



Petroleum Refining Process Waste Listing Determination Proposed Rule Response to Comments Document; Part I

TABLE OF CONTENTS

I.	GENERAL COMMENTS	I-1
A.	The Agency requested comments on its proposal not to list eleven residuals. . .	I-1
B.	EPA requested comments on the data used in proposed rule and methodology and assumptions used in the risk assessment.	I-1
II.	HAZARDOUS OIL-BEARING RESIDUALS RETURNED TO REFINERY PROCESSES	II-1
A.	General Comments on Proposed Exclusions	II-1
B.	Proposed Exclusion is Supported by Case Law and Absence of Risk	II-2
C.	Comments Against the Proposal	II-11
D.	Request for Clarification	II-29
E.	Extension of proposed exclusion to recovered oil generated by organic chemical plants and inserted into co-located or commonly-owned petroleum refining processes along with normal process streams.	II-37
1.	<u>General</u>	II-37
2.	<u>Comments Against Proposal</u>	II-41
3.	<u>The Agency requested additional data on the composition of recovered oil from petrochemical operations that is typically sent to refineries.</u> . . .	II-45
4.	<u>The Agency requested additional information on refinery limitations that may preclude the introduction of toxic constituents from recovered oil generated from chemical manufacturing operations.</u>	II-54
5.	<u>Further Expansion of Proposed Exclusion</u>	II-56
6.	<u>Cokers are integral to refining and are not waste management units</u> .	II-66
7.	<u>Exclusion of Oil-bearing Wastewater</u>	II-68
8.	<u>Miscellaneous Comments on Recovered Oil Topics</u>	II-76

I. GENERAL COMMENTS

A. The Agency requested comments on its proposal not to list eleven residuals.

Comment 1: The commenters support the decisions not to list the 11 residuals. EPA used a *common sense* approach to the rulemaking. Decisions were based on current data and current management practices and supported by the risk analysis. (Amoco, 00062; API, 00046; ARCO, 00054; BP, 00019; Caufield, 00009; Coastal, 00048; Heritage, 00010; NPRA, 00015; Phillips, 00055; Texaco, 00049; Valero, 00051)

Response: EPA appreciates the commenters' support.

Comment 2: EPA used a sufficiently conservative iterative process for the risk assessment and therefore should have an extremely high confidence that these residuals will not pose significant risks. (API, 00046; BP, 00019; Coastal, 00048; Mobil, 00033)

Response: The Agency appreciates the commenters' support. All detailed comments regarding the risk assessment are provided in Section III of this document.

Comment 3: The commenters do not support the listing of the three residuals and believe the current regulations (TC) adequately protects human health and the environment. EPA should re-examine its risk analysis. (API, 00046; Coastal, 00048; Mobil, 00033; NPRA, 00015; Pennzoil, 00053; Phillips, 00055; Valero, 00051)

Response: The commenters provided detailed comments supporting this general comment. They are presented in Section IV on a waste-by-waste basis, as well as in Section III with respect to the risk assessment.

B. EPA requested comments on the data used in proposed rule and methodology and assumptions used in the risk assessment.

Comment 1: The commenters believe EPA obtained accurate and relevant data on the residuals and management practices through site visits, §3007 survey, and sampling and analysis program. (API, 00046; Ashland, 00020; Chevron 00050; Mobil, 00033; NPRA, 00015; Texaco, 00049; Valero, 00051)

Response: EPA appreciates the commenters' support and agrees that the cooperative effort between EPA and the industry work group during the industry study phase of this listing determination resulted in a defensible data base and a useful understanding of the industry and its waste generation and management practices.

Comment 2: The commenters commended EPA on its extensive information collection through sampling and analysis and §3007 survey. (API, 00046; Ashland, 00020; BP, 00019; Chevron, 00050; Mobil, 00033)

Response: EPA thanks the commenters for their support.

Comment 3: The commenters agreed that the rulemaking decisions were supported by the data collected. (API, 00046; Mobil, 00033; Texaco, 00049; Valero, 00051)

Response: EPA appreciates the commenters' support, which was garnered during a useful dialogue during the industry study.

Comment 4: EPA used a *common sense* approach to the rulemaking. (Mobil, 00033; NPRA, 00015; Pennzoil, 00053; Texaco, 00049)

Response: EPA agrees that the rulemaking was grounded in common sense decision making and that the entire process was enhanced by the dialogue engendered by the Common Sense Initiative.

Comment 5: One commenter anticipated that the Agency would receive adverse comments about the adequacy of its data collection and evaluation from parties that advocate maximum regulation of virtually all refining processes and residuals, and that will not be satisfied with EPA's proposal. Those parties may claim that EPA should not proceed with the proposal not to list these residuals until EPA has engaged in another extensive data collection and analysis, or even that EPA should assume that other residuals should be listed as hazardous wastes unless EPA can demonstrate through further evaluation that they are not hazardous. The Agency should reject any such argument and finalize the proposed non-listing determinations since 1) the rulemaking record already is sufficient to support the proposed non-listings, and 2) there is no presumption that solid wastes are hazardous. Rather, EPA may not list a waste as hazardous unless the Agency first determines, based on the evidence, that the waste poses a substantial risk to health or the environment. (Mobil, 00033)

Response: All comments regarding data adequacy were supportive, although one commenter strongly argued that the TCLP procedure should not have been used as input to the risk assessment models (see III.H of this document for comments about the TCLP). No commenters, however, suggested that extensive additional data collection was required or that the final rule should be delayed pending further information collection.

C. The Agency requested comments on the waste groupings chosen by the Agency; and any other information supporting the proposed listings.

Response: Some comments were received regarding the definitions of the three proposed listings. See Section IV and the waste-specific comments regarding "Scope of Listing" for these comments and the Agency's response.

II. HAZARDOUS OIL-BEARING RESIDUALS RETURNED TO REFINERY PROCESSES

A. General Comments on Proposed Exclusions

Comment 1: The Agency's proposal was a common sense approach to the expansion of the recovered oil exclusion. (API, 00046; ARCO, 00054; Heritage, 00010; Mobil, 00033; Phillips, 00055; Valero, 00051)

Response: EPA acknowledges the commenters' support of the proposed exclusion from the definition of solid waste for oil-bearing secondary materials returned to the refining process. As finalized, the exclusion from the definition of solid waste for oil-bearing residuals from specified petroleum refining sources is expanded to allow the use or reuse of a broader array of residuals from petroleum refining operations by inserting the materials into any part of the refinery process, including the coking process. The Agency notes that the exclusion is conditioned on there being no storage or placement of the secondary materials on the land and no speculative accumulation. In addition, the recycling of oil-bearing secondary materials can not result in coke products that exhibit any of the characteristics of hazardous waste.

In addition, in the final rule, EPA clarifies that the exclusion for oil-bearing secondary materials returned to the refining process only extends to the materials actually re-inserted into the refinery process. In cases where oil-bearing secondary materials are reclaimed prior to re-insertion, any residuals that may result from the reclamation process and that are not returned to the refinery process retain the hazardous waste listing and must be managed as a hazardous waste. In the final rule, the Agency modifies the proposed listing descriptions for refining wastes to include any residuals from the processing of listed hazardous wastes.

EPA clarifies that the Agency is not including within the scope of the exclusion oil-bearing secondary materials generated outside the petroleum refining sector (i.e., SIC 2911). The Agency is basing its decision not to exclude these secondary materials from the definition of solid waste on the fact that EPA has very limited data from industry demonstrating the chemical and toxic content of the materials. In fact, the Agency has no information on which to base a finding that the use of oil-bearing hazardous secondary materials originating in a non-refinery sector of the petroleum refining industry in the coking process would be anything other than the management of wastes (e.g., hazardous waste recycling) from that non-refinery sector. Oil-bearing secondary materials originating from non-refinery sectors have the potential to be more waste-like and thus do not warrant an exclusion, especially if their ultimate use is in the quenching process.

Comment 2: The commenters support the exclusion for hazardous oil-bearing materials inserted back to refining processes, including the coker and believe oil-bearing residuals returned to the refining process should be excluded from the definition of solid waste. (Amerada Hess, 00027; Amoco, 00062; ARCO, 00054; BP, 00019; Caufield, 00009; Chevron, 00050; CMA, 00018;

Coastal, 00048; Exxon Chemicals, 00041; Mobil, 00033; Pennzoil, 00053; Phillips, 00055; RETEC, 00028; Shell, 00047; Sun, 00034; Total, 00039; TNRCC, 00043; WIRA, 00024; Valero, 00051)

Response: EPA acknowledges the commenters' support of the proposed exclusion from the definition of solid waste for oil-bearing secondary materials returned to the refining process. As finalized, the exclusion from the definition of solid waste for oil-bearing secondary materials from specified petroleum refining sources is expanded to allow the use or reuse of a broader array of residuals from petroleum refining operations by inserting the materials into any part of the refinery process, including the coking process. The Agency notes that the exclusion continues to be limited to situations where inappropriate storage or accumulation does not occur, and to processes that do not result in coke products that exhibit any of the characteristics of hazardous waste.

In addition, in the final rule, EPA clarifies that the exclusion for oil-bearing secondary materials returned to the refining process only extends to the materials actually re-inserted into the refinery process. In cases where oil-bearing secondary materials are reclaimed prior to re-insertion, any residuals that may result from the reclamation process and that are not returned to the refinery process retain the original hazardous waste listing. In the final rule, the Agency modifies the proposed listing descriptions for refining wastes to include any residuals from the processing of listed hazardous wastes.

EPA clarifies that the Agency is not including within the scope of the exclusion oil-bearing secondary materials generated outside the petroleum refining sector (i.e., SIC 2911). The Agency is basing its decision not to exclude these secondary materials from the definition of solid waste on the fact that EPA has very limited data from industry demonstrating the chemical and toxic content of the materials. In fact, the Agency has no information on which to base a finding that the use of oil-bearing hazardous secondary materials originating in a non-refinery sector of the petroleum refining industry in the coking process would be anything other than the management of wastes (e.g., hazardous waste recycling) from that non-refinery sector. Oil-bearing secondary materials originating from non-refinery sectors have the potential to be more waste-like and thus do not warrant an exclusion, especially if their ultimate use is in the quenching process.

Comment 3: The proposal is fundamentally flawed and should be rejected. (ETC, 00038)

Response: The commenter's full arguments and the Agency's responses are found below in Section II.C of this document.

B. Proposed Exclusion is Supported by Case Law and Absence of Risk

In Section III.A of API's comments, API argues that the proposed exclusion can be supported because (1) it is common sense that oil-bearing secondary materials are best managed in the petroleum refining process, (2) the case law supports a common sense reading of Congress' approach to reuse of this type of material in the statutory definition of solid waste, and (3) while risk is not the appropriate basis for determining the applicability of the definition of solid waste, the oil-bearing residuals do not pose significant levels of risk when recycled. These three elements of API's comments, and EPA's responses, are provided below as Comments 1, 2, and 3, respectively.

Comment 1: [Approach has Common Sense]

Throughout its history, a principal goal of the petroleum industry has been to maximize the product yield of every barrel of crude oil produced. Toward this end, it has long been the practice of the industry to recover and return oil, off-specification products, and oil-bearing residuals to the refining process. This practice pre-dates RCRA by many decades and has been pursued continuously, except where potential regulatory impediments may have arisen.

The proposed exclusion reflects the common sense conclusion that the petroleum refining process is where oil-bearing secondary materials can best be managed and that such recycling should be encouraged. Maximum recovery and productive use of hydrocarbons within the industry whose main business is hydrocarbon use promotes RCRA's goals of resource conservation and waste minimization. (API, 00046)

Response: EPA acknowledges the commenter's support of the exclusion. The Agency points out that although the final rule expands the previous exclusion from the definition of solid waste for oil-bearing residuals from specified petroleum refining sources that are inserted into the petroleum refining process, the exclusion will continue to be limited to certain situations. The exclusion is limited to situations where inappropriate storage or accumulation does not occur, and to processes that do not result in coke products that exhibit any of the characteristics of hazardous waste. In addition, in the final rule, EPA clarifies that the exclusion for oil-bearing secondary materials returned to the refining process only extends to the materials actually re-inserted into the refinery process. In cases where oil-bearing secondary materials are reclaimed prior to re-insertion, any residuals that may result from the reclamation process and that are not returned to the refinery process retain the hazardous waste listing and must be managed as a hazardous waste. In the final rule, the Agency modifies the proposed listing descriptions for refining wastes to include any residuals from the processing of listed hazardous wastes.

EPA clarifies that the Agency is not including within the scope of the exclusion oil-bearing secondary materials generated outside the petroleum refining sector (i.e., SIC 2911). The Agency is basing its decision not to exclude these secondary materials from the definition of solid waste on the fact that EPA has very limited data from industry demonstrating the chemical and toxic content of the materials. In fact, the Agency has no information on which to base a finding that the use of oil-bearing hazardous secondary materials originating in a non-refinery sector of the petroleum refining industry in the coking process would be anything other than the

management of wastes (e.g., hazardous waste recycling) from that non-refinery sector. Oil-bearing secondary materials originating from non-refinery sectors have the potential to be more waste-like and thus do not warrant an exclusion, especially if their ultimate use is in the quenching process.

Comment 2: [Case Law]

API believes that Congress had such [see comment 1 above] a common-sense approach to reuse of such feedstock-like materials in mind when it crafted the statutory definition of solid waste. Indeed, the relevant case law supports this view.

In *American Mining Congress v. EPA*, 824 F.2d 1177 (D.C. Cir. 1987) (“AMC I”), the court held that only materials that are “discarded,” in the ordinary sense of the word, may be considered “solid wastes” under RCRA. Thus, for example, in-process secondary materials used in an ongoing manufacturing process may not be regulated as solid or hazardous wastes under RCRA.

Hydrocarbon-bearing secondary materials inserted into the petroleum refining process, including sludges, were at issue in AMC I, and the court determined that such materials are not discarded and so may not be considered solid wastes. Thus, EPA’s proposal to exclude such oil-bearing materials (as far as it goes) is consistent with the AMC I decision.¹ (API, 00046)

Response: EPA is finalizing the proposed exclusion from the definition of solid waste for oil-bearing secondary materials generated and reused by petroleum refineries, based upon a review of the policy and legal issues involved and on data provided to the Agency related to the composition of the secondary materials and the manner in which secondary materials are reused by the petroleum refining industry. By finalizing the proposed exclusion, the Agency is essentially providing the petroleum refining industry with a regulatory exclusion currently available to other industries that generate hazardous secondary materials and use or reuse the materials by reinserting the materials into the production process, essentially substituting the secondary materials for feedstocks.

Prior to today’s rule, the petroleum refining industry was precluded from reusing many recyclable secondary materials in the refinery process, unless the materials were handled as hazardous wastes prior to being reinserted into the refinery process. The pre-existing regulatory exclusions from the definition of solid waste for secondary materials that are reused or recycled the use of such materials to produce fuels (i.e., 40 CFR §§261.2(e)(2)(ii), 261.4(a)(8)(iv)).

¹The subsequent decisions that EPA often cites have said nothing to undercut the basic holding of AMC I, particularly insofar as that holding applies to the recycling of oil-bearing residuals in the petroleum industry. See, e.g., *American Mining Congress v. EPA*, 907 F.2d 1179 (D.C. Cir. 1990) (“AMC II”); *American Petroleum Institute v. EPA*, 906 F.2d 729 (D.C. Cir. 1990) (“API”).

