed as valuable products. These traditional fuels are unused products that have not been discarded and therefore are not solid wastes. (However, certain "alternative" fuels, such as coal refuse, have in some cases been abandoned, and therefore discarded—see discussion of coal refuse in section VI.A.) EPA also believes that wood collected from forest fire clearance activities and trees and uncontaminated wood found in hurricane debris is not discarded if managed properly and burned as a legitimate fuel, and therefore is not a solid waste. We request comment on whether there are other traditional fuels that would fall within this grouping.

It should be understood that cellulosic biomass, as described above, includes unadulterated or clean wood, but that other forms of wood, such as reconstituted wood/panel products (e.g., medium density fiberboard, particle board, and laminated lumber) or painted and chemically treated wood, would need to be evaluated as to whether they would qualify as a legitimate alternative fuel pursuant to the criteria described in the following section.

2. Guiding Principles Used To Determine if Secondary Materials Used in Combustion Units Are Solid Wastes

For these various secondary materials that are used either as ingredients or alternative fuels, EPA is examining the principles expressed in the various court decisions on previous

rulemakings. In addition, we are considering the overall principle in our hazardous waste regulations that materials treated as a commodity, rather than as a waste, are not discarded and are not solid wastes so long as they are legitimately recycled. We are soliciting comments on the appropriateness of the principles as applied to non-hazardous secondary materials and on how best to structure the criteria for when a non-hazardous secondary material is or is not a solid waste. To this end, the same secondary material could be a solid waste or not depending on how it has been handled and managed because handling and management factors into whether or not the secondary material has been discarded. Key factors in determining if these alternative fuels or ingredients are solid wastes under RCRA are: (1) Whether they have been discarded, which includes how they are managed and whether they are being used as legitimate fuels and ingredients; and (2) if they have been discarded, whether they have been processed to produce a fuel or ingredient product that would not be considered a solid waste.

As noted above in the discussion of AMC I, as well as other consistent cases, the plain-English meaning of the term discard applies to the RCRA definition of solid waste. That is, a material is discarded if it is disposed of, thrown away, or abandoned. Moreover, the term "discarded materials" could not include materials " * * * destined for beneficial reuse or recycling in a continuous process by the generating industry itself."

Determining whether a secondary material is used in a continuous process is important because certain materials under consideration are produced and managed in a continuous process within an industry (e.g., bagasse and cement kiln dust that is recycled in cement kilns). In looking at the recently promulgated Subtitle C non-waste determination petition process under 40 CFR 260.34, to determine whether hazardous secondary materials are used in a continuous process, EPA would evaluate whether the hazardous secondary material is part of the continuous primary production process and is not waste treatment. If the hazardous secondary material is handled in a manner identical to virgin feedstock, then it would appear to be fully integrated into the production process. At the other end of the spectrum, however, hazardous secondary materials indisputably discarded prior to being reclaimed are not a part of the continuous primary production process. See *API I, ILCO* and

Owen Steel, cited previously. Moreover, hazardous secondary materials are likely discarded in the case where industry may reuse materials in the future and it is not clear that reuse will occur. See *AMC II*, cited previously. By similar logic, EPA believes that non-hazardous alternative fuels or ingredients that are produced and used as a legitimate fuel or ingredient in a continuous process would not be considered to have been discarded.

Furthermore, even if the material is not used in a continuous process, if it is used as a legitimate fuel or ingredient, these secondary materials are likely not solid wastes if they were not previously discarded. See *API II* and *Safe Food*, previously cited. Many materials, such as coal fly ash and biomass are intended for legitimate reuse and therefore are not discarded. EPA believes these materials, if used as legitimate fuels or ingredients (as discussed in more detail below) would likely not be solid wastes if they have not been previously discarded (however, as discussed later in this section, previously discarded materials that are processed into a legitimate fuel product or ingredient would also likely not be solid wastes).

However, for alternative fuels or ingredients to not be considered discarded, and thus not solid wastes, they must be legitimate fuels or ingredients. Below we first discuss the legitimacy criteria for alternative fuels, followed by a discussion of the legitimacy criteria for materials used as ingredients.

a. Legitimate Alternative Fuels.

Specifically, the Agency generally considers secondary materials to be a legitimate fuel if they are handled as valuable commodities, have meaningful heating value, and contain contaminants that are not significantly higher in concentration than traditional fuel products. If these criteria are not met, sham recycling may be indicated and the secondary material might be a solid waste. EPA is interested in receiving comments on these principles. Specifically:

- **Handled as a Valuable Commodity.** For hazardous secondary materials, EPA has previously said, with respect to whether something is managed as a valuable commodity, that where there is an analogous raw material, the hazardous secondary material should be managed, at a minimum, in a manner consistent with the management of the analogous raw material.⁴⁴ Where there is no analogous raw material, the

hazardous secondary material should be contained. Hazardous secondary materials that are released to the environment and are not recovered immediately are considered to be discarded. We request comment on whether similar criteria should be used to determine if non-hazardous secondary materials used as alternative fuels are being managed as valuable commodities and thus are not solid waste, or whether more tailored criteria are more appropriate for non-hazardous secondary materials. For example, in situations where there is no analogous raw material, the Agency is interested in what type of containment would be necessary for non-hazardous secondary materials, particularly whether materials that are physically solid, such as tires, require containment.

- **Meaningful Heating Value:** EPA is seeking comment on how to define meaningful heating value for materials that are used as alternative fuels. Because of the wide variety of materials in question, and because of technology advances and the fact that fuel values vary, EPA questions whether it is possible or appropriate to establish a specific heating value cutoff for "legitimate" fuel. In the context of the hazardous waste regulations, EPA addressed the concept of whether a hazardous secondary material has an adequate, meaningful heating value in the so-called "comparable fuels" rule (63 FR 33781) with a benchmark Btu content of 5,000 Btu/lb (see section V.A.6 for more on the comparable fuels rule).⁴⁵ However, given improved combustion processes that have been developed that cost-effectively produce energy from lower rank materials (e.g., circulating fluidized bed combustion units), and given the fact that lower Btu content non-hazardous materials are frequently combusted for fuel value, EPA is requesting comment on whether a Btu content is needed, and if so whether a lower Btu content may be appropriate. Alternative fuel materials have a wide range of heating values that range from 2,600 Btu/lb for food; to 3,000 Btu/lb for yard trimmings; to 3,750 Btu/lb for sludge; to 5,000 Btu/lb for wood; and to 13,450 BTU/lb for rubber.⁴⁶ We request comment on

⁴⁵ In addition, EPA has previously stated that Subtitle C industrial furnaces (i.e., cement kilns and industrial boilers) burning wastes with energy value greater than 5,000 Btu may generally be said to be burning for energy recovery, however, lower energy wastes could conceivably be burned for energy recovery due to the devices' general efficiency of combustion. "Thus, the 5,000 Btu level is not an absolute measure of burning for energy recovery * * *". (see 62 FR 24251, May 2, 1997).