The primary business of the petroleum refining industry is fuel production. Essentially, all petroleum refining feedstocks, including secondary materials substituted for primary feedstocks, contribute to the production of fuels. EPA's intent, when developing the previously established restrictions to the exclusions from the definition of solid waste for secondary materials that are reused was to protect human health and the environment from the potential risks associated with the combustion of hazardous wastes. EPA normally views combustion of hazardous wastes as a form of discard and retains jurisdiction over such processes, even if they occur as part of recycling activities. See, for example, 40 CFR Section 266.100 (applicability of hazardous waste management rules to air emissions from boilers and industrial furnaces burning hazardous waste). However, EPA does not view the use or reuse of petroleum refining secondary materials for the production of primary fuels by the petroleum refining industry necessarily as discarding those materials. Therefore, EPA is revising the existing regulations governing the recycling of hazardous secondary materials to exclude oil-bearing secondary materials generated and reused by petroleum refineries from the definition of solid waste. To ensure that the management of such materials does not include an element of discard, and to ensure that the materials do not become part of the waste disposal problem, the Agency is restricting the exclusion to situations where the secondary materials are not stored or placed on the land and where there is no speculative accumulation of the materials. In addition, the exclusion does not apply to situations that would result in a coke product that exhibits a characteristic of hazardous waste. See RCRA Section 3004(q)(2).

The Agency also is requiring that the materials excluded under this provision of today's rule be returned directly to a refinery for insertion. While this is not an issue if materials are recycled on site, EPA has concerns about situations where these materials are generated at one refinery for insertion into another. Such materials should not end up at an intermediate non-refinery facility without an accompanying hazardous waste manifest. In cases where materials generated at one petroleum refinery are to be recycled at another refinery, to meet the conditions of the exclusion the materials must be located either at the generating refinery, at the receiving refinery, or must otherwise be in transit between the two facilities. This is consistent with the argument that the exclusion is provided on the basis that the secondary materials are being used within the realm of on-going production in the petroleum refining sector.

In the final rule, EPA clarifies that the exclusion for oil-bearing secondary materials returned to the refining process only extends to the materials actually re-inserted into the refinery process. In cases where oil-bearing secondary materials are reclaimed prior to re-insertion, any residuals that may result from the reclamation process that are not returned to the refinery process, and therefore may be discarded, retain the original hazardous waste listing. In the final rule, the Agency modifies the proposed listing descriptions for refining wastes to include any residuals from the processing of listed hazardous wastes.

EPA notes that it arrived at the decision to exempt oil-bearing secondary materials generated by petroleum refineries that are re-inserted into the refining process, not merely based on the argument that the oil-bearing residuals are reinserted into the petroleum refining process, but

because the residuals are returned to the refining process without there being an element of discard within the management of the residuals prior to the residuals being inserted into the refinery process. In assessing the appropriate regulatory status of secondary materials from petroleum refinery operations, EPA assessed the data provided to the Agency on recyclable oil-bearing materials and concluded that these materials are analogous to crude oils.² Therefore, as part of the Agency's effort to apply the regulatory framework of RCRA to the refining industry in a reasonable manner, the Agency has identified those management practices in which oil-bearing secondary materials that are similar in composition to crude oil can be returned to fuels production in a manner not involving discarding or any element of discard.

EPA does not accept all of the commenter's arguments. It should be noted that EPA disagrees that an exclusion is compelled (even assuming legitimate recycling is occurring). First, there is direct case authority that secondary materials which originate from wastewater treatment systems -- the origin of most of the secondary materials which would be excluded under today's rule (see below) -- can be considered to be "discarded." See **AMC II**, 907 F.2d at 1186 ("Nothing in **AMC I**) prevents the agency from treating as 'discarded' the wastes at issue in this case, which are managed in land disposal units that **are** part of wastewater treatment systems, which **have** therefore become 'part of the waste disposal problem,' and which are **not** part of ongoing industrial processes" (emphasis original)). Industry indicates that, primarily, the oil-bearing hazardous secondary materials utilized in the quenching process are wastewater treatment sludges (chiefly K048, F037 and F038³), which are thus directly analogous to the sludges at issue in the **AMC II** decision, and thus could be considered to be discarded.

With regard to secondary materials recycled via quench coking, EPA adds further that wastewater treatment sludges likewise could be considered to be solid wastes pursuant to RCRA section 3004(q)(2)(A) which indicates that certain provisions otherwise applicable to hazardous waste-derived fuels do not apply to petroleum coke produced from "petroleum refinery wastes containing oil which are converted into petroleum coke at the same facility at which such wastes were generated." The plain language of the provision can be read to cover the activity at issue here, and thus indicate that wastewater treatment sludges and other hazardous secondary materials going to quench coking could be classified as solid wastes.⁴

² October 8, 1993 and October 13, 1993 letters from Mark A. Smith (Unocal) to James R. Berlow.

³ See September 3, 1997 letter from Kyle Isakower, American Petroleum Institute to William Brandes, Office of Solid Waste.

⁴The **AMC I** court gave this provision a restrictive reading, stating (somewhat circularly) that it applied only to material that had already become a hazardous waste. 824 F. 2d at 1188. However, given the holding of **AMC II** that wastewater treatment residuals can be classified as solid wastes and that wastewater treatment operations break any chain of what must be regarded

More basically, EPA does not regard the use of oil-bearing wastewater treatment sludges in the quenching process to be the type of operation which must necessarily be classified as part of an on-going manufacturing process. The parts of the petroleum refining process outside the Agency's RCRA jurisdiction involve the sequential distillation of crude oil into various fractions such as gasoline, fuel oil, asphalt, and conventional coking. See 824 F.2d at 1181. However, the quenching process need not be viewed as one more on-going step in this process. Not only is there the temporal interdiction of the generation of wastewater and subsequent management of the wastewater and sludges in the refinery's wastewater treatment system, but the quenching process differs in material ways from the standard refining operations. As discussed above, the materials utilized have less oil, higher percentages of unusable materials, and the process generates less recovered oil, than any other unit operation in the conventional refining process.

The Agency thus does not accept the argument that exclusion of hazardous secondary materials used in the quenching process is compelled. This is not to say that the Agency lacks the **discretion** to make such a determination. The term "discarded" is ambiguous, and within the Agency's authority to interpret consistent with the general goals and policies of the statute. **AMC II**, 907 F. 2d at 1186; **American Petroleum Inst v. EPA**, 906 F. 2d 726, 741 (D.C. Cir. 1990). Among these goals, of course, is encouraging environmentally sound recycling. RCRA section 1003(a)(6). Moreover, assessing what should be viewed as continuous industrial processes, and which types of material recovery operations are "not part of the waste disposal problem" (**AMC II**, 907 F.2d at 1186), are the types of technical and policy questions particularly committed to EPA's expert discretion. It is that discretion which the Agency is exercising in determining in this rule that a conditional exclusion is appropriate for certain hazardous oil-bearing secondary materials used in the coke quenching process.

As mentioned above, the exclusion continues to be limited to situations where inappropriate storage or accumulation does not occur, and to processes that do not result in coke products that exhibit any of the characteristics of hazardous waste. The D.C. Court articulated the Agency's authority to classify a waste as "discarded" even in those cases where the waste may be destined for reuse or recycling. As the D.C. Circuit indicated, "discarded" is an ambiguous term that admits to interpretive discretion. The Agency is exercising such discretion in the rule promulgated today. **AMC II**, 907 F. 2d at 1185.

EPA also notes that the EPA Administrator through a rulemaking subject to notice and comment may designate solid wastes recycled in any manner as "inherently waste-like materials" in accordance with the criteria of 40 CFR 261.2(d)(3). The intent to recycle is not a shield against the regulation of residuals that have left the ongoing process.

as a continuous industrial process, the wastewater treatment sludges destined for the quenching process could be classified as being hazardous wastes.

Comment 3: [Risk is not an acceptable basis for DSW determination, but if it were, there is no significant risk]

API notes that, in support of the proposal, as well as in many other recent contexts involving the definition of solid waste, EPA tends to elevate considerations of risk to a level that is unnecessary in light of the case law. In other words, the Agency appears first to consider the level of potential risk to human health and the environment that it perceives to be associated with a given material or recycling process, and then decides largely on that basis whether or not a recycled material is or should be a solid waste, without regard to whether the material is discarded. See, e.g., 59 FR 38540 (July 28, 1994) (i.e., recovered oil rule); 57 FR 27880, 27884 (June 22, 1992) (exclusion for coke by-product plant residues). One obvious flaw in this approach is that in some industries, even the primary manufacturing process, using only virgin materials, may pose substantial risks. Yet EPA has always recognized that in enacting RCRA, Congress did not intend for EPA to regulate or otherwise intrude into the primary manufacturing process.⁵ Rather, Congress limited EPA's authority under RCRA to materials that are discarded, i.e., disposed of, and provided vast authorities in other statutes, such as the Clean Air Act and the Clean Water Act, to regulate manufacturing and the recycling of undiscarded materials⁶.

Nonetheless, the Agency supports the proposed exclusion in this rulemaking, in large part, on the basis of a lack of risk associated with the recycled oil-rich materials. See, e.g., 60 FR 57752, 57754 - 55. While, as discussed above, API does not believe that purported risk is the lawful criterion for determining whether materials are solid wastes (as opposed to determining which solid wastes may be hazardous waste),⁷ API agrees that the oil-bearing residuals at issue do not

⁵See, e.g., 51 FR 25487 (July 14, 1986) (citing H.R. Rep. No. 1491, 94th Cong., 2d Sess. 26 (1976)). 50 FR 638 (Jan. 4, 1985).

⁶For the same reasons, API questions EPA's authority to regulate materials as solid wastes on the basis of a finding that they are "inherently waste-like", see 60 FR 57755, where such a finding is based primarily on perceived risk and not on the controlling statutory criterion of "discard."

⁷API also takes exception to the implicit suggestion in the preamble that recycled secondary materials are *presumed* to be solid wastes, *unless* EPA can justify a determination that they are not solid wastes based on safety or risk considerations. See 60 FR 57752 (col. 3). No such presumption appears in the statute or in the cases construing the statute. EPA's reliance on the *API* case is misplaced. There, the court invoked RCRA's "cradle-to-grave" scheme to question EPA's conclusion that a particular solid waste (electric arc furnace dust) *ceased* to be a solid waste upon reaching a recovery facility. The dust's status as a solid waste in the first instance was undisputed, and not in issue in that case. Nowhere did the court suggest that secondary materials must be presumed to be solid wastes in order to implement RCRA's cradle-to-grave scheme.

pose significant levels of risk when recycled in the petroleum refining process. The residuals typically are stored and transported in non-land-based⁸ vessels or devices that are designed to prevent releases. Emissions from the refining processes to which the residuals are returned are subject to stringent controls under the Clean Air Act. Moreover, the refining process separates contaminants from hydrocarbons such that the fuels produced, and their combustion, do not pose the kind of risks that Congress intended to address when it directed EPA to regulate hazardous waste fuels in the 1984 RCRA Amendments.

Thus, while API believes that common-sense, the case law, and the undiscarded nature of these residuals provide the appropriate rationales for the proposed exclusion, the exclusion has a sound basis even when viewed purely from the perspective of risk. In addition, API concurs with EPA that the proposed exclusion will promote legitimate recycling and resource conservation, consistent with the objectives of RCRA; see 42 U.S.C. Section 6902, and EPA's regulatory reinvention efforts. (API, 00046) (See also CMA, 00018; Mobil, 00033)

Response: The Agency based its decision to exclude, from classification as solid waste, oil-bearing residuals that are inserted directly into any part of the refining process upon EPA's authority to regulate materials that are recycled, as interpreted and established by the Courts, including the AMC II decision (*AMC II*, 907 F. 2d at 1186-87). The *AMC II* decision established that EPA has jurisdiction over materials that are recycled when the management of such materials includes an element of discard. The Court in *AMC II* held that "discarded" is an ambiguous term that EPA may interpret in a reasonable manner. One way in which the Agency has chosen to interpret the term "discard" is through a determination of whether recycling serves as a shield for treatment or destruction of a waste or its constituents, or provides for the legitimate reuse of a material as a feedstock in a production process. In making such an interpretation, the Agency may analyze the material in question to determine whether the material is substantially similar to other feedstocks used in the production process and whether the material can be inserted into the production process without raising the concentrations of hazardous constituents in the final product to levels of concern. The preamble discussions cited by the commenter are the discussions that present the Agency's findings relative to the determination of whether the oil-bearing materials are being discarded rather than legitimately recycled.

⁸API notes that the proposed regulatory language conditions the exclusion upon a material not being "placed on the land." Consistent with EPA's long-standing policy that products that are spilled and promptly cleaned up and recycled are not wastes, API assumes that EPA intends to condition the exclusion upon the absence of any placement on the land *in a manner constituting disposal*. EPA should either revise the condition to the exclusion to read "placed on the land in a manner constituting disposal," or explain in the preamble to the final rule that the condition should be so read.

In today's rulemaking, the Agency has determined that oil-bearing secondary materials generated by the petroleum refining sector that are reused in the refinery process are substantially similar to streams used as feedstock in the industry. The critical recycling practice for purposes of this rulemaking is recycling of secondary streams into petroleum coking operations. (This is because virtually all secondary streams which contain oil, but are not pure enough to be "recovered oil," are recovered via coking). The secondary streams are substantially similar to normal coker feedstock material. In addition, all the data available to EPA indicates that the recycling of oil-bearing residuals can be accomplished without raising hazardous constituent concentrations to levels of concern in the final coke product.⁹ To partially guard against this possibility, EPA is limiting the exclusion to materials that result in the production of coke that does not exhibit the characteristic of a hazardous waste.

In addition, EPA has found that hazardous oil-bearing refinery sludges are managed in much the same way as are non-regulated coker feedstocks prior to insertion into the petroleum coker (be it normal coking or quench coking).¹⁰ Given that the oil-bearing materials are substituting for feedstocks, the industry has a significant economic incentive to store the materials in a safe manner. Therefore, the Agency does not believe that storage of the residuals prior to reinsertion into the refining process poses hazards to human health and the environment. To guard against risks associated with unsafe storage practices, the Agency has conditioned the exclusion on there being no placement of the materials on the land and the materials cannot be accumulated speculatively (i.e., there can be no element of discard). See 63 FR at 28581 (May 26, 1998) where EPA imposed identical conditions on intra-industry recycling of mineral processing secondary materials, and explained that consideration of risk is relevant to determinations of when a recycling activity is "part of the waste disposal problem," a key component of the jurisdictional standard. See AMC II, 907 F. 2d at 1186.

Furthermore, data on the composition of the coke product indicate that use of oil-bearing secondary materials has little, if any, impact on the quality and/or properties of the resulting coke.^{11 12} EPA has information which indicates that levels of toxic metals in coke produced from oil-bearing sludges is comparable to those found in coke produced strictly from crude oil residuum.

⁹ "Petroleum Refining Process Waste Listing Determination, Supplemental Background Document," U.S. EPA, Office of Solid Waste, March, 1997.

¹⁰ *Ibid.*

¹¹ February 2, 1993 data submission from Mobil Oil Corporation.

¹² "Petroleum Refining Process Waste Listing Determination, Supplemental Background Document," U.S. EPA, Office of Solid Waste, March, 1997.

Given each of these findings, the Agency finds that the reinsertion of oil-bearing residuals into the refinery coking process is not part of the waste disposal problem. Identical findings support the exclusion for insertion elsewhere in the refining process.

In response to the commenter's request to revise the proposed condition of the exclusion to the absence of any placement on the land "in a manner constituting disposal," the Agency disagrees with the commenter. The Agency's reason for restricting the placement of secondary materials on the land goes beyond use "constituting disposal." EPA's intent for the condition also is to preclude the storage of oil-bearing secondary materials in land-based units prior to reinserting the materials into the refinery process. EPA has long established that placement of hazardous wastes in land-based units constitutes discard. Courts concur. See, for example, AMC II, 907 F. 2d at 1186-87. Hazardous oil-bearing secondary materials that are managed in land-based units thus are not included with the exclusion.