⁴⁶ See background document titled "Methodology for Allocating Municipal Solid Waste to Biogenic

whether we should develop a specific minimum Btu value on an "as-fired" basis that would qualify a secondary material as having meaningful heating content, or whether we should define meaningful heating value more qualitatively based on general principles.

- **Presence of Non-fuel Contaminants:** In the hazardous waste comparable fuels rule, EPA established numerical specifications for toxic organics, toxic metals, sulfur, nitrogen, halogens, and polychlorinated biphenyls (PCBs). To address the possible presence of waste-like contaminants in non-hazardous secondary materials, EPA believes a qualitative approach is more appropriate and can be used to identify waste materials containing contaminants that are significantly higher in concentration than those contained in traditional fuel products to the degree that sham recycling is indicated. The term "contaminants" refers to constituents in secondary materials that may be of a concern when burned as a fuel. For example, secondary materials that could contain contaminants that are significantly higher in concentration than those contained in traditional fuel products include chromium-, copper-, and arsenic (CCA)-treated lumber, secondary mill residues (i.e., residues such as board, trim and breakage from the manufacture of reconstituted wood/panel products), polyvinyl chloride (PVC) plastics which can contain 60 percent halogens (chlorine),⁴⁷ lead-based painted wood, fluorinated plastics, and non-hazardous halogenated solvents. In determining whether the concentration of contaminants in secondary materials is "significantly higher," the Agency could include a qualitative evaluation of the potential human health and environmental risks posed. A contaminant concentration could be elevated without posing unacceptable risk, and therefore may not be considered "significant" for the purposes of determining whether the secondary material is a legitimate fuel. We request comment on whether a qualitative approach to defining fuels as solid waste because they are too contaminated (indicating sham recycling) is an appropriate option. In any case, given the multiplicity of fuel materials, we believe that numerical specifications are likely to be

and Non-Biogenic Energy, Energy Information Administration (U.S.DOE), May, 2007.

⁴⁷ Constituents, such as chlorine in PVC are relevant because of the potential for chlorinated combustion by-products to be emitted (e.g., dioxins, hydrogen chloride).

⁴⁴ See "Revisions to the Definition of Solid Waste," Final Rule, October 30, 2008, at 73 FR 64667.

impractical. We also request comment on whether the contaminants evaluated for the comparable fuels rule,⁴⁸ which mostly includes Appendix VIII constituents, should also be used for non-hazardous secondary materials used as fuels, or whether a different list of contaminants is appropriate.

b. Legitimate Alternative Ingredients. For non-hazardous secondary materials to be used as legitimate ingredients, the Agency would use a similar legitimacy analysis as was developed in the hazardous waste program. Specifically, the Agency would generally consider secondary materials to be a legitimate ingredient if the secondary material is handled as a valuable commodity, the secondary material provides a useful contribution, the recycling results in a valuable product, and the product does not contain contaminants that are significantly higher in concentration than traditional products. If these criteria are not met, sham recycling may be indicated and the secondary material may be a solid waste. For use as an ingredient, EPA would not be looking at fuel value since the secondary materials are being used as an ingredient and not a fuel. Instead, the Agency would look at useful contribution and valuable product, as described below. The Agency is interested in receiving comments on these principles, including whether the following principles are reasonable for non-hazardous secondary materials used as ingredients:

- **Handled as a Valuable Commodity.** For hazardous secondary materials, EPA has previously said, with respect to whether a secondary material is managed as a valuable commodity, that where there is an analogous raw material, the hazardous secondary material should be managed, at a minimum, in a manner consistent with the management of the analogous raw material. Where there is no analogous raw material, the hazardous secondary material should be contained. Hazardous secondary materials that are released to the environment and are not recovered immediately are discarded, and thus would be regarded as a waste and not a commodity. We request comment on whether similar criteria should be used to determine if non-hazardous secondary materials used as ingredients are being managed as valuable commodities and thus are not solid waste, or whether more tailored criteria are more appropriate for non-hazardous secondary materials.

- **Useful Contribution:** For hazardous secondary materials, EPA has previously stated that a secondary material must provide a useful contribution to the recycling process or to the product of the recycling process.⁴⁹ The ways in which a secondary material can add value and usefully contribute to a recycling process are: (i) The secondary material contributes valuable ingredients to a product or intermediate; or (ii) replaces a catalyst or carrier in the recycling process; or (iii) is the source of a valuable constituent recovered in the recycling process; or (iv) is recovered or regenerated by the recycling process; or (v) is used as an effective substitute for a commercial product. We request comment on whether this description is applicable for non-hazardous secondary materials used as ingredients in a combustion process.

- **Valuable Product or Intermediate:** Similarly, for hazardous secondary materials, EPA has stated that the recycling process must produce a valuable product or intermediate.⁵⁰ The Agency believes a product or intermediate is valuable if it is (i) sold to a third party or (ii) used by the recycler or generator as an effective substitute for a commercial product or as an ingredient or intermediate in an industrial process. The Agency believes this description is broad enough to incorporate both products that are valuable from a monetary standpoint and products or intermediates that have intrinsic value to the generator or the recycler. We are seeking comment on whether this description of valuable product/intermediate is an appropriate way to consider this criterion in the context of non-hazardous secondary materials used as ingredients.