EPA clarifies for the commenter that materials excluded from the definition of solid waste (e.g., hazardous commercial chemical products, excluded secondary materials that are being recycled) that are spilled and *immediately* cleaned up and recycled remain excluded from the definition of solid waste. However, contaminated soils and other cleanup residues that are not recycled are solid wastes. In cases where a generator makes a claim that spill residues are excluded materials, the generator has the burden of proving that legitimate recycling will take place. In the absence of strong, objective indicators that recycling is taking place, or that the generator intends to recycle the materials, the spill residues and contaminated media are solid wastes immediately upon being spilled, because they are abandoned, and must be managed in accordance with all applicable RCRA management standards. See generally 55 FR at 22671 (June 1, 1990).

Comment 4: The commenter urges EPA to finalize the planned interim final rule correcting the original recovered oil exclusion. (CMA, 00018)

Response: EPA corrected the existing exclusion from the definition of solid waste for recovered oil through the issuance of a direct final rule (61 **FR** 13103, March 26, 1996). The corrected rule reflects the result EPA initially intended, which was to condition the exclusion of recovered oil on the oil being reinserted into the petroleum refining process at a point where the process removes or will remove at least some contaminants. In today's final rule, the Agency is expanding the exclusion to allow for reinsertion of a broader array of residuals into more parts of the refinery, including the coking process.

C. Comments Against the Proposal (ETC, 00038)

ETC submitted extensive comments against the proposal. The general flow of these comments is outlined below:

- A. The proposed exclusions ignore controlling judicial decisions on EPA's jurisdiction (Comment 1).

- B. Overwhelming evidence of environmental contamination from mismanagement of oil-bearing materials proves that these materials are part of the waste disposal problem (Comment 2)
- C. The proposed exclusions are overly broad because the secondary materials in question are not immediately reused in ongoing, closed-loop production processes
 - 1. The oil-bearing residuals will not be managed in a closed-loop process (Comment 3).
 - 2. The oil-bearing materials are not immediately reused (Comment 4).
- D. The proposed exclusions are overly broad because there is no required minimum oil content for the excluded materials (Comment 5).
- E. The proposed exclusions are overly broad because they contain no limitations on hazardous constituent content in the secondary materials destined for reuse (Comment 6).

Comment 1: EPA correctly states that judicial decisions have construed the Agency's RCRA jurisdiction over secondary materials very broadly, with only "relatively narrow" exceptions for materials that are not "discarded." 60 FR 57752 col. 2. Specifically, the Agency is foreclosed from regulating materials as solid wastes only when the materials are "destined for immediate reuse in another phase of the industry's ongoing production process [and] . . . have not yet become part of the waste disposal problem." *Id.* (quoting American Mining Congress v. EPA, 907 F.2d 1179, 1186 (D.C. Cir. 1990) (AMC II) (emphasis by court)).

Determining whether a particular reuse practice is part of ongoing production activities or is part of the waste disposal problem "necessarily entails fact-specific evaluation." 59 FR 38536, 38541 col. 3 (July 28, 1994). EPA also acknowledges that such decisions cannot be made in a vacuum. Instead, EPA must reconcile determinations to exclude materials from RCRA jurisdiction with Congress' overriding objective to establish a cradle-to-grave regulatory structure to ensure the safe handling of hazardous wastes. 60 FR 57752 col. 3.

In proposing to expand the existing exclusion at 40 CFR 261.4(a)(12) and to add a new exclusion at 261.4(a)(13), however, EPA would contravene this controlling law. EPA's proposal fails to provide any assurance that the oil-bearing residuals in question will be (1) immediately reused, and (2) managed in a manner that prevents them from becoming part of the waste disposal problem prior to reuse. This failing is particularly unjustified given that historic mismanagement of oil-bearing materials has already caused significant environmental contamination.

In short, the proposal would inappropriately exclude materials from Subtitle C regulation that are discarded and are part of the waste disposal problem. This, in turn, would defeat RCRA's goal of ensuring safe management of hazardous wastes from cradle to grave.

Response: The Agency disagrees with the commenter. Although the Agency is precluded from classifying a material as a solid waste when the material is "destined for immediate reuse," the Court did not hold that materials that are not immediately reused are always solid wastes. The Agency retains considerable discretion in determining when (or in what situations) materials that

are destined for reuse become part of the waste disposal problem and therefore are solid wastes. In the case of the oil-bearing materials that are the subject of today's rulemaking, the Agency determined that these materials are substantially similar to normal feedstock materials and that petroleum refiners are handling these materials in the same or a similar manner as other feedstock materials. In addition, with respect to secondary materials recycled via coking, the Agency determined that the recycling of oil-bearing residuals can be accomplished without raising hazardous constituent concentrations to levels of concern in the final coke product, when such materials are inserted into the coker. Therefore, these materials are not part of the waste disposal problem.

To ensure that oil-bearing residuals are not "discarded" or managed in a manner that would cause them to become part of the waste disposal problem, the Agency conditions the exclusion on there being neither placement of oil-bearing secondary materials on the land prior to reuse nor speculative accumulation of the secondary oil-bearing materials. In this manner, while the Agency is relinquishing some control over the subject residuals, the Agency has acted to limit the period of time that such materials may be retained before they are returned to the process. The Agency also notes that secondary materials that are spilled or otherwise released to the environment are not excluded from the definition of solid wastes. Such materials are abandoned, and therefore discarded and remain subject to RCRA management standards. In addition, the oil-bearing residuals may be subject to the Spill Prevention and Control Act.

The Agency notes that the materials excluded under this provision of today's rule must be returned directly to a refinery for insertion into the refinery process. While this is not an issue if materials are recycled on site, EPA has concerns about situations where these materials are generated at one refinery for insertion into another. Such materials should not end up at an intermediate non-refinery facility without an accompanying hazardous waste manifest. In cases where materials generated at one petroleum refinery are to be recycled at another refinery, to meet the conditions of the exclusion the materials must be located either at the generating refinery, at the receiving refinery, or must otherwise be in transit between the two facilities. This is consistent with the argument that the exclusion is provided on the basis that the secondary materials are being used within the realm of on-going production in the petroleum refining sector.

Comment 2: As mentioned in Comment 1, secondary materials become discarded, and hence "solid wastes," if they are handled in such a way as to become part of the waste management problem, even if the materials will subsequently be reused in a production process. AMC II, 907 F.2d at 1186; American Petroleum Inst. v. EPA, 906 F.2d 729, 741 (D.C. Cir. 1990); Shell Oil Co. v. EPA, 950 F.2d 741, 756 (D.C. Cir. 1991). An obvious example is placement of materials into a land disposal unit such as a surface impoundment, where hazardous constituents can be released to the environment, prior to insertion into a recycling unit. AMC II, 907 F.2d at 1186.

Another way a material can become a waste subject to RCRA regulation is if its management has resulted in environmental harm. As EPA stated in declining to include certain petroleum refinery

sludges in the exclusion for recovered oil, "there have been many damage incidents associated with management of such materials as toxic sludges from wastewater treatment, confirming that these materials are part of the waste disposal problem, rather than part of an on-going manufacturing operation." 59 FR 38542 cols. 2-3 (emphasis added). See also 60 FR 57753 col. 1.

In this rulemaking, EPA recites the above principles but then states that "it does not believe that storage of the residuals prior to reinsertion into the refining process poses hazards to human health or the environment." 60 FR 57754 col. 3. This statement is contradicted by all available facts. In reaching this mistaken conclusion, EPA expressed its belief that refineries manage such residuals in a similarly safe manner as they manage non-regulated crude oil residuals. Id. In fact, the Agency did not even assess the risks posed by storage and management of the very oil-bearing materials proposed for exclusion. See, e.g., Listing Background Document, EPA RCRA Docket document no. S0003, at 26, 37, 46, 57 and 121.

As discussed below, EPA has ignored overwhelming evidence in the record that oil-bearing materials have been widely mismanaged and have caused environmental damage at petroleum refineries throughout the United States. A review of that evidence "confirms that these materials are part of the waste disposal problem." 59 FR 38542 cols. 2-3. The evidence convincingly demonstrates that Subtitle C controls for management of oil-bearing residuals destined for reuse are necessary to protect human health and the environment.

EPA investigated and reported on the following damage incidents in preparing its risk assessment for this rulemaking:

1. Golden West Refining Company -- Santa Fe Springs, CA
Metal and volatile organic contamination in groundwater and soil beneath aboveground storage tanks (ASTs) in west and south tank farms. Hydrocarbon releases from the site have rendered nearby aquifer unsuitable for domestic or municipal use. Assessment of Risks from the Management of Petroleum Refining Waste: Background Document, Appendix H, Damage Incident History, at H-11 (EPA RCRA Docket Document No. S0006).
2. Amoco Oil Refinery and South Tank Field -- Whiting, IN
Nearby residents have complained about releases of catalyst from electrostatic precipitators and hoppers. Report notes a "high potential for release [to air and surface water] exists" from windblown particles while the precipitator is being emptied. Report also discusses releases from spent catalyst storage bins. Damage Incident History at H-22 to H-23.
3. Energy Cooperative, Inc. -- East Chicago, IL
"Several of the [ASTs] are known to have leaks. A major rupture of one of the storage tanks reportedly last occurred in 1969. Most of the tanks show visual signs of

overflowing as well as oil/product accumulations at the base of the tanks and within the berm containment area. It is suspected that repeated spills, overfilling, and leaks have all significantly contributed to both soil and groundwater contamination." Damage Incident History at H-24 (emphasis added).

"The ECI site appeared to have had numerous and significant spills. Most tanks had visual signs of overfilling, and product was found on the ground inside the containment berms. Many of the earthen berms showed signs of staining, as did the base of the storage tanks and equipment. Documentation in the reports reviewed indicated broken underground pipelines, tank leaks, and frequent overfills." Id. (emphasis added).

4. ARCO Oil & Gas Co. -- Lafayette, LA

Release of materials from a broken flowline caused by excessive corrosion at pipe elbow. Id. at H-27.

5. Canal Refinery -- Church Point, LA

"Wastewaters and tank bottoms discharged from storage tanks." Id. at H-28.

6. Conoco-Lake Charles Refinery -- Lake Charles, LA

"High potential for past releases of hazardous constituents [from caustic ASTs] . . . to underlying soils and groundwater." Also, barium, chromium, copper, zinc, and several organic compounds detected in groundwater samples collected near chromium and lead AST. Id. at H-29.

7. Conoco-Westlake Refinery -- Westlake, LA

Spillage of oily material observed near East Gas Oil and Crude Oil Tank storage facility. "The spillage appears to be caused by poor housekeeping practices. Also, the facility failed to clean up this spillage in a timely manner." In addition, "[t]he poor condition of [four spent caustics ASTs] could lead to leaks or possibly tank rupture." Id. at H-30.

8. Shell Oil Co. -- Norco, LA

"[A]n estimated 40,680 pounds of 20 percent sodium hydroxide (caustic) were spilled to an unlined tank dike. The misinterpretation of operating procedures resulted in the overfilling of a tank used to blend 20 percent sodium hydroxide." Report also notes that there have been "several releases involving alkaline solution and slop oil, attributed to line corrosion or fibercast piping pulling apart at the joint." Damage Incident History at H-34 to H-35.

9. Giant Refinery -- Gallup, NM

Release of sludge from reformer-desulfurizer charge tank occurred during normal tank-cleaning operations. Id. at H-38.

10. Basin Refinery -- Okmulgee, OK

"[I]t appeared that some of the [ASTs] on-site still contained oil products and were possibly leaking. Soil discoloration, possibly from berm overflows or failure of abatement equipment, was evident during the site visit." Id. at H-41.

11. El Paso Refinery -- El Paso, TX

"Excessive hydrocarbon contamination of the groundwater has been found in the areas surrounding and under the surface impoundments and several storage tanks. One of the SWMUs is a concrete, on-ground tank equipped with a leachate collection system. The concrete tank apparently leaks, as indicated by the accumulation of liquid in the leachate collection system." Groundwater contamination from this refinery "is a great concern since El Paso is totally dependent on groundwater for the majority of its water supply." Id. at H-48.

12. Old ATC Refinery Superfund Site -- Wilmington, NC

"Results of previous investigations identified 13 sources of contamination at ATC, including 11 areas of soil contamination and two characterized waste areas. The majority of these sources involved the mismanagement of petroleum products which can occur [from] pipeline leaks during the transfer of petroleum over pipelines or from defective 55-gallon drums." Id. at H-50.

In addition to these damage incidents documented by EPA itself, the API, in a recent survey, reported pervasive environmental contamination at petroleum refineries. The survey also reported a general lack of basic safeguards for ASTs, such as secondary containment. A Survey of API Members' Aboveground Storage Tank Facilities (July 1994). API's findings are generally consistent with those of EPA. See, e.g., Listing Background Document at 154 (nearly one-third of spent caustic ASTs have no secondary containment equipment). The API survey reveals the following facts regarding management of oil-bearing materials:

1. There are 95 petroleum refining facilities in API's membership, and the 61 facilities responding to the survey collectively have 10,298 ASTs on-site. API Survey at 3-4. Well over half of these tanks have a capacity exceeding 420,000 gallons, with roughly one-third of the tanks having a capacity exceeding two million gallons. Id. In addition, approximately 90% of the total number of tanks are more than 15 years old. Id. at A-8.
2. Over one-third of the ASTs lack overfill protection mechanisms. API Survey at 7.
3. Of the 61 responding facilities, 85% have known groundwater contamination on-site. The contamination rate may be even higher for non-API facilities and for API facilities not responding to the survey. API Survey at 16. Of course, there may very well be groundwater contamination at facilities that responded "don't know" to this question in the survey. Id. at B-6.

4. Of the refineries with known on-site groundwater contamination, 44% reported off-site groundwater contamination as well. Id. at 15.
5. Of the 10,298 ASTs operated by survey respondents, 3.6% (or 370) of the tanks had "confirmed bottom failures" within the past five years. Id. at 19. Given that a possible response to this question in the survey was "have no idea," the actual number of tanks with such failures is likely significantly higher. Id. at B-5.
6. Over half the refineries with buried AST-associated piping have less than 25% of the piping cathodically protected to prevent corrosion-related failures. Id. at A-18.

In view of these facts, EPA's argument that oil-bearing residuals will be managed "just as safely" as crude oil feedstocks is unpersuasive. In addition, the newspaper articles attached as Exhibit 2 (see ETC's original comments for exhibits) illustrate that uncontrolled releases of petroleum products, frequently in excess of hundreds of thousands of gallons, are a serious environmental problem.

In light of this undisputed evidence of mismanagement, oil-bearing residuals destined for reuse at petroleum refineries clearly are part of the waste disposal problem, and therefore must be regulated as solid wastes subject to RCRA. AMC II, 907 F.2d at 1186; 59 FR 38542 cols. 2-3. EPA's proposal to exempt the management of such residuals from all Subtitle C controls, including the 40 CFR Part 264 Subpart J tank standards -- without even assessing the risks posed by storage of the residuals prior to reuse -- is irrational, unsupported in the record, and contrary to law.

Response: Although the damage incidents cited by the commenter have some relevance to the issue of assessing potential risks from the management of oil-bearing residuals prior to reuse at petroleum refineries, many of the damage cases cited by the commenter and which are contained in Appendix H of EPA's document "Assessment of Risks from the Management of Petroleum Refinery Wastes: Background Document," are either significantly dated, or are associated with facilities that no longer are in operation. In addition, some of the damage incidents cited are not the result of releases of oil-bearing residuals or releases of hazardous wastes.