- **Presence of Contaminants:** As mentioned above under legitimate fuel criteria, EPA is suggesting a qualitative approach may be more appropriate to use in identifying waste materials containing contaminants that are significantly higher in concentration than those contained in traditional products to the degree that sham recycling is indicated. In the context of hazardous secondary materials, EPA expects those making a legitimate recycling determination to look at the concentrations of hazardous constituents found in the product made from hazardous secondary materials and compare them to the concentrations of

hazardous constituents in analogous products to determine if the concentrations are significantly higher.⁵¹ In determining whether the concentration of contaminants in secondary materials is “significantly higher,” the Agency could include a qualitative evaluation of the potential human health and environmental risks posed. A contaminant concentration could be elevated without posing unacceptable risk, and therefore may not be considered “significant” for the purposes of determining whether the secondary material is a legitimate ingredient. EPA concluded in the most recent hazardous secondary material rulemaking that the complexities of defining “significant” via a bright-line quantitative test that would also still be appropriate for all industries, all recycling processes, and all recycled hazardous secondary materials were too great for the Agency to be able to design as a simple and straightforward system of tests to be used in making such determinations.⁵² We request comment on whether a similar qualitative approach to defining ingredients used in a manufacturing process involving combustion as solid waste because they are too contaminated (indicating sham recycling) is the preferred option or whether numerical specifications is a better approach. In addition, the Agency is requesting comment on whether the contaminants evaluated should be the hazardous constituents listed in Appendix VIII to 40 CFR Part 261 or whether a different list of contaminants is more appropriate for non-hazardous secondary materials used as ingredients.

c. Discarded Secondary Materials That Have Been Processed. In many cases, the secondary material may have been discarded, but later processed to produce a legitimate fuel product or ingredient, ready for direct use in an industrial process. In such cases, the processed material that is extracted or reclaimed as a legitimate fuel or ingredient would not be a waste, but rather a product of the processing activity. In general, the products from the recycling of solid wastes are not themselves wastes—for example, paper that is made from recycling used paper and then sold in stores is a product, not a waste. EPA believes that if a secondary material is processed into a legitimate fuel or ingredient material, the processed material would not be a discarded material. Of course, these

⁴⁹ See “Revisions to the Definition of Solid Waste,” Final Rule, October 30, 2008, at 73 FR 64667.

⁵⁰ See “Revisions to the Definition of Solid Waste,” Final Rule, October 30, 2008, at 73 FR 64667.

⁵¹ See “Revisions to the Definition of Solid Waste,” Final Rule, October 30, 2008, at 73 FR 64667.

⁵² See “Revisions to the Definition of Solid Waste,” Final Rule, October 30, 2008, 73 FR at 64745.

⁴⁸ See RCRA Comparable Fuel Exclusion Final Rule, June 19, 1998 at 40 CFR 261.38.

products still must qualify as legitimate fuels or ingredients, as previously discussed. Otherwise, sham recycling may be indicated and the materials may be a solid waste. For example, used oil that is processed to produce “on-spec fuel” and that meets the standards of 40 CFR 279.11 would be considered a product, not a waste. See section V.A.4 for more discussion of used oil.

In the following sections, we discuss three groupings (previously listed) where we believe secondary materials are not solid wastes, but rather are non-discarded products that are legitimate fuels or ingredients when used in combustion units. We are soliciting comment on our interpretation of these materials as not being solid wastes under RCRA.

3. Secondary Materials Used as Legitimate “Alternative” Fuels That Have Not Been Previously Discarded

As we discussed previously, EPA believes that the question of what constitutes a legitimate “fuel” reflects the availability of fuel materials generally, the demand for fuel, and technology developments. Thus, in addition to traditional fuels, the Agency also believes that there is a category of secondary materials that are legitimate alternative fuels; that is, there are secondary materials that may not have been traditionally used as fuels, but that are nonetheless legitimate fuels today because of changes in technology and in the energy market. In cases where these legitimate alternative fuels have not been discarded, EPA would not consider them to be solid wastes.

Alternative fuels consisting of biomass represent a large percentage of the alternative fuels in use today. We generally believe that much of the biomass currently used as alternative fuels are not solid waste since they have not been discarded in the first instance and are legitimate fuel products (i.e., they have been managed as valuable commodities, have meaningful heating value and do not contain contaminants that are significantly higher in concentration than those in traditional fuel products). Thus, when burned, it would not be considered “sham” combustion. See previous discussion in section V.A.2. Biomass can include a wide range of alternative fuels, and can be broken down into two different categories—cellulosic biomass and non-cellulosic biomass. Cellulosic biomass includes forest-derived biomass (e.g., green wood, forest thinnings, clean and unadulterated bark, sawdust, trim, and tree harvesting residuals from logging and sawmill materials), food scraps, and pulp and paper mill residuals (e.g.,

spent pulping liquors; hog fuel, such as clean and unadulterated bark, sawdust, trim screenings; and residuals from tree harvesting), and agricultural residues (e.g., straw, corn husks, peanut shells, and bagasse). Non-cellulosic biomass includes manures and gaseous fuels (e.g., from landfills and manures).

EPA generally considers biomass as described above, especially cellulosic biomass, to have comparable composition when compared to traditional fuel products due to the nature of the plants and animals (i.e., they would not be considered to have additional “contaminants”). Thus, if they are managed as valuable commodities and have meaningful heating value, then we do not believe that they should be considered solid wastes. We request comment on whether biomass as described above contains contaminants that are significantly higher in concentration when compared to traditional fuel products. In determining whether the concentration of contaminants in biomass is “significantly higher,” the Agency could include a qualitative evaluation of the potential human health and environmental risks posed. A contaminant concentration could be elevated without posing unacceptable risk, and therefore may not be considered “significant” for the purposes of determining whether the secondary material is a legitimate fuel. We also request comment on the impact of a solid waste determination, one way or the other, on the inclusion of biomass materials in the many state-initiated renewable fuels specifications whereby such materials (e.g., manures, forest thinnings) are required to be used in the electric generation portfolio within the state.