EPA has found that hazardous oil-bearing refinery sludges are managed in much the same manner as are non-regulated crude oil residuals prior to insertion into the petroleum refinery process.¹³ A typical petroleum refinery operation stores secondary materials in tanks or containers that are designed and maintained in accordance with guidelines set by the American National Standard Institute (ANSI). The ANSI standards governing design, construction, operation, maintenance and inspection of petroleum terminal and tank facilities help to ensure

¹³ "Petroleum Refining Process Waste Listing Determination, Supplemental Background Document," U.S. EPA, Office of Solid Waste, March, 1997.

environmentally protective storage of in-process residuals prior to reinsertion into the coker or other parts of the refinery. To further insure against improper storage of oil-bearing residuals, the Agency has conditioned the exclusion on there being neither any storage in a manner involving placement on the land, nor speculative accumulation of the secondary oil-bearing materials.

The Agency understands that even in cases where a refinery adheres to stringent and highly protective storage standards, the potential for environmental releases exists. The Agency notes that waste mismanagement incidents, such as those to which the commenter refers, are subject to full RCRA Subtitle C controls. The exclusion for oil-bearing residuals that are returned to the petroleum refinery process does not apply to spill residues and contaminated media, unless such materials are immediately cleaned up and recycled. Spill residues and contaminated soils are solid wastes (and potentially hazardous wastes) if they are treated and/or disposed.^{14 15 16} In fact, the Agency contends that contaminated soils and other cleanup residues generally are solid wastes because of the difficulty associated with recycling wastes contained within environmental media. To demonstrate that a spill residue is not a solid waste, the generator has the burden of proving that legitimate recycling will take place. Releases to the environment at permitted RCRA facilities also are subject to the requirements for managing releases from solid waste management units in Subpart F of 40 CFR Parts 264/265.

EPA notes fundamentally that these operations involve situations where there are distinct questions regarding jurisdiction: intra-industry recycling in processes which can legitimately be viewed as on-going production. The activity can also be viewed as sequential processing of hydrocarbons contained in an initial raw material. Storage is analogous to storage of raw materials. The rule addresses the most obvious possibility of such activities still being part of the waste management problem by forbidding land placement for excluded materials. The commenter's further implicit suggestion that leaks from storage necessarily also render these secondary materials ineligible for exclusion goes too far in EPA's view. See 63 FR at 28581-82 (May 26, 1998) where EPA addressed similar arguments in the context of intra-industry recovery within the mineral processing industry. EPA's conclusion here is similar: given the potential jurisdictional constraints, "Where there is no obvious element of discard present, such as land-based storage, the Agency does not believe it should exercise its interpretive discretion to assert authority."

¹⁴ 54 FR 48494, November 22, 1989.

¹⁵ 55 FR 22671; June 1, 1990.

¹⁶ See Agency guidance related to solid waste determinations for spilled commercial chemical products, e.g., PPC: 944.1995(20); EPA Document Number: 530-R-95-002E; NTIS: SUB-9224-95-005.

EPA also notes a certain irony in this comment. The tanks storing these secondary materials are unregulated because they are wastewater treatment tanks (see 264.1(g)(6)), and the commenter has not questioned this exempt status.

Comment 3: In proposing to exclude a wide variety of oil-bearing residuals from RCRA regulation if they are inserted into the refining process, EPA fails to reconcile the proposal with existing Agency policy regarding closed-loop recycling. This failing further highlights the lack of necessary safeguards in the proposal.

As part of its effort to justify imposition of upgraded design and operating standards for hazardous waste storage tanks nearly 10 years ago, EPA "confirmed that a substantial number of hazardous waste tank systems are likely to be leaking and may lead to substantial risks to human health and the environment." 51 FR 25422, 25426 col. 1 (July 14, 1986). EPA indicated that its data "confirm that leaking tanks present serious threats because they allow hazardous chemicals to contaminate soils and ground water." *Id.* at 25430 cols. 2-3.

The one exemption from the 1986 tank standards EPA allowed was for secondary materials managed in closed-loop systems. EPA justified this exemption based upon "the closed nature of the process (hard connections from point of generation to point of return to the original process), integral relationship of these reclamation steps to production processes, and widespread use and economic value of the activity." *Id.* at 25443 col. 1.

Significantly, the storage tanks that will be used to manage the oil-bearing residuals proposed for exclusion in this proposal will be managed in tank systems just like those addressed in EPA's 1986 rulemaking. As discussed in Section II.B of ETC's comments, these tanks pose the same kind and degree of risk EPA discussed for former hazardous waste storage tanks. Therefore, in accordance with EPA's own reasoning, residuals managed in these tanks should not be eligible for an exclusion from RCRA unless recycled in a true closed loop.

Of course, the proposal does not limit the new exclusion in this way. To the contrary, EPA proposes to greatly expand the existing recovered oil exclusion in such a way that is neither "closed" nor a "loop." Oil-bearing residuals could be shipped -- without a hazardous waste manifest -- to off-site locations to be stored prior to reuse. Moreover, such residuals could be shipped from intracompany and intercompany sources, as well as from sources wholly outside the petroleum refining industry. 60 FR 57754. EPA proposes no controls or any minimum design or operating standards for storage and transportation of these materials. EPA has therefore completely ignored both the storage tank damage case evidence in the docket and the Agency's established position that hazardous secondary materials cannot be managed safely outside a closed-loop process without meeting Subtitle C controls.

Furthermore, by allowing these hazardous oil-bearing residuals to be (1) shipped off-site without a tracking mechanism such as a manifest, (2) loaded into tanks that lack overfill protection, (3) stored in tanks that lack secondary containment and that are already leaking or have a high

potential to leak, and (4) conveyed to a production process without management standards, EPA would be creating numerous opportunities for mismanagement of these hazardous wastes. In doing so, EPA would be unable to "show[] how the determination is consistent with RCRA's objective to 'establish a cradle-to-grave regulatory structure for the safe handling of hazardous wastes.'" 60 FR 57752 col. 3 (quoting API, 906 F.2d at 741).

Response: The Agency does not believe that the exclusion is overly broad, or that the exclusion should be limited to immediate re-use in closed-loop systems. Other exclusions from the definition of solid waste that are codified under §261.4 are for materials that are recycled under circumstances that are not defined as closed-loop processes. The Agency has considerable discretion in determining when the definition of solid waste applies to materials that are reused in an on-going production process, as well as when the materials are "recycled" one-site, at an off-site facility, or within another industrial process.¹⁷

EPA is finalizing the proposed exclusion from the definition of solid waste for oil-bearing secondary materials generated at petroleum refineries and reused by petroleum refineries, based upon a review of the policy and legal issues involved and on data provided to the Agency related to the composition of the secondary materials and the manner in which secondary materials are reused by the petroleum refining industry.^{18 19} By finalizing the proposed exclusion, the Agency is essentially providing the petroleum refining industry with a regulatory exclusion currently available to other industries that generate hazardous secondary materials and use or reuse the materials by reinserting the materials into a production process, essentially substituting the secondary materials for primary feedstocks.

Prior to today's rule, the petroleum refining industry was precluded from reusing many recyclable secondary materials in the refinery process, unless the materials were handled as hazardous wastes prior to being reinserted into the refinery process. The previously promulgated regulatory exclusions from the definition of solid waste for secondary materials that are reused or recycled preclude the use of such materials to produce fuels (i.e., 40 CFR §§261.2(e)(2)(ii), 261.4(a)(8)(iv)).

The primary business of the petroleum refining industry is fuel production. Essentially, all petroleum refining feedstocks, including secondary materials substituted for primary feedstocks, contribute to the production of fuels. EPA's intent, when developing the previously established

¹⁷ API v. EPA, 906 f. 2d 726, 740-41 (D.C. Cir. 1990); Ilco v. EPA, 996 F.2d 1126 (11th Cir. 1993); Owen Electric Steel v. Browner, 37 F. 3d 146 (4th Cir. 1994).

¹⁸ February 2, 1993 data submission from Mobil Oil Corporation.

¹⁹ "*Petroleum Refining Process waste Listing Determination: Supplemental Background Document*," U.S. EPA, Office of Solid Waste, March, 1997.

restrictions to the exclusions from the definition of solid wastes for secondary materials that are reused was to protect human health and the environment from the potential risks associated with the incineration of hazardous wastes. EPA views the incineration of hazardous wastes as a form of discard and retains jurisdiction of such wastes and management processes. However, EPA does not necessarily view the use or reuse of secondary materials in the refinery process for the production of primary fuels by the petroleum refining industry as discard. The fact that secondary material originates within the industry, and involves recovery and utilization of a resource present in the initial crude oil, raises significant issues of authority. As noted in the previous response, in such cases, the Agency believes its discretion is best exercised by assuming that certain elements of discard -- land-based storage in particular -- are addressed, but not to seek to control storage activities which are similar or identical to raw material storage practices. Therefore, EPA revised the existing regulations governing the recycling of hazardous secondary materials to exclude oil-bearing secondary materials generated by refineries and reused in the refinery process by inserting the materials into the refining process from the definition of solid waste. To ensure that the management of such materials does not include an element of discard, and to ensure that the materials do not become part of the waste disposal problem, the Agency is restricting the exclusion to situations where the secondary materials are not stored or placed on the land and where there is no speculative accumulation of the materials. The exclusion does not apply to wastes and situations that would result in a coke product that exhibits a characteristic of hazardous waste.

In addition, in the final rule, EPA clarifies that the exclusion for oil-bearing secondary materials returned to the refining process only extends to the materials actually re-inserted into the refinery process. In cases where oil-bearing secondary materials are processed (e.g., de-oiling, centrifugation, desorption) prior to re-insertion into a refining unit, any residuals that may result that are disposed or intended for disposal would be classified as F037 hazardous waste. In the final rule, the Agency has modified the listing description for F037 to include any residuals from the processing of oil-bearing secondary materials that, were it not for the exclusion, would otherwise be defined as a listed hazardous waste.

EPA also clarifies that the Agency is not including within the scope of the exclusion oil-bearing secondary materials generated outside the petroleum refining sector (i.e., SIC 2911). The Agency is basing its decision not to exclude these secondary materials from the definition of solid waste on the fact that EPA has very limited data from industry demonstrating the chemical and toxic content of the materials. In fact, the Agency has no information on which to base a finding that the use of oil-bearing hazardous secondary materials originating in a non-refinery sector of the petroleum refining industry in the coking process would be anything other than the management of wastes (e.g., hazardous waste recycling) from that non-refinery sector. Oil-bearing secondary materials originating from non-refinery sectors have the potential to be more waste-like and thus do not warrant an exclusion, especially if their ultimate use is in the quenching process.

The Agency also is requiring that the materials excluded under this provision of today's rule be returned directly to a refinery for insertion. While this is not an issue if materials are recycled on site, EPA has concerns about situations where these materials are generated at one refinery for insertion into another. Such materials should not end up at an intermediate non-refinery facility without an accompanying hazardous waste manifest. In cases where materials generated at one petroleum refinery are to be recycled at another refinery, to meet the conditions of the exclusion the materials must be located either at the generating refinery, at the receiving refinery, or must otherwise be in transit between the two facilities. This is consistent with the argument that the exclusion is provided on the basis that the secondary materials are being used within the realm of on-going production in the petroleum refining sector.

Comment 4: EPA's rationale for the proposed exclusion is based in part on the assumption that oil-bearing residuals will be "inserted directly" into the refining process. 60 FR 57754 col. 1. EPA adds that these residuals are "transferred directly" from storage to the refining process, and thus such storage does not pose hazards to human health and the environment. *Id.* at 57754 col. 3. As mentioned above, EPA did not even assess the risks posed by storage prior to reuse, even though this activity is a critical component of the exclusion. Listing Background Document at 26, 37, 46, 57 and 121.

EPA, however, fails to mandate that the residuals be "immediately" or "directly" reused; instead, the Agency merely prohibits speculative accumulation prior to reuse. 60 FR 57796 (proposed 261.4(a)(12)). In other words, as long as 75% or more of the residuals in storage are inserted into the refining process within 12 months, then the exclusion may be maintained. 40 CFR 261.1(c)(8). It is clear, therefore, that immediate reuse of the residuals is not a condition of the proposed exclusion, and that the Agency's stated rationale is contradicted by the actual regulatory language proposed.

To make matters worse, as detailed above there is substantial evidence that storage of oil-bearing residuals prior to insertion into the refining process can cause environmental harm. Existing tanks used to store these residuals, and existing pipes used to convey the residuals, frequently lack basic safeguards necessary to prevent releases to the environment. In addition, operating practices have contributed to releases of these materials. EPA's failure to structure the proposed exclusion to ensure that "secondary materials [are] immediately reused within an industrial process," Chemical Waste Management v. EPA, 976 F.2d 2, 14 (D.C. Cir. 1992), will result in unacceptable risks to human health and the environment.

Response: The Agency is not asserting that oil-bearing residuals must be "immediately" recycled back to the petroleum refinery process. EPA did not base the proposed exclusion on such a premise and the final rule does not restrict the exclusion to those instances where the oil-bearing residuals are recycled within a closed-loop system. The Agency finds that the exclusion is not overly broad and the exclusion need not be limited to immediate re-use in closed-loop systems.

EPA recognizes that not all facilities transfer oil-bearing secondary materials from exempt wastewater treatment tanks via hard pipe or tank trucks to stationary tanks or containers where oil is recovered and/or secondary materials are prepared for insertion into the coker. However, EPA believes that refineries are handling oil-bearing materials in the same or similar manner as other feedstocks and that these management practices are protective. The Agency points out that the American National Standard Institute (ANSI) standards governing the design, construction, operation, maintenance, and inspection of petroleum terminal and tank facilities help to ensure that the storage of residuals prior to reinsertion into the refinery process is protective of human health and the environment. In addition, the Agency addressed what it believes to be the primary concern--placement of oil-bearing materials on the land--by including a restriction on the proposed exclusion.

The Agency also is requiring that the materials excluded under this provision of today's rule be returned directly to a refinery for insertion. While this is not an issue if materials are recycled on site, EPA has concerns about situations where these materials are generated at one refinery for insertion into another, but are instead managed at intermediate non-refinery facilities prior to insertion into a petroleum refinery process. This is consistent with the argument that the exclusion is provided on the basis that secondary materials are being used within the realm of on-going production in the petroleum refining sector. EPA is indicating in the regulatory text of the exclusion that oil-bearing materials may be inserted into the same refinery where they are generated, or sent directly to another refinery, and still be excluded.

EPA is finalizing the proposed exclusion from the definition of solid waste for oil-bearing secondary materials generated and reused by petroleum refineries based upon a review of the policy and legal issues involved and on data provided to the Agency related to the composition of the secondary materials and the manner in which secondary materials are reused by the petroleum refining industry.^{20 21} By finalizing the proposed exclusion, the Agency is essentially providing the petroleum refining industry with a regulatory exclusion currently available to other industries that generate hazardous secondary materials and use or reuse the materials by reinserting the materials into the production process, essentially substituting the secondary materials for primary feedstocks.

Prior to today's rule, the petroleum refining industry was precluded from reusing many recyclable secondary materials in the refinery process, unless the materials were handled as hazardous wastes prior to being reinserted into the refinery process. The previously regulatory exclusions from the definition of solid waste for secondary materials that are reused or recycled

²⁰ February 2, 1993 data submission from Mobil Oil Corporation.

²¹ "Petroleum Refining Process waste Listing Determination: Supplemental Background Document," U.S. EPA, Office of Solid Waste, March, 1997.

preclude the use of such materials to produce fuels (i.e., 40 CFR §§261.2(e)(2)(ii), 261.4(a)(8)(iv)).

The primary business of the petroleum refining industry is fuel production. Essentially, all petroleum refining feedstocks, including secondary materials substituted for primary feedstocks, contribute to the production of fuels. EPA's intent, when developing the previously established restrictions to the exclusions from the definition of solid wastes for secondary materials that are reused was to protect human health and the environment from the potential risks associated with the incineration of hazardous wastes. EPA views the incineration of hazardous wastes as a form of discard and retains jurisdiction of such wastes and management processes. However, EPA does not view the use or reuse of secondary materials for the production of primary fuels by the petroleum refining industry as discard. Therefore, EPA is revising the existing regulations governing the recycling of hazardous secondary materials to exclude oil-bearing secondary materials generated and reused by petroleum refineries from the definition of solid waste. To ensure that the management of such materials does not include an element of discard, and to ensure that the materials do not become part of the waste disposal problem, the Agency is restricting the exclusion to situations where the secondary materials are not stored or placed on the land and where there is no speculative accumulation of the materials. In addition, the exclusion does not apply to situations that would result in a coke product that exhibits a characteristic of hazardous waste. These conditions are not unlike the exclusions provided for other materials that are excluded from the definition of solid waste under 40 CFR 261.4.

Comment 5: EPA's rationale for proposing to broaden the existing recovered oil exclusion at 40 CFR 261.4(a)(12) is that the oil-bearing residuals identified in this rulemaking are essentially the same as those covered by the original exclusion. 60 FR 57754 col. 1. The instant proposal, however, fails to provide any parameters or limitations on the meaning of the critical term "oil-bearing residual." For this reason, the proposal is overly broad.

In promulgating the original exclusion for recovered oil, the Agency rejected the petroleum industry's request to include oil-containing wastewaters in the exclusion. EPA noted that "[t]he percentage of oil in plant wastewaters . . . is minuscule, on the order of .0001% to .000001%." 59 FR 38539 col. 3. EPA explained that in distinguishing between excluded and non-excluded oil-bearing materials, it will consider several factors, including water, solids and metals content. Id. at 38537 col. 3. EPA emphasized, however, that "the salient characteristic of recovered oil is the obvious one: that it consist primarily of oil." Id.

The proposed expansion of the recovered oil exclusion would apply to "all oil-bearing secondary materials that are generated within the petroleum refining industry," as well as recovered oil from certain organic chemical industry operations. 60 FR 57753-54. Nowhere in the preamble or proposed regulatory language, however, does EPA define the critical term "oil-bearing." While EPA asserts that materials covered by the exclusion are "likely" to be recovered oil or to "closely resemble" recovered oil, id. at 57754 col. 1, there is no minimum oil content specified in the

proposed exclusion. Accordingly, the proposal could be seen as authorizing refinery operators to deem any oil-containing secondary materials, even those with "minuscule" oil content, as excluded from Subtitle C. Such an outcome would clearly exceed EPA's more limited objective of excluding only those secondary materials that are "substantially similar to normal . . . feedstock material." Id. at 57754 col. 2.

Response: The Agency considered, as suggested in several comments, setting a minimum oil content to define the scope of "oil-bearing secondary materials" that are excluded when used in the quenching process, or to require a demonstration of hydrocarbons actually being recovered from the excluded secondary materials that is comparable to oil recovery in the conventional coking process. The Agency rejected limiting the exclusion based on a set minimum oil content or a recovery efficiency requirement for several reasons.

As the petroleum industry stated in their comments, the quenching process represents the last possible process in which to recover hydrocarbon from the original crude oil feedstock. The refinery processes and operating procedures are designed to separate and process into products as much hydrocarbon as possible from the crude oil feedstock, in other words, to prevent as much oil from making its way into these secondary materials as possible. The oil that does make its way into these secondary materials is generally considered unavoidable and inevitable, or in some cases, too much oil in these secondary materials is evidence of a problem with some aspect of the overall refining process (which goes towards explaining the wide range of oil contents in these materials). Thus, it would be counter to the overall efficiency of the petroleum refining process to require a minimum oil content in the secondary materials. Conversely, the Agency believes it is fundamental to this exclusion that there actually be oil recovered for further refining when these oil-bearing hazardous secondary materials are used in the quenching process.

Also, the Agency believes that, in this case, a minimum oil content condition would do little to ensure that only those secondary materials from which oil can actually be recovered would be excluded, or in other words, the Agency does not believe that setting a minimum oil content would ensure that secondary materials are legitimately being used in the quenching process. Since most of the secondary materials in question result from wastewater treatment, a minimum oil content requirement would only serve to encourage a refinery to operate the refinery process less efficiently to ensure that these secondary materials contain the minimum oil content and thus avail themselves of an exclusion.

Although the Agency did not establish a minimum oil content for the exempt secondary materials, it is highly unlikely that refinery owners or operators will allow any incompatible materials to be inserted into the coker for fear of interfering with proper operation of the coker. In addition, the coking process must comply with air emissions standards imposed under the Clean Air Act. It is unlikely that refinery owners and operators will insert secondary materials into the coker that will result in violations of the applicable CAA standards.

EPA clarifies in today's rule that the exclusion for oil-bearing secondary materials returned to the refining process only extends to the materials actually re-inserted into the refinery process. In cases where oil-bearing secondary materials are reclaimed prior to re-insertion, any residuals that may result from the reclamation process and that are not returned to the refinery process retain the hazardous waste listing and must be managed as hazardous wastes. In the final rule, the Agency modifies the proposed listing descriptions for refining wastes to include any residuals from the processing of listed hazardous wastes.

Comment 6: EPA does not provide any limitation on permissible concentrations of Appendix VIII hazardous constituents (e.g., toxic metals) in oil-bearing residuals destined for reuse. Consequently, the proposal runs counter to established Agency policy on preventing the unregulated disposal of "toxics along for the ride" as part of otherwise legitimate reuse of secondary materials.

Firmly established Agency policy holds that "[t]o determine whether the processing of a specific waste is legitimate recycling or treatment, one must consider, among other things, the fate of the constituents in the waste as they are processed." OSWER Directive No. 9441.1990(03) at 1. If the waste "contains hazardous constituents not present in the analogous raw material (or hazardous constituents at significantly higher concentrations than in the analogous raw material) that serve no purpose in the manufacture of the product, the process would appear to constitute treatment/disposal rather than legitimate recycling." *Id.* at 2. See also OSWER Directive No. 9441.1989(19) at 4 (same); OSWER Directive No. 9441.1985(29) at 2-3 (EPA must evaluate Appendix VIII constituents and total suspended solids in water supernatant from petroleum refinery wastewaters returned to API separator).

EPA acknowledges that it decided in the July 1994 recovered oil rule not to exclude hazardous oil-bearing secondary materials that are inserted into the coking process "until the Agency studied further whether the coker may be functioning . . . as a waste management unit." 60 FR 57754 col. 1. EPA now asserts that it is "convinced" that the coker is an integral part of the refining process, and "it is highly unlikely that refinery owners or operators would allow any incompatible materials to be inserted into the coker for fear of interfering with proper operation of the coker." *Id.* In addition, EPA points to industry data "which support's industry's claim that oil-bearing sludges generated during the refining process are substantially similar to normal feedstock material." *Id.*

There are two fatal flaws with this aspect of the proposal. First, EPA fails to make the exclusion expressly conditioned upon not exceeding specified hazardous constituent concentrations in the secondary materials. EPA does propose limiting the exclusion to the production of coke which does not exhibit a hazardous waste characteristic. That limitation, however, focuses solely on the product after it already has been subjected to the elevated temperatures of the coker, and provides no limit on hazardous constituent content in the oil-bearing residuals prior to insertion into the coker, where hazardous constituents may be disposed of or released into the environment.

Faced with similar concerns, EPA promulgated maximum allowable levels of certain hazardous constituents that could not be exceeded to maintain the recycling exclusion for used oil. 40 CFR 279.11. These "specifications" help ensure that used oil that is recycled is not adulterated with toxic constituents and is in fact substantially similar to displaced virgin fuels. See 50 FR 49164, 49180-87 (Nov. 29, 1985).

The second problem with this aspect of the proposal is uncertainty concerning the representativeness of the data evaluated by EPA. The proposal would exclude secondary materials sent to refineries from facilities in fully 13 different SIC codes. 60 FR 57753 col. 3. At the same time, the Agency merely states that it has received "some additional data" comparing oil-bearing residuals with normal coker feed. Id. at 57754 col. 2. To the extent those data are limited to secondary materials from facilities in just a few of the permissible SIC codes, EPA would have no rational basis to conclude that all the oil-bearing residuals covered by the exclusion are substantially similar in hazardous constituent content to normal feedstock materials.

EPA's failure to make the proposed exclusion explicitly conditioned upon not exceeding hazardous constituent levels is particularly disturbing in light of the extensive mismanagement and storage-related damage incidents discussed above. Without solid, representative data that oil-bearing secondary materials from all 13 SIC codes included in proposed 40 CFR 261.4(a)(12) do not contain Appendix VIII constituents not found in normal feedstock material (or hazardous constituents at significantly higher concentrations than in the analogous raw material), EPA would be severely undermining the RCRA cradle-to-grave regulatory system for hazardous wastes.

Response: As set out in more detail in the preamble to the final rule, EPA carefully examined the question of whether toxic metals are "along for the ride," i.e., serve a legitimate function or are present in concentrations so high as to indicate that the secondary material is just being discarded to get rid of unusable toxics. The Agency notes that the main purpose of the petroleum coking unit is to recover hydrocarbons from the oil contained in the feedstocks for further refining. Similarly, the main purpose of using the secondary materials in the coke quenching process is the energy-efficient recovery of hydrocarbon from the residual oil in the oil-bearing secondary materials, as a light fraction suitable for recovery as a high-end refining product. The Agency also notes that coke product produced using hazardous secondary materials in the quenching process is basically similar to coke produced without using secondary materials in the quenching process. Further, EPA notes that the making of anode-grade coke, the most high-valued coke with the most stringent product specifications, is likewise able to meet the product specifications while using these secondary materials in the quenching process.

In considering whether the fact that the coke product produced using secondary materials in the quenching process continues to meet the product specifications (and, in fact, demonstrates little change in the levels of contaminants compared with coke produced without hazardous secondary materials) is simply a result of dilution, the Agency acknowledges that such dilution does occur.

However, there are several other considerations. For example, the primary product of the petroleum coking process is the hydrocarbon fraction recovered for use as feedstock in the production of high-value fuel products, with the coke product being a co-product of the coking process. The Agency is convinced that such recovery occurs when oil-bearing secondary materials are used in the quenching process. Given that the recovered hydrocarbon is the primary product of using the secondary materials in the quenching process, the simple fact that the coke product (i.e., the co-product) continues to meet the applicable product specifications and shows no appreciable increase in risk carries more weight in the Agency's evaluation. In other words, demonstrating hydrocarbon recovery is the key test in determining whether the hazardous secondary materials actually serve a useful role in the overall coking operation, rather than demonstrating a net contribution to the coke (as opposed to no degradation of the coke). Acknowledging that there is a potential for some degradation of the coke product, depending on the constituent make-up of the particular secondary materials used in the quenching process, the Agency believes that economic forces, driven by product specifications and competition for markets, will serve to ensure that the quenching process is not simply a means of indiscriminately disposing of hazardous wastes. However, in cases where there is sufficient degradation of the product (or co-product) such that it no longer meets product specifications or otherwise becomes unmarketable, the Agency would question the legitimacy of using the secondary materials in the quenching process. Similarly, if there were no hydrocarbon recovery stemming from the use of the hazardous secondary materials in the quenching process, the Agency would question the legitimacy of the activity. (The Agency knows of no such cases.)

With regard to the commenter's concern regarding the potential for hazardous constituents contained in hazardous secondary materials to be "toxics-along-for-the-ride," the hazardous metals found in the hazardous secondary materials generally can be traced back to the metals found in the original crude oil feedstock and so do not represent contaminants introduced through means other than the continued processing of the raw material feedstocks. EPA's traditional concern regarding unnecessary hazardous constituents being processed and ending up in a product is mitigated in this case because the Agency views this activity as the continual processing of a raw material that contains the hazardous constituents, with concentrations of constituents found in the feedstock streams varying dependent on the point in the overall production process. In the context of a multi-step production process, there is much less of an element of discard of the hazardous constituents inherent in the original raw material than there would be had these secondary materials been generated by another industry or had the hazardous constituents not been inherent to the original raw material.

EPA also concluded that market constraints relating to product specifications will act as a deterrent to the reuse of residuals with significant levels of toxics. Because anode grade petroleum coke must meet rigorous specifications for salt content and is of significantly greater economic value than fuel grade coke, market constraints work to limit any degradation of product quality. In the case of fuel grade coke, while there are less stringent product standards, there are nevertheless standards on the percent ash remaining. As noted in the proposed rule (60

FR 57755), the data EPA obtained does not indicate a significant change in the composition of fuel grade coke when produced with feedstocks that include oil-bearing residuals.

Finally, regarding the comments citing the lack of a specification for the oil-bearing secondary material, in contrast to the existing specification for used oil fuel elsewhere in the RCRA regulations. There is a critical difference between a waste-derived product like used oil fuel -- which will be used directly -- and an intermediate material which will be processed into a product. In one case, risk can be posed to an end user, perhaps in a residential setting (see November 29, 1985 final rule). Whereas, EPA has already determined that use of secondary refining materials within the refining process does not affect product quality or toxics levels in end products. EPA thus sees no need for a specification.

D. Request for Clarification

Comment 1: EPA should explain that materials listed as hazardous wastes under 40 CFR 261.31 - 261.33 are not solid wastes when recycled in a manner described in 40 CFR §§261.2(e)(1)(i), (ii), and (iii) or §261.4(a)(8). EPA correctly recognizes that listed wastes are not solid wastes if they are recycled in a manner described in 40 CFR §261.2(e)(1)(iii) or §261.4(a)(8). Acknowledging that listed wastes are not solid wastes under these two exclusions calls into question the status of other listed wastes that are recycled in other ways, e.g., 40 CFR §261.2(e)(1)(i) and (ii), and can be read to expand EPA's jurisdiction beyond what is provided under RCRA. Therefore, the commenter recommends that EPA either clarify this issue in the preamble to the final rule by explaining that these exclusions apply to all listed waste, or make the following changes to the rules:

1. 40 CFR §261.2(e) should be amended to read:
Materials, including those listed under 40 CFR §§261.31 - 261.33, that are not solid wastes when recycled.
2. 40 CFR §261.4(a)(8) should be amended to read:
Secondary materials, including those listed under 40 CFR §§261.31- 261.33, that are reclaimed and returned to the original process or processes in which they are generated where they are reused in the production process provided:

(CMA, 00018)

Response: The commenter most likely is referring to the discussion at 60 FR 57750 of the proposed rule in which EPA failed to mention the status of other listed wastes that are recycled in other ways, e.g., 40 CFR §261.2(e)(1)(i) use or reuse as ingredients and (ii) use or reuse as effective substitutes for commercial products. EPA should have stated, "However, when these materials are recycled as described in 40 CFR 261.2(e)(1)(i), (ii), and (iii) or 261.4(a)(8), they are not solid wastes and are not subject to hazardous waste regulations." EPA acknowledges the

error. However, the structures of 40 CFR 261.2(e) and 261.4(a)(8) were not the subject of this proposed rule.