EPA also believes that tires used as TDF, which include whole or shredded tires, that have not been previously discarded, are legitimate fuels that meet our previous described criteria (i.e., they are handled as valuable commodities, have meaningful heating value, and do not contain contaminants that are significantly higher in concentration when compared to traditional fuel products). EPA’s 1997 study on “Air Emissions from Scrap Tire Combustion”⁵³ concluded that potential emissions from TDF are often

⁵³ This study was published by EPA’s Office of Research and Development and produced as part of EPA’s National Risk Management Research Laboratory strategic long-term research plan for the prevention and control of pollution to air, land, water, and subsurface resources; protection of water quality in public water systems; remediation of contaminated sites and groundwater; and prevention and control of indoor air pollution.

less than and generally within the same range as, emissions from conventional fossil fuels. Thus, if the tires have not been abandoned and thrown away, we would not consider them to be solid wastes. For example, approximately 130 million tires per year are obtained from tire dealerships and used directly as a fuel. In many cases, these tires are collected pursuant to state tire programs and handled as valuable products, and, therefore, they have not been abandoned, disposed of, or thrown away.⁵⁴ In other cases, they are transferred to brokers or directly to industrial operations through standard commercial transactions. In contrast, tires that have accumulated in tire piles over the years (i.e., those tires in tire piles that have been abandoned) have been discarded, and thus considered to be solid waste (although they may later be processed into a legitimate fuel product).⁵⁵

Other non-traditional alternative fuels in use today that we are evaluating to determine whether they have not been discarded, and are legitimate alternative fuels include construction and demolition materials, scrap plastics, non-hazardous non-halogenated solvents and lubricants, and wastewater treatment sludge. We request comment on whether these secondary materials are legitimate alternative fuels and thus would not be solid wastes if they have not been previously discarded. Commenters should provide data and/or information supporting whether these secondary materials are legitimate and whether they are or are not considered to have been discarded.

Some secondary materials are questionable as to whether they are legitimate fuels because they lack adequate heating value, which could be the case for wet biomass that has insufficient as-fired heating content due to its moisture content. Another secondary material that may not be a legitimate fuel is biomass that has, for example, undergone chemical treatment, such that the material may contain contaminants that are significantly higher in concentration than those in traditional fuel products to

⁵⁴ States typically regulate these programs under their state solid waste authorities. It is not the Agency’s intent to undercut state authorities in this area. We request comment on whether tires collected pursuant to state tire programs have been discarded. We also request comment on whether an EPA designation specifying that used tires, for example, managed pursuant to state collection programs are not solid wastes, would adversely impact a states ability to manage such programs. This similarly would apply to used oil as well.

⁵⁵ For example, as noted below, whole tires can be processed (shredded) into fuel products after they have been discarded.

the degree that sham recycling is indicated. Secondary materials that we think may contain contaminants that are significantly higher in concentration than those of traditional fuel products include PVC (which can contain 60 percent chlorine),⁵⁶ halogenated plastics, chromated copper arsenate (CCA) lumber, creosote lumber, copper-based treated lumber, lead-based treated lumber, secondary mill residues (i.e., residues such as board, trim and breakage from the manufacture of reconstituted wood/panel products), and non-hazardous halogenated solvents. In determining whether the concentration of contaminants in secondary materials is “significantly higher,” the Agency could include a qualitative evaluation of the potential human health and environmental risks posed. A contaminant concentration could be elevated without posing unacceptable risk, and therefore may not be considered “significant” for the purposes of determining whether the secondary material is a legitimate fuel. We request comment on whether these secondary materials contain contaminants that are significantly higher in concentration compared to traditional fuel products, and whether there are other secondary materials not listed that should be considered to have contaminant concentrations that would result in them being disqualified as a legitimate fuel (i.e., a solid waste when burned).

We also request comment on whether there are other types of secondary materials that should be considered alternative fuels, assuming they have not been discarded and are legitimate (i.e., they meet the criteria discussed in section V.A.2). For example, as we discuss in more detail in section VI, biofuel production has increased dramatically in the past few years and is expected to continue increasing over the coming years. We later take specific comment on the extent to which biofuels are currently used in stationary combustion units, and the extent to which byproducts from the production of biofuels, as well as ingredients used to produce biofuels, such as fats, oils, and greases, are used directly in stationary combustion units as alternative fuel sources. Commenters should explain the circumstances under which these secondary materials would not be considered to have been

discarded, and how these materials meet the criteria as legitimate fuels. See the Materials Characterization Papers in the docket established for this ANPRM for a complete description of the secondary materials EPA is assessing as part of this effort.

4. Secondary Materials Used as Legitimate “Alternative Fuels” Resulting From the Processing of Discarded Secondary Materials

EPA also believes that legitimate fuel products may be extracted, processed, or reclaimed from non-hazardous secondary materials that have been discarded in the first instance and that such products would generally not be considered solid waste. Once processed to make a legitimate fuel product, such a product would not be discarded and therefore would not be a solid waste, provided it met the general principles previously discussed for being a legitimate fuel. (Note: Until a legitimate product has been extracted, processed or reclaimed, the secondary material that has been discarded is a solid waste.) The principle behind this idea of processing a waste to produce a product is common to industrial processes.

Due to the nature of some materials (e.g., low Btu value, the presence of contaminants, or the need for certain physical characteristics to address handling issues associated with the combustion device), processing will be necessary for the secondary material to be used as a fuel. Such discarded materials generally would be solid wastes until the point that a fuel product is produced; however, the fuel itself would not be a solid waste as long as it met the legitimacy factors. Secondary materials that can be processed into fuel include discarded biomass, coal fines, used oil, tires, and landfill ash. The degree of processing necessarily will vary depending on the specific material, but the objective remains the same—the product from the processing must be a legitimate fuel (i.e., a material with meaningful heating value, with contaminants that are not present at significantly higher concentrations than those of traditional fuel products, and managed as a valuable commodity). Below are some examples of secondary materials that we believe may be processed to produce a legitimate non-waste fuel.

- For biomass that has been previously discarded and has high moisture content, dewatering/drying techniques can be used to effectively increase the Btu/lb and produce a legitimate non-waste fuel, provided the biomass does not contain contaminants at significantly higher concentrations

and is handled as a valuable commodity.

- Wood with lead-based paint can be processed to remove the lead-based paint, leaving the underlying wood for use as a non-waste, traditional fuel, and the lead-based paint can then be safely disposed of or sent for lead recovery.