Comment 2: Implicit in the proposed exclusion is the principle that oil-bearing residuals destined for the refining process never become solid wastes, assuming they actually are recycled (although leftover residuals following oil recovery that are discarded are hazardous wastes if the residuals exhibit a hazardous waste characteristic). Put another way, the proposed exclusion attaches at the point the residual is produced.²²

For example, although API urges EPA to exclude oil-bearing wastewaters upstream of oil recovery, assume for the sake of argument that EPA declines to exclude such wastewaters. The oil-bearing sludge produced in an API separator would nonetheless be excluded under EPA's proposal, if the sludge is destined for oil recovery and is actually sent to oil recovery. The sludge is formed, or produced, as oil-bearing particles settle from the wastewater and collect in the bottom of the separator. At that point of formation or production, the sludge (if destined for oil recovery) is not a solid waste. The sludge does not become excluded only once it is removed from the separator. As another example, crude oil storage tank bottoms, formed in the storage tanks, never become solid wastes (either inside or outside the tank), if they are destined for oil recovery and actually sent to oil recovery.

That this is EPA's intent is demonstrated by the following passage in the preamble to the proposed rule, which discusses the protective nature of the management of wastewater sludges prior to insertion to a coker or other refinery units:

The residuals are typically transferred from exempt wastewater treatment tanks via hard pipe or tank trucks to stationary tanks or containers where oil is recovered and/or the secondary materials are prepared for insertion into the coker. Since the residuals are not ordinarily stored in stand-alone storage tanks but are instead transferred directly to process tanks and containers (i.e., centrifuge systems, desorption units, etc.) EPA does not believe that storage of the residuals prior to reinsertion into the refining process poses hazards to human health or environment. In addition, American National Standard Institute (ANSI) standards governing design, construction, operation, maintenance and inspection of petroleum terminal and tank facilities help to ensure environmentally protective management and storage of the in-process residuals prior to reinsertion into the coker or other parts of the refinery. 60 FR 57754 (col. 3).

²²To avoid confusion, we do not use the phrase "point of generation," because that point is usually viewed as the point at which a material becomes a solid and hazardous waste or otherwise becomes subject to regulation. *See, e.g.,* the definition of "generator" in 40 CFR 260.10.

Additionally, EPA states that “[A]ny material that spills from tanks and containers and is not expeditiously retrieved for reinsertion is a solid waste and, if listed or characteristic, a hazardous waste.” (60 FR 57755 (col 1).) Presumably, a residual that spills from storage or oil recovery tanks and containers and that is expeditiously retrieved would not be a solid waste.

There are, however, two statements in the preamble that could cause confusion about the status of oil-bearing residuals during storage or oil recovery. First, EPA describes the proposed exclusion as applying to oil bearing residuals that are “inserted directly into any part of the refining process.” (60 FR 57754) (col. 1)) The use of the qualifier “directly” must have been inadvertent, because, as discussed above, the Agency recognizes that oil-bearing residuals are often stored in tanks and processed in oil recovery units before insertion to the refining process per se, and that such storage and processing should not affect the excluded status of the residuals.²³ [see also RETEC, 00028]

Second, with specific reference to crude oil storage tank sediment, EPA states that “de-oiling activities, whether in situ or ex situ, are considered recycling and thus are not subject to RCRA Subtitle C permitting requirements.” (60 FR 57782 (col. 2)). This statement is potentially confusing because it could be read to suggest that the sediments are solid wastes, but that the de-oiling process is exempt solid waste recycling. However, the correct analysis would be that oil-bearing sediments destined for oil recovery are not solid wastes in the first instance. Thus, the quoted language most likely refers to the Subtitle C status of de-oiling units with respect to de-oiled residues destined to be discarded and which are solid wastes.

EPA should clarify in the preamble to the final rule that oil-bearing residuals that are either destined for direct insertion to the refining process or destined for recovery of oil (which is then inserted to the refining process), and that ultimately are so inserted, are excluded from the definition of solid waste from the point they are initially produced.²⁴ Additionally, API recommends that the language of the exclusion be amended to read as follows:²⁵ (New language underlined; deleted language stricken through.)

Any hazardous oil-bearing secondary materials that are produced by SIC codes: 1311, 1321, 1381, 1382, 1389, 2911, 4612, 4613, 4922, 4923, 4789, 5171, and 5172, and which are to be inserted into the petroleum refining process (SIC Code 2911) at or before any

²³ EPA has previously confirmed this with respect to the “recovered oil” exclusion promulgated in 1994. See, e.g., EPA Comment Response Document for Recovered Oil Rule (Feb. 1994), F-94-SWF-S0003.

²⁴Residual materials remaining after oil recovery that are discarded would be solid wastes. Their “point of generation” would be after completion of oil recovery.

²⁵New language is underscored. Deleted language is lined through.

point where removal of contaminants occurs (including, but not limited to, distillation, catalytic cracking, fractionation, or thermal cracking units (i.e., cokers)), unless the material is placed on the land in a manner constituting disposal, or speculatively accumulated before being so recycled. Such secondary materials inserted into thermal cracking units are excluded provided that the coke product does not exhibit a characteristic of hazardous waste.

This revised language would be more consistent with EPA's intent and with the recovered oil rule (as it is expected to be amended by direct final rule) in its use of the phrase "to be inserted" and by deletion of the unnecessary phrase, "along with normal process streams." Most importantly, it appropriately recognizes that oil-bearing residuals destined for the refining process, with or without an intervening oil recovery step, are not "discarded" and are not part of the waste disposal problem. (API, 00039)

Response: The exclusion applies at the point at which an oil-bearing residual is generated, as the commenter correctly states. However, only those materials which are re-inserted in compliance with all the provisions of the exclusion are excluded from regulation as solid waste. Oil-bearing materials managed in land-based units, speculatively accumulated materials, and wastewaters are not excluded from the definition of solid waste. In addition, residues from de-oiling procedures or other reclamation steps that are not inserted into the petroleum refining process remain listed hazardous wastes and must be managed as hazardous wastes.

The commenter suggests that the term "produced" be used to distinguish between the materials to which the exclusion applies and other "generated" wastes. EPA disagrees with the commenter. The exclusion only applies to secondary materials if the materials are managed in accordance with the conditions established in the exclusion. Secondary materials that are placed on the land, speculatively accumulated, or otherwise discarded are solid wastes, as and when generated.

The comment also suggests that the proposed regulatory language for the exclusion be modified to reflect that the applicability of the exclusion applies to materials "which are to be inserted," rather than the proposed language which states "are inserted." EPA agrees. The exclusion, as promulgated, applies to all materials that are intended for insertion and are inserted, rather than at the point of re-insertion, provided that all other conditions are met. However, the generator of the oil-bearing residuals does bear the burden of demonstrating that the generated residuals are not being accumulated speculatively or stored or placed on the land prior to reinsertion into the refinery process. If the generator cannot make such a demonstration, the exclusion will not apply.

The commenter requests that the point of insertion be "at or before any point where removal of contaminants occurs." This phrase is a requirement of the currently promulgated version of 40 CFR 261.4(a)(12). See 61 FR 13103. However, through today's rulemaking, the Agency has concluded that the coker also serves as a productive process unit integral to the refinery. The coker largely produces more valued hydrocarbons that are separated and routed to other

fractionation units, as well as residual petroleum coke. While there is a potential for metals accumulation in coke product, EPA, in regulating the properties of the coke product that results from the reinsertion of oil-bearing residuals, has sought to cap additional contaminants at levels protective of human health and the environment. EPA did not retain the requirement from the original regulation regarding the “point where removal of contaminants occurs” because the coker is no longer considered primarily a waste management unit.

EPA re-evaluated the scope of the proposed exclusion, and in particular the regulatory status of residuals which undergo various types of preparation to make the residual suitable for reinsertion. The Agency is excluding materials that are returned in their entirety to refining processes. The refining processes include, but are not limited to, distillation, catalytic cracking, fractionation, or thermal cracking units (e.g., coker). These are processes which manipulate predominately dry oil feedstock. However, frequently oil-bearing materials may be processed to make them usable in the refinery. This processing may involve centrifugation, desorption, and filtration, among other treatments to enrich oil content or remove water. These processes are routinely performed at a refinery facility and are considered by EPA as part of the ongoing refining of petroleum products. Residues resulting from such processing that are not re-inserted to the refinery process retain the a hazardous waste listing (F037) if disposed or intended for disposal.

With respect to oil-bearing materials from exploration and processing, EPA also notes that in many cases, the Bevill-Bentsen amendment exempts such materials in any case. Thus, for example, EPA has already noted that crude oil emulsions and tank bottoms from exploration and processing are within the scope of the Bevill-Bentsen amendment. [EPA, Report to Congress on the Management of Wastes from the Exploration and Production of Crude Oil, Natural Gas and Geothermal Energy, p. 9 Table I (Dec. 1989)].

EPA initially proposed that oil-bearing residuals be inserted “along with normal process streams” and the commenter suggested striking this phrase. It was the Agency’s intent that only those oil-bearing residuals that are being recycled for their hydrocarbon content be excluded from the definition of solid waste. The proposed language could be read to preclude the separate insertion of oil-bearing materials. The separate management of oil-bearing materials prior to their reinsertion, however, may involve practices that are “not routinely employed” in the refining of “normal process streams.” For example, most process streams are not centrifuged prior to insertion in the next process unit, however this is a common oil recovery process. Therefore, the phrase is not included in the regulatory language for the final exclusion.

Lastly, the commenter requests that EPA modify the exclusion such that only materials which are “placed on the land in a manner constituting disposal” are not included within the scope of the exclusion. The Agency considers any treatment, storage, or disposal in a land-based unit to be “placement on the land,” and to involve an element of discard. The effect of the commenter’s suggested modification to the proposed regulatory language would be to exempt land treatment

or storage on the land of oil-bearing materials intended for insertion to the refining process from all RCRA controls. Such an outcome **was not** the Agency's intent. As stated in the proposal:

Today's proposed exclusions do not apply to oil-bearing hazardous secondary materials that are placed in land-based hazardous waste management units such as surface impoundments or land treatment units. The Agency considers materials placed in such units to be discarded, and hence solid wastes. Land-based units that contain hazardous oil-bearing residuals are subject to Subtitle C requirements. (60 FR 57755)

EPA clarifies that the Agency is not including within the scope of the exclusion oil-bearing secondary materials generated outside the petroleum refining sector (i.e., SIC 2911). EPA is not finalizing the proposed exclusion for oil-bearing secondary materials generated elsewhere within the petroleum industry, such as from petroleum exploration and production sites, bulk crude oil storage, and petroleum industry-related transportation facilities. The Agency is basing its decision not to exclude these secondary materials from the definition of solid waste on the fact that EPA has very limited data from industry demonstrating the chemical and toxic content of the materials. In fact, the Agency has no information on which to base a finding that the use of oil-bearing hazardous secondary materials originating in a non-refinery sector of the petroleum refining industry in the coking process would be anything other than the management of wastes (e.g., hazardous waste recycling) from that non-refinery sector. Oil-bearing secondary materials originating from non-refinery sectors have the potential to be more waste-like and thus do not warrant an exclusion, especially if their ultimate use is in the quenching process.

The Agency notes that the pre-existing recovered oil exclusion promulgated July 28, 1994, is still being retained under today's rule with respect to recovered oil generated from within the petroleum refining industry.

Comment 3: It is important for EPA to make an explicit statement that refinery wastewater/tank bottom sludges (K048-K052, F037 and F038) are to be excluded from the definition of solid waste if these sludges are inserted into the refinery process. (Mobil, 00033; Valero, 00051)

Response: Oil-bearing secondary materials included within the scope of the exclusion include materials which, if discarded are hazardous wastes, such as K048-K052, F037, and F038. When such materials are returned in their entirety to the refining process, without being placed on the land or accumulated speculatively, the materials are exempt. Oil recovered from such materials also may be exempt recovered oil, if the oil is recycled in accordance with the terms of the exclusion. However, wastes resulting from preparative steps necessary to make such residual suitable for reuse, and which are not returned to the production process, retain any applicable hazardous listings and associated waste codes and must be managed as solid and hazardous wastes.

Again, EPA clarifies that the Agency is not including within the scope of the exclusion oil-bearing secondary materials generated outside the petroleum refining sector (i.e., SIC 2911).

EPA is not finalizing the proposed exclusion for oil-bearing secondary materials generated elsewhere within the petroleum industry, such as from petroleum exploration and production sites, bulk crude oil storage, and petroleum industry-related transportation facilities. The Agency is basing its decision not to exclude these secondary materials from the definition of solid waste on the fact that EPA has very limited data from industry demonstrating the chemical and toxic content of the materials. In fact, the Agency has no information on which to base a finding that the use of oil-bearing hazardous secondary materials originating in a non-refinery sector of the petroleum refining industry in the coking process would be anything other than the management of wastes (e.g., hazardous waste recycling) from that non-refinery sector. Oil-bearing secondary materials originating from non-refinery sectors have the potential to be more waste-like and thus do not warrant an exclusion, especially if their ultimate use is in the quenching process.

The Agency notes that the pre-existing recovered oil exclusion promulgated July 28, 1994, is still being retained under today's rule with respect to recovered oil generated from within the petroleum refining industry.

Comment 4: One difficulty with the proposed exclusion is defining what is meant by "inserted into the petroleum refining process." Much equipment is integral to oil recovery and insertion, including centrifuges, thermal augers, filter presses, etc. The commenter presumes that the use of such equipment as a step in refining oil bearing materials would make the materials eligible for the exclusion. Otherwise, this exclusion would be of limited usefulness because this type of equipment is very important for processing oil-bearing secondary materials and subsequently inserting the resulting components into the refining process. (ARCO, 00054)

Response: By centering the exclusion on those oil-bearing materials that are "inserted into the refinery process," the Agency's intention is to limit the exclusion to those oil-bearing materials that are being used as feedstocks for their hydrocarbon content in the production of petroleum products. The Agency's intention is not to place a limitation on the process technology employed in reusing these materials as feedstocks. The Agency understands that oil-bearing secondary materials may require special management to isolate hydrocarbon rich streams that are suitable for use in the refining process. Any residuals generated from such pre-processing or reclamation of the oil-bearing materials to render the oil-bearing materials suitable for insertion into the petroleum refining process remain listed hazardous waste if discarded or otherwise managed.

Wastewaters are not exempt oil-bearing residuals, nor are secondary oil-bearing residuals managed within land-based units. In addition, the exclusion is limited to oil-bearing secondary materials that are generated by the petroleum refining sector and directly inserted into a refinery process.

Comment 5: The proposed exclusion does not specify the regulatory status of residuals that result from the insertion of these materials into the refining process. The apparent assumption is that every component would become a product. In some cases there could be some residual

material left over. For example, some refineries may recover the oil from an oil-bearing secondary material (that would otherwise be a listed hazardous waste) and insert that oil into the refining process and convert some of the oily solids into petroleum coke. However, this refinery may not be able to convert all of the remaining oily solids into petroleum coke because the resulting coke would not meet specifications. (For example, these oily solids could be largely oily dirt that would result in coke that would not meet its 'ash' specification.) Logically, this excess residual could not be subject to the derived-from rule if it was originally an oil-bearing secondary material that was excluded from the definition of solid waste. It would simply be subject to hazardous waste "characteristic" testing at that point of generation when it could no longer be inserted into the refining process. (ARCO, 00054)

Response: In the final rule, EPA clarifies that the exclusion for oil-bearing secondary materials returned to the refining process only extends to the materials that are actually inserted into the refinery process. In cases where oil-bearing secondary materials are reclaimed prior to reuse, any residuals that may result from the reclamation process and that are not returned to the refinery process retain the hazardous waste listing. In the final rule, the Agency modifies the proposed listing descriptions for refining wastes to include any residuals from the processing of oil-bearing secondary materials that are listed hazardous wastes.