- Tires that cannot be handled whole by some combustion devices (whether discarded or not) can be processed by shredding and removing dirt or other contaminants to produce TDF. Turning scrap tires into TDF can involve two physical processing steps: chipping/shredding and in some cases metal removal. TDF consists of chipped tires ranging in size from 1 to 4 inches; the amount of metal in TDF varies depending on how much of the tires have been processed. Some units, such as cement kilns use the metal in the wire as a valuable ingredient in the manufacturing process, and therefore do not require its removal. However, most other units benefit from TDF that has been processed to minimize the amount of metal and improve heating efficiency. At this point, EPA considers tire shredding/chipping alone (without metal recovery), as well as in combination with metal recovery, as legitimate processing activities sufficient to convert a discarded material into a fuel product.

- Coal fines, biomass, and other materials can be mixed and processed into pellets (or other forms) that have the consistency and handling characteristics of coal (e.g., K-Fuel, N-Viro).

In all of the examples above, we, at this point, view the secondary material to have been sufficiently processed to produce a fuel that would not be a solid waste if it met the general principles described earlier—that is, the fuel product is a legitimate fuel and “sham” combustion (i.e., discard rather than use) has not occurred. Of course, any waste generated in the “processing” of these materials would need to be managed properly. We seek comment on whether the processing described above is sufficient to convert discarded material into a fuel product.

In addition to the examples above, we request comment on some additional operations that involve processing. Specifically, logging and primary milling residues may be chipped or sorted before combustion. Although we generally believe that this material would not be considered to have been discarded, we request comment on whether any forest-derived biomass that was determined to have been discarded and was subsequently processed by chipping or sorting prior to combustion

⁵⁶ As previously discussed, the term “contaminants” refers to constituents in secondary materials that may be of a concern when burned as a fuel. Constituents, such as chlorine in PVC are relevant because of the potential for chlorinated combustion by-products to be emitted (e.g., dioxins, hydrogen chloride).

would be considered to have undergone adequate processing to convert the discarded material into a fuel product. Mined landfill power plant ash can also be processed (e.g., crushed, screened, and/or separated into its fundamental components through density separation techniques) into a fuel. We also request comment on whether mined landfill ash is adequately processed to convert it into a fuel product or ingredient (under the assumption that it meets our previously described legitimacy criteria).

Used oil is a special case since it is specifically addressed in the RCRA statute (RCRA section 3014). It is worth noting that the statute does not define used oil as a solid waste. Section 3014 provides that EPA is to make a determination whether used oil is a hazardous waste, but is silent on whether used oil per se is a solid waste. Thus, we must apply the previously described criteria to determine if used oil is in fact discarded. Pursuant to RCRA section 3014, the Agency has promulgated standards for used oil management. The Standards for the Management of Used Oil in 40 CFR part 279 set forth management requirements for used oil that include contaminant limits to identify when used oil is considered to be "on-specification" used oil as opposed to "off-specification," and when it must be managed as a hazardous waste.

Table 1 in section 279.11 provides contaminant limits for "on-specification" used oil. On-specification used oil can only be burned for energy recovery, and once used oil is shown to meet the specification limits, the only requirement is maintenance of records of shipment to on-specification burners. No requirements or limitations are imposed on the management or burning of the on-specification used oil. Other uses of on-specification used oil would continue to cause that use to be subject to the used oil regulations. Management of used oil that does not meet the specification limits (referred to as off-spec used oil) is subject to the management controls, including recordkeeping, storage standards, and burning requirements. With one exception, off-spec used oil may only be burned in Subtitle C hazardous waste incinerators, or in boilers and industrial furnaces specified by the regulations (see 40 CFR 279.61). The exception is generators may burn off-spec used oil in used oil-fired space heaters provided that the heater burns only used oil that the owner or operator generates or used oil received from household do-it-yourself used oil generators, the heater is designed to have a maximum capacity

of not more than 0.5 million Btu per hour, and the combustion gases from the heater are vented to the ambient air.

There also is an upper total halogen limit for used oil (known as the rebuttal presumption). If the used oil has halogens in excess of 1,000 ppm, the used oil is considered to have been mixed with halogenated hazardous wastes, and must be managed as a hazardous waste unless a demonstration can be made that the used oil does not in fact contain hazardous waste.

We generally consider off-specification used oil that is collected from repair shops to have been originally discarded since this used oil contains both fossil fuel and contaminants picked up during use as a lubricant, and likely contains contaminants that are significantly higher in concentration than traditional fuels, and thus would not be considered a legitimate fuel per the criteria discussed in section V.A.2. However, if the fossil fuel component is extracted from the non-fuel contaminants through processing to meet the on-specification levels in 279.11, the resultant fossil fuel is not significantly different from traditional fossil fuels in every way and thus should be considered a product fuel, not a waste. We also consider used oil that is collected from repair shops that already meet the "on-spec" limits to be legitimate fuel products, not wastes.

We request comment on whether off-specification used oil managed pursuant to the 40 CFR 279 used oil management standards which are burned for energy recovery is considered to be discarded, and thus solid waste. Although off-specification used oil may contain contaminant levels that are higher in concentration than traditional (virgin) fossil fuels, they still are managed within the constraints of the used oil management standards, and may only be burned in specific types of combustion devices.

5. Secondary Materials Used as Legitimate Ingredients

For secondary materials used as ingredients, we also must determine whether the alternative ingredients have been discarded, which includes assessing how they are managed, and whether they are being used as legitimate ingredients pursuant to the criteria described in section V.A.2. Secondary materials that the Agency is assessing as alternative ingredients include CKD, bottom ash, boiler slag, blast furnace slag, foundry sand, and secondary glass material. We request comment on whether these secondary materials are legitimate ingredients as

previously described in section V.A.2 and thus would not be solid wastes if not previously discarded. Commenters should provide data and/or information supporting whether these secondary materials are legitimate ingredients and thus, whether they are or are not considered to have been discarded. For example, we believe that CKD is not a solid waste if it is recycled within the continuous clinker production process. We also believe that coal fly ash is handled as a commodity within continuous commerce when it is marketed to cement kilns as an alternative ingredient. As a result, if it is determined to be a legitimate ingredient pursuant to the criteria outlined in section V.A.2, we would not consider it to be a solid waste.

If the alternative ingredient was previously discarded, however, the Agency believes that such secondary materials are solid wastes, unless they were processed into a legitimate ingredient product. The Agency solicits comment on this situation (that is, the situation where a discarded material is recovered from the environment, and directly used as an ingredient) and, if comments are submitted that argue that such secondary materials (once recovered from the environment) should not be considered solid waste, the commenters should provide the basis or rationale for such a position (including a demonstration of how the secondary materials meet the legitimacy criteria outlined in section V.A.2) in order for the Agency to evaluate the arguments that are presented by the commenters. The Agency specifically requests comments on the extent to which secondary materials that have already been discarded (e.g., coal ash that has been landfilled) are later processed and used as ingredients in combustion units. Commenters should provide a description of the types of processing that the secondary material undergoes. EPA is also soliciting comment on the level of processing that would be considered sufficient to transform a discarded material into an ingredient product.

6. Hazardous Secondary Materials That May Be Excluded From the Definition of Solid Waste Under RCRA Subtitle C Because They Are More Like Commodities Than Wastes

Under the hazardous waste regulations, the Agency has evaluated a number of hazardous secondary materials that are recycled and determined that such materials, while they either met a listing description or exhibited one or more of the hazardous characteristics, were not "solid wastes"

for purposes of the Subtitle C hazardous waste regulations. Specifically, the following materials may be burned under certain conditions and are not solid wastes, but only for purposes of the hazardous waste regulations—black liquor, spent sulfuric acid, and comparable fuels. EPA is interested in extending this determination so that these materials are not considered solid wastes under RCRA Subtitle D.

The Agency believes that it has sufficient information in the rulemaking records that covered the determinations for black liquor, spent sulfuric acid,⁵⁷ and comparable fuels⁵⁸ to conclude that the exclusions are broadly applicable to the definition of solid waste; however, it solicits comment on whether it needs to develop additional information and provide new arguments. EPA emphasizes that it is not requesting comment on the solid waste definition for purposes of its hazardous waste regulation, but only on whether the exclusion conceptually applies to the definition of solid waste that is applicable to non-hazardous Subtitle D wastes, when these secondary materials are used as a fuel or ingredients.

EPA provides the following summaries of its regulations and solicits any views from the public on these materials. Specifically, a determination was made that black liquor reclaimed in a pulping liquor recovery furnace and then reused in the pulping process and spent sulfuric acid used to produce virgin sulfuric acid were not solid wastes under the hazardous waste regulations. The reason that these hazardous secondary materials were determined not to be solid wastes was because these hazardous secondary materials were determined to be an integral part of the manufacturing process. With respect to comparable fuels, EPA determined that certain hazardous secondary materials that meet specific requirements to ensure the material's toxic constituents and physical properties are similar to commercial (benchmark) fuels, are products, not solid wastes. See 63 FR 33781. The Agency has also recently finalized a rule that expands the Comparable Fuels Exclusion to encompass a new category of liquid hazardous secondary materials known as emission-comparable fuel (ECF).⁵⁹ By

expanding the Comparable Fuels Exclusion, ECF will be handled as a valuable commodity. ECF is subject to the same regulations that currently apply to the Comparable Fuels Exclusion, with the exception of certain oxygenates and hydrocarbons (constituents which contribute energy value to the fuel). The rule specifies conditions on burning ECF which assure that emissions from industrial boilers burning ECF are comparable to emissions from industrial boilers burning fuel oil.

The Agency specifically states in the hazardous waste rules that such “solid waste” determinations are only with respect to the Subtitle C hazardous waste regulations (see 40 CFR 261.1(b)(1)). EPA, however, wishes to obtain comment on whether to extend these exclusions beyond the hazardous waste regulations and apply them to these materials when they are used as a fuel or ingredient, and they meet the general principles discussed in today's notice.

VI. Additional Areas for Comment

The Agency is also interested in receiving comments on the following four issues.

A. Fuels or Materials That Have Been Discarded That Are Generally Considered To Be Solid Wastes

The Agency considers materials that have been previously discarded and not subsequently processed into a legitimate fuel or ingredient products as solid wastes under RCRA. However, the question has been raised by certain industry groups and states⁶⁰ as to whether these discarded materials—once recovered from the environment—may no longer be considered solid waste (assuming they are in fact valuable fuels or ingredients and otherwise meet the legitimacy criteria once recovered). Therefore, the Agency solicits comment on whether there are any circumstances under which these secondary materials should not be considered solid wastes under RCRA.

EPA recognizes that waste can be burned for energy or material recovery, and such materials, once they have been discarded, generally are considered “solid wastes” and units that burn these materials would be subject to the CAA section 129 incineration standards if

they have not been processed into a legitimate ingredient or fuel. However, as discussed in section III of this preamble, as prices for primary materials have increased, in many cases, the economics of using secondary materials as a substitute for primary materials has shifted, changing how the secondary materials are considered in commerce. In addition, new technologies can expand the universe of secondary materials that could be considered legitimate fuels.

The Agency is therefore interested in taking comment on the situation where discarded materials can be directly used as a legitimate fuel or ingredient (as defined in section V.A.2) without processing because they are indistinguishable in all relevant aspects from a fuel or ingredient product. (Note that the Agency is only requesting comment on these secondary materials at the point they have been removed from their “discard” environment and are being managed as a valuable commodity. Materials that have been disposed of in abandoned piles or landfills are clearly discarded while they remain in those environments and are subject to the appropriate federal, state and local regulations.) As an example, based on the results of EPA's 1997 study on “Air Emissions from Scrap Tire Combustion,” it was concluded that potential emissions from TDF are often less than, but at least generally within the same range as, emissions from conventional fossil fuels, as long as combustion occurs in a well-designed, operated, and well-maintained combustion device. Other data supports this conclusion. See background document titled “Materials Characterization Paper; Scrap Tires,” for a more detailed discussion on comparing TDF emissions to traditional fossil fuel emissions.

Coal refuse (i.e., mining rejects) is another secondary material that we believe falls within this category. Some of these materials were discarded by coal mining companies from the time mining first began in the Appalachians through the late 1970s. The materials had historically been piled through the Pennsylvania and West Virginia coal regions until laws were enacted in the late 1970s that required site reclamation. The advent of CFB combustion boilers, capable of efficiently burning fuels of lower calorific value, has resulted in the ability to use this material as a fuel (millions of tons of coal refuse have been burned as a fuel since the advent of CFBs). See background document titled “Materials Characterization Paper; Coal Refuse,” for more details.