Comment 6: Residuals returned anywhere in the refining process for re-refining should be excluded from the definition of solid waste. EPA's suggestion that oil bearing petroleum residuals will only be exempt from regulation if inserted into the petroleum refining process prior to the coker stage is improper because not all refineries will avail themselves of the use of cokers. Any oil-bearing residual should be allowed to be recycled within the petroleum refining process. These are very low risk waste management scenarios which minimize waste streams and allow refiners to obtain the most value out of these processes. (Total, 00039)

Response: In today's final rule, EPA expands the exclusion from the definition of solid waste for recovered oils to oil-bearing secondary materials that are returned to any part of the refining process. While the prior exclusion was limited to oil-bearing materials reinserted into the process before the coker, EPA is now removing this restriction. Facilities need not employ a coker as the method of residual oil processing for the oil-bearing material that is returned to the process to be exempt. However, oil-bearing materials that are inserted into thermal cracking units only are excluded on the condition that the coke product does not exhibit a characteristic of hazardous waste.

Comment 7: To eliminate the confusion associated with the exclusion's list of SIC codes, especially for activities that can be described under multiple SIC codes, the commenter recommends that the regulatory language not reference SIC codes but simply state EPA's intent to have it include "oil-bearing materials from all aspects of exploration, production, transport, refining, distribution and marketing." If there are specific materials that EPA does not intend to include in this exclusion, these could be specifically mentioned rather than an incomplete list of

SIC codes that could result in compliance problems with little environmental benefit. (ARCO, 00054)

Response: The Agency is not including within the scope of the exclusion oil-bearing secondary materials generated outside the petroleum refining sector (i.e., SIC 2911). EPA is not finalizing the proposed exclusion for oil-bearing secondary materials generated elsewhere within the petroleum industry, such as from petroleum exploration and production sites, bulk crude oil storage, and petroleum industry-related transportation facilities. The Agency is basing its decision not to exclude these secondary materials from the definition of solid waste on the fact that EPA has very limited data from industry demonstrating the chemical and toxic content of the materials. In fact, the Agency has no information on which to base a finding that the use of oil-bearing hazardous secondary materials originating in a non-refinery sector of the petroleum refining industry in the coking process would be anything other than the management of wastes (e.g., hazardous waste recycling) from that non-refinery sector. Oil-bearing secondary materials originating from non-refinery sectors have the potential to be more waste-like and thus do not warrant an exclusion, especially if their ultimate use is in the quenching process.

The Agency notes that the pre-existing recovered oil exclusion promulgated July 28, 1994, is still being retained under today's rule with respect to recovered oil generated from within the petroleum refining industry.

E. Extension of proposed exclusion to recovered oil generated by organic chemical plants and inserted into co-located or commonly-owned petroleum refining processes along with normal process streams.

1. General

Comment 1: The commenters generally support the exclusion of recycled oil-bearing residuals from chemical plants and co-located refining processes. (Amerada Hess, 00027; Amoco, 00062; API, 00046; BP, 00019; CMA, 00018; Exxon, 00035; Exxon Chemicals, 00041; Mobil, 00033; NPRA, 00015; Shell, 00047; TNRCC, 00043; Union Carbide, 00056; Valero, 00051)

Response: The Agency acknowledges the commenter's support of the exclusion from the definition of solid waste for recovered oil generated at organic chemical plants and inserted into co-located or commonly-owned petroleum refining processes. The Agency notes that the final exclusion applies only to recovered oils generated at organic chemical manufacturing plants that are co-located with petroleum refineries.

It is the Agency's understanding that co-located facilities often share wastewater treatment systems. In these cases, given the predominance of petroleum refining wastewater, the Agency believes that the recovered oil exclusion appropriately applies to oil recovered from shared petrochemical/petroleum refining wastewater treatment systems. In addition, a petroleum refiner that is co-located with a chemical manufacturing facility should have sufficient knowledge of the

recovered oils, or the processes from which the recovered oil are generated, and have knowledge of any potential risks associated with the management of the oils to ensure that they can be reused safely within its refinery process. The Agency believes that there will be significant incentives to minimize the levels of potentially toxic and hazardous constituents in the recovered oil. In general, the Agency believes that co-located facilities provide an opportunity for the recycling of recovered oil without imposing significant risks to human health and the environment. In addition, the degree of integration between a petrochemical facility and a petroleum refinery that are co-located helps to ensure that each owner/operator is familiar with the other's manufacturing processes, composition of products and intermediates, and administrative procedures. These attributes go beyond the strict commercial relationship that is more typical of transactions between buyers and sellers of various secondary materials, by-products, and intermediates.

The Agency decided not to expand the exclusion to recovered oils generated at off-site organic chemical plants, even in cases where the off-site facility may be commonly owned by the refinery accepting the recovered oil. The Agency has not been able to develop a definition of "common ownership" that would be clear and workable. As part of EPA's continuing efforts to redefine solid waste, defining common ownership (as a possible means of describing certain intracompany relationships) also has been explored and has proven very difficult. This is largely because of the many complex ways in which 'ownership' can be defined from both a financial and a legal perspective. EPA believes that to attempt to do so here would not prove effective. However, EPA does believe that the concept of 'co-located' is more or less understandable and reflects physical boundaries as well as a degree of integration that would help ensure more control by each facility over the transfer of materials throughout the combined facility. Co-located in today's rule means that the petroleum refinery and the organic chemical manufacturing facility are physically adjacent to one another, or otherwise share a common boundary. In situations where the facilities consider themselves co-located but they are not physically adjacent nor do they share a common boundary, the Agency is further clarifying co-located to include facilities that have a high degree of integration with one another, as evidenced by things such as: shared wastewater treatment systems; shared manufacturing units; transfer of materials via dedicated piping; environmental permits that cover both facilities; facilities share common emergency response equipment, procedures, and planning; etc. These examples can be typical of physically co-located facilities, and therefore can be used to clarify cases where for one reason or another an integrated petrochemical and petroleum refinery do not actually share a common boundary.

In addition, the Agency does not have sufficient data to support expanding the exclusion for recovered oil beyond recovered oils generated at co-located petrochemical plants. Although the Agency received some data comparing recovered oil samples against the used oil specification criteria, the data submitted by commenters did not include information precisely identifying the specific waste that was sampled and did not provide information on the presence or concentration of other hazardous constituents (outside those included in the used oil specification) contained in the waste. Given the Agency's lack of understanding of the types of wastes that could qualify for

such a broad exclusion and given that these wastes, if provided the exclusion, would be allowed to be stored for a period of time greater than 90 days in tanks or containers that do not have to meet RCRA subtitle C storage standards and could be transported any distance without being accompanied by a hazardous waste manifest, the Agency has decided not to extend the proposed exclusion to all petrochemical facilities at this time. The Agency believes there may be significant unknown risks associated with the transport of "recovered oils" generated at unrelated facilities and which a refinery may have little information on the content of the oil. In the case of recovered oil from off-site (non-co-located) facilities, the Agency believes that there are significant opportunities for "recycling" to serve as a shield for the treatment or destruction of wastes or hazardous constituents. The Agency does not have sufficient data to adequately define "recovered oil" as it applies to the organic chemical industry and so as to minimize the potential for "toxics-along-for- the-ride."

The Agency also is limiting the exclusion for recovered oils generated at co-located petrochemical plants to those recovered oils that are hazardous only because they exhibit the characteristic of ignitability (as defined in 40 CFR 261.21) and/or toxicity for benzene (40 CFR 261.24, waste code D018). The Agency is limiting the exclusion in this manner because the Agency has concerns regarding the possibility that certain hazardous wastes may end up in the petrochemical recovered oils either through inadvertent or intentional mixing. Specifically, there are many secondary materials that EPA has explicitly listed as hazardous (e.g., K-wastes at 40 CFR 261, Subpart D, under "Organic Chemical Industry"). Many of these wastes are highly-halogenated residuals, and EPA studied each of these waste streams at the time they were listed and determined that they posed certain risks. EPA believes that these wastes are clearly distinct from the recovered oils discussed here, and that the intent is not to send these materials to petroleum refineries in any event.

Comment 2: The proposed exclusion extends to oil-bearing materials produced throughout the petroleum industry -- including the exploration and production, transportation, refining and marketing sectors, as well as organic chemical manufacturing facilities associated with refineries -- and subsequently inserted into the refining process. Thus, the exclusion would appropriately recognize the integrated nature of the petroleum industry and the in-process, undiscarded nature of hydrocarbon-bearing materials produced in various parts of the industry and sent to petroleum refineries for insertion into the refining process.

While risk is not the correct criterion for determining whether a material is a solid waste (see Comment II.B.3), API agrees with EPA that the risks associated with these materials are very low. As in the case with oil-bearing residuals generated at refineries, oil-bearing residuals produced throughout the industry are typically managed in non-land-based units. They are handled much as crude oil and petroleum products are handled, including storage in tanks and transportation by pipeline, truck, rail, or barge. Their return to refineries for processing into valuable fuels and other petroleum products promotes resource conservation and prevents their becoming a part of the waste disposal problem.

Response: EPA acknowledges the commenter's support for the exclusion from the definition of solid waste for recovered oil generated at organic chemical manufacturing plants. EPA notes that the Agency based its decision to exclude from the definition of solid waste oil-bearing residuals generated by petroleum refineries and recovered oil generated by co-located petrochemical facilities that are inserted into any part of the refining process on EPA's authority to regulate materials that are recycled, as interpreted and established by the Courts, including the *AMC II* decision (*AMC II*, 907 F. 2d at 1186-87). The *AMC II* decision established that EPA has jurisdiction over materials that are recycled when the management of such materials includes an element of discard. The Court in *AMC II* held that "discarded" is an ambiguous term that EPA may interpret in a reasonable manner. One way in which the Agency has chosen to interpret the term "discard" is through a determination of whether recycling serves as a shield for treatment or destruction of a waste or its constituents, or provides for the legitimate reuse of a material as a feedstock in a production process. In making such an interpretation, the Agency may analyze the material in question to determine whether the material is substantially similar to other feedstocks used in the production process and whether the material can be inserted into the production process without raising the concentrations of hazardous constituents to levels of concern in the final product. EPA's decision to finalize the proposed exclusions from the definition of solid waste is based upon an evaluation of the legitimate reuse of the residuals reinserted into the production process as feedstocks and the contributions of the hazardous constituents in the residuals to the production process.

The Agency is limited the exclusion for recovered oils generated at petrochemical plants to those recovered oils that are generated at petrochemical facilities that are "co-located" with the petroleum refinery that intends to recycle the recovered oils. The Agency decided not to expand the exclusion to recovered oils generated at off-site organic chemical plants, even in cases where the off-site facility may be commonly owned by the refinery accepting the recovered oil. The Agency has not been able to develop a definition of "common ownership" that would be clear and workable. As part of EPA's continuing efforts to redefine solid waste, defining common ownership (as a possible means of describing certain intracompany relationships) also has been explored and has proven very difficult. This is largely because of the many complex ways in which 'ownership' can be defined from both a financial and a legal perspective. EPA believes that to attempt to do so here would not prove effective. However, EPA does believe that the concept of 'co-located' is more or less understandable and reflects physical boundaries as well as a degree of integration that would help ensure more control by each facility over the transfer of materials throughout the combined facility.

Co-located in today's rule means that the petroleum refinery and the organic chemical manufacturing facility are physically adjacent to one another, or otherwise share a common boundary. In situations where the facilities consider themselves co-located but they are not physically adjacent nor do they share a common boundary, the Agency is further clarifying co-located to include facilities that have a high degree of integration with one another, as evidenced by things such as: shared wastewater treatment systems; shared manufacturing units; transfer of materials via dedicated piping; environmental permits that cover both facilities; facilities share

common emergency response equipment, procedures, and planning; etc. These examples can be typical of physically co-located facilities, and therefore can be used to clarify cases where for one reason or another an integrated petrochemical and petroleum refinery do not actually share a common boundary.

The Agency does not have sufficient data to support expanding the exclusion for recovered oil beyond those recovered oils generated at co-located organic chemical manufacturing facilities (SIC code 2869). Although the Agency received some data comparing recovered oil samples against the used oil specification criteria, the data submitted by commenters did not include information precisely identifying the specific waste that was sampled and did not provide information on the presence or concentration of other hazardous constituents (outside those included in the used oil specification) contained in the waste. Given the Agency's lack of understanding of the types of wastes that could qualify for such a broad exclusion and given that these wastes, if provided the exclusion, would be allowed to be stored for a period of time greater than 90 days in tanks or containers that do not have to meet RCRA subtitle C storage standards and could be transported any distance without being accompanied by a hazardous waste manifest, the Agency has decided not to extend the proposed exclusion to all petrochemical facilities at this time. The Agency believes there may be significant unknown risks associated with the transport of "recovered oils" generated at unrelated facilities and which a refinery may have little information on the content of the oil. In the case of recovered oil from off-site (non-co-located) facilities, the Agency believes that there are significant opportunities for "recycling" to serve as a shield for the treatment or destruction of wastes or hazardous constituents. The Agency does not have sufficient data to adequately define "recovered oil" as it applies to the organic chemical industry and so as to minimize the potential for "toxics-along-for-the-ride."

The Agency also is limiting the exclusion for recovered oils generated at co-located organic chemical manufacturing facilities to those recovered oils that are hazardous only because they exhibit the characteristic of ignitability (as defined in 40 CFR 261.21) and/or toxicity for benzene (40 CFR 261.24, waste code D018). The Agency is limiting the exclusion in this manner because the Agency has concerns regarding the possibility that certain hazardous wastes may end up in the petrochemical recovered oils either through inadvertent or intentional mixing. Specifically, there are many secondary materials that EPA has explicitly listed as hazardous (e.g., K-wastes at 40 CFR 261, Subpart D, under "Organic Chemical Industry"). Many of these wastes are highly-halogenated residuals, and EPA studied each of these waste streams at the time they were listed and determined that they posed certain risks, and the high concentrations of chlorinated toxics would not normally be recycled in a petroleum refining process, but rather would be gotten rid of, i.e., discarded. EPA believes that these wastes are clearly distinct from the recovered oils discussed here, and that the industry's intent is not to send these materials to petroleum refineries in any event.

2. Comments Against Proposal (ETC 00038)

Comment 3: In proposing to exclude a wide variety of oil-bearing residuals from RCRA regulation if they are inserted into the refining process, EPA fails to reconcile the proposal with existing Agency policy regarding closed-loop recycling. This failing further highlights the lack of necessary safeguards in the proposal.

As part of its effort to justify imposition of upgraded design and operating standards for hazardous waste storage tanks nearly 10 years ago, EPA "confirmed that a substantial number of hazardous waste tank systems are likely to be leaking and may lead to substantial risks to human health and the environment." 51 FR 25422, 25426 col. 1 (July 14, 1986). EPA indicated that its data "confirm that leaking tanks present serious threats because they allow hazardous chemicals to contaminate soils and ground water." *Id.* at 25430 cols. 2-3.

The one exclusion from the 1986 tank standards EPA allowed was for secondary materials managed in closed-loop systems. EPA justified this exclusion based upon "the closed nature of the process (hard connections from point of generation to point of return to the original process), integral relationship of these reclamation steps to production processes, and widespread use and economic value of the activity." *Id.* at 25443 col. 1.

Significantly, the storage tanks that will be used to manage the oil-bearing residuals proposed for exclusion in this proposal will be managed in tank systems just like those addressed in EPA's 1986 rulemaking. As discussed in Section II.B of ETC's comments, these tanks pose the same kind and degree of risk EPA discussed for former hazardous waste storage tanks. Therefore, in accordance with EPA's own reasoning, residuals managed in these tanks should not be eligible for an exclusion from RCRA unless recycled in a true closed loop.