⁵⁷ See Definition of Solid Waste Final Rule, January 4, 1985 at 50 FR 641–642, covering both black liquor and spent sulfuric acid.

⁵⁸ See “Expansion of the RCRA Comparable Fuels Exclusion (CFE)”, Final Rule, December 19, 2008, 73 FR 77953.

⁵⁹ See “Expansion of the RCRA Comparable Fuels Exclusion (CFE)”, Final Rule, December 19, 2008, 73 FR 77953.

⁶⁰ For example, see the Hybrid Regulatory Approach paper presented by the multi-industry coalition of stakeholders (PCA/CIBO/AF&PA/USWAG/RMA) in the docket established for this action entitled: “Outline of Regulatory Approach to Determine Materials Considered Fuels—not Solid Wastes—under RCRA,” June 12, 2008. We have had verbal discussions with the states on this issue as well.

The Agency specifically solicits comment on whether there are circumstances under which materials that have been discarded and which are legitimate fuels or ingredients should or should not be considered a solid waste once they are removed or recovered from the “discard” environment and managed as a legitimate fuel or ingredient.

B. Other Approaches for Determining Whether Secondary Materials Are Fuels and Not Solid Wastes

The Agency is also interested in receiving comments on an approach, as presented to the Agency by industry representatives, for determining when secondary materials are fuels and thus, not solid waste, and how the process may be implemented.⁶¹ Many aspects of the approach presented have been discussed throughout this ANPRM, with the common principle that certain secondary materials are not solid waste when burned for energy if they meet established criteria or are specifically identified not to be solid waste. For example, industry representatives suggest that material should be evaluated, on a case-by-case basis, to identify which criteria have been satisfied and determine whether the material is legitimately handled as a fuel. Criteria identified by industry stakeholders may include: Handling and storage of materials to minimize loss, use of materials within a reasonable period of time, material value (e.g., whether there is a market for the material as a fuel, internal or external to the company), material managed and treated as a commodity, and processing of material to enhance fuel value. Industry stakeholders also recommend that EPA should list by regulation specific materials as fuels, rather than solid wastes. Thus, under the industry recommended approach, it would not be necessary to evaluate whether the criteria have been satisfied in every instance. Specifically, listed materials that were recommended include: Traditional/historical fuels (e.g., coal, fuel oil, pet coke, coal refuse, used oil regulated under 40 CFR Part 279, synfuel, TDF, biomass fuel, biofuel, and gas pipeline condensate), materials specifically excluded from RCRA Subtitle C that have beneficial fuel value, materials combusted for chemical recovery, materials that are modified or

processed to produce a product of significant fuel or feedstock value, biomass materials from agricultural and forest resources, tires reclaimed via state programs, materials that had been discarded, but can be processed for use as a fuel or feedstock, and materials that a state approves as a fuel or determines can be beneficially reused.

To implement the aforementioned concepts for determining when or which secondary materials are fuels, industry presented two methods, which were not meant to be mutually exclusive. One method implements the criteria concept, by which an owner or operator of a combustion device must determine that the material meets the criteria set forth and maintain records to demonstrate that these criteria are met. (Presumably, the owner or operator would be subject to potential enforcement action if EPA determined that the criteria were misapplied.) The other method implements an extension of the listed materials concept by allowing an owner or operator to petition EPA or the state to specifically list a material (in addition to a pre-established list of materials). In a petition, the owner or operator would use the criteria as the basis for proposing that EPA or the state list the material (although industry notes that not all criteria need to be satisfied to qualify as a fuel), or the owner or operator could submit additional information to demonstrate the environmental equivalence of the material to other listed fuels.

The Agency solicits comments on whether the rules should include a petition process that would allow a person to submit a rulemaking petition and argue, on a case-by-case basis, that a secondary material is not a solid waste. This petition process would address situations where a material would otherwise be considered a solid waste under current regulations. As discussed in section V.A.6, the Agency has excluded certain materials from being a solid waste under the Subtitle C hazardous waste regulations. Should the Agency allow persons to petition the Agency to have a secondary material excluded from the definition of solid waste based on the legitimacy criteria discussed in section V.A.2? The Agency is interested in receiving comments on the validity and potential specific procedures of a case-by-case petition process by the owner or operator of a combustion device, including what criteria should be considered in evaluating such petitions. In addition, we also request comment on the concept of establishing a list of materials that are fuels.

For more information, see the multi-industry coalition’s paper in the docket established for this action entitled: “Outline of Regulatory Approach to Determine Materials Considered Fuels—not Solid Wastes—under RCRA,” June 12, 2008. The Agency also has received several papers from industry groups which we have reviewed and considered in drafting this ANPRM that are also available for viewing and comment in the docket.

*C. Materials for Which State Beneficial Use Determinations Have Been Made*⁶²

States regulate the management of non-hazardous solid waste, typically including secondary industrial materials, but many have a process or promulgated regulations to determine when these materials are no longer wastes, because they can beneficially and safely be used as products in commerce. The Agency is also soliciting comments on state beneficial use determinations and how those determinations deal with solid wastes, and how those decisions should be considered by EPA in determining what is or is not a solid waste under RCRA, which in turn determines how it is regulated under the CAA standards. Many state determinations addressing a material’s beneficial use and solid waste status are consistent with the principles explained in this ANPRM, but some state determinations (as previously discussed, both wastes and non-wastes may be used beneficially) may be inconsistent. In order for state programs to qualify materials as not solid waste under federal law, under the terms suggested in this notice, secondary materials would need to be legitimate fuels or ingredients and otherwise meet the conditions of the federal regulations.

As we have noted previously, states are the lead Agencies for implementing the non-hazardous waste programs and, as such, we want to make sure that state programs are not adversely affected by any decisions that are made by EPA. We see a benefit to deferring to state decisions, which are able to consider site specific information. The Association of State and Territorial Solid Waste Management Officials (ASTSWMO) reports that they receive requests from the regulated community to consider non-hazardous, industrial secondary materials as not being solid wastes when they are beneficially used. Most states (30 of 34 reporting) indicated they had either formal or

⁶¹ See the Hybrid Regulatory Approach paper presented by the multi-industry coalition of stakeholders (PCA/CIBO/AF&PA/USWAG/RMA) in the docket established for this action entitled: “Outline of Regulatory Approach to Determine Materials Considered Fuels—not Solid Wastes—under RCRA,” June 12, 2008.

⁶² This applies to state beneficial use determinations for secondary materials used as fuels or ingredients in combustion units that are not determined to be “non-wastes” pursuant to this rulemaking effort.

informal decision-making processes or beneficial use programs relating to the use of solid wastes. Materials are no longer subject to the state's solid waste regulations under the state rules when a state determines that the secondary materials are no longer solid wastes when beneficially used.

The Agency acknowledges state beneficial use determinations and seeks comment on whether to consider secondary materials that receive a state beneficial use determination for use as a fuel or as an ingredient as not a solid waste, should also not be considered a solid waste under federal law. Commenters who support such a position should provide the basis or rationale for this position. For example, would a determination be needed that shows the beneficial use determination was in-line with EPA's principles as outlined in section V.A.2. (i.e., whether they were legitimate fuels or ingredients)?

D. Biofuels

Biofuels and byproducts from the production of biofuels are non-traditional alternative fuels being offered for stakeholder consideration. Biofuels can be generally described as a gas or liquid fuel made from biological materials, including plants, animal manure, and other organic sources. Thus, biofuels produced from these materials, such as ethanol and biodiesel are not considered to be solid wastes themselves, but rather are viewed as legitimate fuel products. Biofuels production has increased dramatically in the past few years and is expected to continue increasing over the coming years. The Energy Policy Act of 2005 amended the CAA to establish a Renewable Fuel Standard (RFS) program which established a major new federal renewable fuel volume mandate. While market forces initially caused renewable fuel use to far exceed these mandates, this program provided certainty that at least a minimum amount of renewable fuel would be used in the U.S. transportation market, which in turn provided assurance for investment in production capacity. The Energy Independence and Security Act of 2007 (EISA) updated the RFS program to include a new definition of renewable fuels that accounted for the fuel life-cycle emissions of greenhouse gases (GHG)⁶³ and also increased the

⁶³ A "renewable fuel" is defined in EISA as a fuel that is produced from renewable biomass and that is used to replace or reduce the quantity of fossil fuel present in transportation fuel. "Renewable biomass" is defined as (1) Planted crops and crop residue, (2) planted trees and tree residue, (3) animal waste material and animal byproducts, (4)

total renewable fuel volume mandate to 36 billion gallons per year by 2022; the statute also established four specific categories of renewable fuels, each with a separate volume mandate. These categories are renewable fuel, advanced biofuel, biomass-based diesel, and cellulosic biofuel.

Biofuels production can be viewed as including both the feedstock materials that are used to produce biofuels, as well as the byproducts generated from the production of biofuels. EPA considers these materials to be legitimate alternative fuels when they have meaningful heating value, do not contain contaminants that are significantly higher in concentration than traditional fuels, and are handled as a valuable commodity. For example, a project completed by the University of Georgia (UGA) Engineering Outreach Service (EOS) demonstrated that biofuels processed from fats and grease (chicken fat, yellow grease, choice white grease, and beef tallow), either singly or blended with No. 2 fuel oil, are technically and economically viable alternatives to No. 2 fuel oil in industrial boilers.⁶⁴ We request additional data and comment on the extent to which fats, oils, and greases (FOGs) and related biomass materials that can be used as feedstocks to produce biofuels and that are not previously addressed in this ANPRM, are also used directly as fuels in stationary combustion sources. Further, the Agency requests comment on the extent to which FOGs and biomass materials are processed into biofuels for use in stationary combustion sources, such that their assessment as part of this rulemaking effort is warranted. For example, the U.S. Energy Information Administration estimated used cooking oil is produced at a rate of some 100 million gallons per day in the USA.⁶⁵ Literature suggests that biodiesel can be prepared from waste cooking oil. Although there are instances where such oil is used as a fuel for engines with only minimal processing (such as filtering), more intensive processing (such as the addition of ethyl alcohol with sodium hydroxide as a catalyst for the transesterification of vegetable oils and animal fats) is necessary to produce

slash and commercial thinnings, (5) biomass from the immediate vicinity of buildings, (6) algae, and (7) separated yard waste or food waste, including recycled cooking and trap grease.

⁶⁴ FY 2005 *FoodPAC* Final Report; "Combustion of Poultry Fat for Plant Heat and Steam," University of Georgia.

⁶⁵ Radich, A. Biodiesel performance, costs, and use. U.S. Energy Information Administration, 2006. <http://www.eia.doe.gov/oiaf/analysispaper/biodiesel/index.html>.

true biodiesel fuel.⁶⁶ Finally, we request comment on whether non-hazardous byproducts generated from the production of biofuels, such as dry distiller's grain from corn ethanol and lignin from cellulosic ethanol, are being used as alternative fuels, which therefore should be assessed as part of this rulemaking effort.

VII. Statutory and Executive Order Reviews

Under Executive Order (EO) 12866 (58 FR 51735, October 4, 1993), this action is a "significant regulatory action." Accordingly, EPA submitted this action to the Office of Management and Budget (OMB) for review under EO 12866 and any changes made in response to OMB recommendations have been documented in the docket for this action.

Generally, because this action is "advanced" in nature and does not, therefore, propose any requirements on any entities, the various administrative requirements EPA must address in the rulemaking process are not applicable. When EPA issues a notice of proposed rulemaking, EPA will address those requirements. EPA expects to prepare an Economic Assessment (EA) in support of the proposed action. We will submit this EA, along with the proposed rulemaking to OMB for review.

List of Subjects in 40 CFR Part 257

Environmental protection, Waste treatment and disposal.

Dated: December 22, 2008.

Stephen L. Johnson,

Administrator.

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FEDERAL COMMUNICATIONS COMMISSION

47 CFR Part 74

[MB Docket No. 08-253; FCC 08-278]

Replacement Digital Television Translator Service

AGENCY: Federal Communications Commission.

ACTION: Proposed rule.

SUMMARY: In this document, the Commission proposes and seeks comment on rules that would create a new "replacement" digital television translator service. The new replacement

⁶⁶ *Energies* 2008, 1, 3-18; DOI: 10.3390/en1010003, "Waste Cooking Oil as an Alternate Feedstock for Biodiesel," <http://www.mdpi.com/1996-1073/1/1/3/pdf>.