Of course, the proposal does not limit the new exclusion in this way. To the contrary, EPA proposes to greatly expand the existing recovered oil exclusion in such a way that is neither "closed" nor a "loop." Oil-bearing residuals could be shipped -- without a hazardous waste manifest -- to off-site locations to be stored prior to reuse. Moreover, such residuals could be shipped from intracompany and intercompany sources, as well as from sources wholly outside the petroleum refining industry. 60 FR 57754. EPA proposes no controls or any minimum design or operating standards for storage and transportation of these materials. EPA has therefore completely ignored both the storage tank damage case evidence in the docket and the Agency's established position that hazardous secondary materials cannot be managed safely outside a closed-loop process without meeting Subtitle C controls.

Furthermore, by allowing these hazardous oil-bearing residuals to be (1) shipped off-site without a tracking mechanism such as a manifest, (2) loaded into tanks that lack overfill protection, (3) stored in tanks that lack secondary containment and that are already leaking or have a high potential to leak, and (4) conveyed to a production process without management standards, EPA would be creating numerous opportunities for mismanagement of these hazardous wastes. In doing so, EPA would be unable to "show how the determination is consistent with RCRA's

objective to 'establish a cradle-to-grave regulatory structure for the safe handling of hazardous wastes.'" 60 FR 57752 col. 3 (quoting API, 906 F.2d at 741).

Response: The final exclusion for recovered oils generated at organic chemical manufacturing plants is not overly broad. The Agency disagrees with the commenter's assertion that the exclusion should be limited to cases where the recovered oils are immediately re-used or recycled in closed-loop systems. The Agency notes that EPA has discretion in establishing exclusions from the definition of solid waste, in addition, other exclusions from the definition of solid waste that are codified under 40 CFR §261.4 are for materials that are recycled in manners other than closed-loop processes. The Agency has considerable discretion in determining when the definition of solid waste applies to materials that are reused in the original production process, as well as when the materials are "recycled" by at off-site facility, or within another industrial process.²⁶

EPA is finalizing an exclusion from the definition of solid waste for recovered oils generated by co-located organic chemical manufacturing facilities and reused by the petroleum refinery, based upon a review of the policy and legal issues involved and on data provided to the Agency related to the composition of the recovered oils and the manner in which the recovered oils are reused by the petroleum refining industry.^{27 28}

EPA is limiting the exclusion from the definition of solid waste to include recovered oils generated at *co-located* organic chemical manufacturing facilities that are inserted into the petroleum refining process. The Agency is restricting the exclusion in this manner because the Agency has not been able to develop a definition of "common ownership" that would be clear and workable. As part of EPA's continuing efforts to redefine solid waste, defining common ownership (as a possible means of describing certain intracompany relationships) also has been explored and has proven very difficult. This is largely because of the many complex ways in which 'ownership' can be defined from both a financial and a legal perspective. EPA believes that to attempt to do so here would not prove effective. However, EPA does believe that the concept of 'co-located' is more or less understandable and reflects physical boundaries as well as a degree of integration that would help ensure more control by each facility over the transfer of materials throughout the combined facility.

²⁶ API v. EPA, 906 f. 2d 726, 740-41 (D.C. Cir. 1990); Ilco v. EPA, 996 F.2d 1126 (11th Cir. 1993); Owen Electric Steel v. Browner, 37 F. 3d 146 (4th Cir. 1994).

²⁷ February 2, 1993 data submission from Mobil Oil Corporation.

²⁸ "*Petroleum Refining Process waste Listing Determination: Supplemental Background Document*," U.S. EPA, Office of Solid Waste, March, 1997.

In addition, The Agency also is limiting the exclusion for recovered oils generated at co-located organic chemical manufacturing facilities to those recovered oils that are hazardous only because they exhibit the characteristic of ignitability (as defined in 40 CFR 261.21) and/or toxicity for benzene (40 CFR 261.24, waste code D018). The Agency is limiting the exclusion in this manner because the Agency has concerns regarding the possibility that certain hazardous wastes may end up in the petrochemical recovered oils either through inadvertent or intentional mixing. Specifically, there are many secondary materials that EPA has explicitly listed as hazardous (e.g., K-wastes at 40 CFR 261, Subpart D, under "Organic Chemical Industry"). Many of these wastes are highly-halogenated residuals, and EPA studied each of these waste streams at the time they were listed and determined that they posed certain risks. EPA believes that these wastes are clearly distinct from the recovered oils discussed here, and that the intent is not to send these materials to petroleum refineries in any event.

To further ensure that the management of such materials does not include an element of discard, and to ensure that the materials do not become part of the waste disposal problem, the Agency is restricting the exclusion to situations where the secondary materials are not stored or placed on the land and where there is no speculative accumulation of the materials.

Comment 4: EPA's rationale for proposing to broaden the existing recovered oil exclusion at 40 CFR 261.4(a)(12) is that the oil-bearing residuals identified in this rulemaking are essentially the same as those covered by the original exclusion. 60 FR 57754 col. 1. The instant proposal, however, fails to provide any parameters or limitations on the meaning of the critical term "oil-bearing residual." For this reason, the proposal is overly broad.

In promulgating the original exclusion for recovered oil, the Agency rejected the petroleum industry's request to include oil-containing wastewaters in the exclusion. EPA noted that "[t]he percentage of oil in plant wastewaters . . . is minuscule, on the order of .0001% to .000001%." 59 FR 38539 col. 3. EPA explained that in distinguishing between excluded and non-excluded oil-bearing materials, it will consider several factors, including water, solids and metals content. *Id.* at 38537 col. 3. EPA emphasized, however, that "the salient characteristic of recovered oil is the obvious one: that it consist primarily of oil." *Id.*

The proposed expansion of the recovered oil exclusion would apply to "all oil-bearing secondary materials that are generated within the petroleum refining industry," as well as recovered oil from certain organic chemical industry operations. 60 FR 57753-54. Nowhere in the preamble or proposed regulatory language, however, does EPA define the critical term "oil-bearing." While EPA asserts that materials covered by the exclusion are "likely" to be recovered oil or to "closely resemble" recovered oil, *id.* at 57754 col. 1, there is no minimum oil content specified in the proposed exclusion. Accordingly, the proposal could be seen as authorizing refinery operators to deem any oil-containing secondary materials, even those with "minuscule" oil content, as excluded from Subtitle C. Such an outcome would clearly exceed EPA's more limited objective of excluding only those secondary materials that are "substantially similar to normal . . . feedstock material." *Id.* at 57754 col. 2.

Response: Although the Agency has not established a minimum oil content for the exempt secondary materials, it is unlikely that petroleum refiners will insert non-oil-bearing materials into the refinery process. Existing economic factors should control which materials will be returned to the process without imposing detrimental impact on overall refinery operations. The Agency bases the exclusion on the fact that recovered oils from organic chemical plants returned to the petroleum refining process may be substantially similar to normal feedstocks. It is highly unlikely that refinery owners or operators would allow any incompatible materials to be inserted into the coker for fear of interfering with proper operation of the coker. In addition, the coking process must comply with air emissions standards imposed under the Clean Air Act. It is unlikely that refinery owners and operators will insert secondary materials into the coker that will result in violations of the applicable CAA standards.

See response to Comment 5 under Section II.C above.

The Agency notes that the final exclusion for recovered oils generated at organic chemical manufacturing facilities is restricted to recovered oils generated at those facilities that are co-located with petroleum refineries. In the case of facilities that are co-located, the Agency believes that there is a greater potential for facility owner/operators to have an accurate understanding of the composition of the recovered oil being recycled and there will be significant incentives to minimize the levels of potentially toxic and hazardous constituents in the recovered oil.

See response to Comment 3 directly above.

3. The Agency requested additional data on the composition of recovered oil from petrochemical operations that is typically sent to refineries.

Four commenters responded, providing data or references. (CMA, 00018; Exxon Chemical, 00041; NPRA, 00015; Shell, 00047)

SHELL

Shell provided the following three examples of recovered oil from petrochemical operations and a Lube Oil Plant that could be typically sent to a petroleum refinery as per the information requested on page 57756. These recovered oils are generated at petrochemical plants and a lube oil plant that are owned by Shell but not co-located with a Shell refinery.

Parameter & (Used Oil Spec.)	Belpre, Ohio	Lakeland, Florida	Lakeland, Florida	Metairie, Louisiana
Same Company (not co-located)	Yes	Yes	Yes	Yes
SIC	2822	2821	2821	2992

Parameter & (Used Oil Spec.)	Belpre, Ohio	Lakeland, Florida	Lakeland, Florida	Metairie, Louisiana
Recovered Oil	Unused Naphtha	Unreacted Toluene	Unused Crude Dimer Distillate	Unused Lube Oil (Wet. BS&W 15%)
Volume	3 to 5 k gallons/day	200 gallons/day	20 to 25 gallons/day	300 gallons/day
Routine Analysis	Yes. for IIC Speciation	For the Amine Content	Iron & Oxygen	
Sample Location	Accumulation Vessel	From the Tank	Truck	
# of Samples	1 / week	1 / month	1 / shipment	
Type of Sample	grab	grab	grab	
Appearance	Liquid Hydrocarbon (Clear to Dark)	Clear, colorless liquid	Dark Brown, Murky	Clear to Cloudy
Sulfur:	Not Detected	Not Detected (x-ray diffraction)	341 ppm (GC)	< 1% (MSDS)
Distillation:	62% BP 155 -265 14% BP 265 - 400 14 % BP 400+	Boiling point is 111°C (est.)	Boiling point is 300°F (95% of material)	Unknown but High
Flash Point: (100°F min)	< 140°F (Process knowledge) 0 to -4° F Cyclohexane	4°C (39.2°F) (Tagg Closed Cup)	80°F (PMCC)	> 300°F (MSDS)
Hydrocarbon Type	Aromatic Mixture (GC)	100% Aromatic (GC)	Fatty Acids, C18 Unsaturated Dimers, Olefins	
API Gravity:	52	32	35	24
Specific Gravity	0.771	0.867	0.85	
Ash:	< 0.1%	< 0.01	1-2% (estimate)	
Total Chlorine	< 0.2%	38 ppm (x-ray diffraction)	0.018% (x-ray diffraction)	< 0.5% (MSDS)
Arsenic (5 ppm max)	Not Detected (EPA 7060)	Not Detected (x-ray diffraction)	Not Detected	N/A (MSDS)
Cadmium (2 ppm max)	0.05 ppm (EPA 7131)	Not Detected (x-ray diffraction)	Not Detected	N/A (MSDS)

Parameter & (Used Oil Spec.)	Belpre, Ohio	Lakeland, Florida	Lakeland, Florida	Metairie, Louisiana
Chromium (10 ppm max)	0.5 ppm (EPA 7191)	Not Detected (x-ray diffraction)	Not Detected	< 1.0 ppm (MSDS)
Lead (100 ppm max)	Not Detected (EPA 7421)	Not Detected (x-ray diffraction)	Not Detected	N/A (MSDS)
Total Halogens (1,000 ppm (presumption) 4,000 ppm max)	< 0.2%	40 ppmw (x-ray diffraction)	0.026% (x-ray diffraction)	N/A (MSDS)
Toluene	Not Applicable	99.2% (GC)	Not Applicable	
Triethylene tetraamine	Not Applicable	0.01 - 0.05% (GC)	Not Applicable	
Cyclohexane	30 - 80% (GC)	Not Applicable	Not Applicable	
Mineral oils	1 - 30% (GC)	Not Applicable	Not Applicable	
Kraton polymer	0 - 10% (GC)	Not Applicable	Not Applicable	
Styrene	0 - 10% (GC)	Not Applicable	Not Applicable	
Butadiene	0 - 3% (GC)	Not Applicable	Not Applicable	
Isoprene	0 - 5% (GC)	Not Applicable	Not Applicable	
Ethyl benzene	0 - 5% (GC)	Not Applicable	Not Applicable	
2-ethylhexanol	0 - 15% (GC)	Not Applicable	Not Applicable	
2-ethylhexanoic acid	0 - 10% (GC)	Not Applicable	Not Applicable	
Diethyl ether	0 - 5% (GC)	Not Applicable	Not Applicable	
Ethylene dibromide	0 - 100 ppm (GC)	Not Applicable	Not Applicable	
Hexane, Pentane, Butane	5 - 60% (GC)	Not Applicable	Not Applicable	
Antioxidants	0 - 5% (GC)	Not Applicable	Not Applicable	
Barium	<0.5 ppm (EPA 6010A)	Not Applicable	Not Applicable	
Nickel	2.6 ppm (EPA 249.2)	Not Applicable	Not Applicable	
Silver	<0.05 ppm (EPA 7761)	Not Applicable	Not Applicable	

CMA (00018)

CMA asked companies to conduct sampling, perform analyses, and compile recovered oil data for the purposes of this rulemaking. As presented in Table 1(CMA), analytical results demonstrate that petrochemical recovered oil is both “similar” to the refinery recovered oil the Agency already excludes from the definition of solid waste and is “suitable” for use in petroleum products. Data is presented for co-located/same company facilities and co-located/ intercompany facilities. For comparison purposes, recovered oil analytical data is also presented for refinery recovered oil streams. In addition, Table 1(CMA) contains information on the SIC Codes applicable to the petrochemical recovered oil....

Analytical results and observations from the recovered oil characterization included in Table 1(CMA) are as follows:

- Refinery recovered oil *appearance* was dark brown to black; petrochemical recovered oil ranged from a golden color, which reflects a narrow cut stream, to black. The petrochemical recovered oil streams are all of an acceptable appearance for a refiner.
- Refinery recovered oil *specific gravity* ranged from 0.882 to 0.896; petrochemical recovered oil ranged from 0.61, again reflecting a light, narrow cut stream, to 0.920. The petrochemical streams are all acceptable for processing in a refinery system.
- *The distillation 50% parameter* (which is the temperature at which 50% of the sample boils off) showed a range of 423 to 511 degrees F. for refinery recovered oil and 194 to 399°F. for petrochemical recovered oil. The range exhibited by these recovered off streams is indicative of lighter material that will fractionate into more valuable refinery product pools, such as motor gasoline. Overall, the distillation ranges are quite similar, with most of the petrochemical recovered oil boiling off within the refinery recovered oil range. This indicates that processing of the petrochemical recovered oil in a refinery system will be indistinguishable from the processing of refinery recovered oil.
- *Flask points* of the samples were essentially in the same range, varying from <46° to <72°F. for refinery recovered oil and from <60° to < 72° F. for petrochemical recovered oil.
- Aromatics and saturates represented over 96% of the *hydrocarbon types* for both refinery and petrochemical recovered oil, again evidencing a high degree of similarity between the two streams.
- Sulfur content of the petrochemical recovered oil ranged from non-detectable to 0.23 weight %; for refinery recovered oil it was 0.520 to 0.83. The lower sulfur level in the petrochemical recovered oil streams is preferred.

- Ash content for the petrochemical recovered oil samples ranged from < 0.001 to 0.03 weight %; for refinery recovered oil it ranged from 0.0 to 0.073 . All these are low levels that clearly indicate the suitability of the material to a refinery system.
- *Chlorine* levels in refinery recovered oil ranged from <1 ppmw to 13 ; for petrochemical recovered oil they ranged from <10 to 3300 . It is common for petrochemical recovered oil to have a higher chlorine level due to the use of chloride-based catalyst systems. These streams are all acceptable to a refiner, who has the option of determining, for any hydrocarbon source, the optimum point of insertion in the refinery process to maximize the contribution of the recovered oil.

Overall, the analytical results in Table 1(CMA) demonstrate that petrochemical recovered oil is both “similar” to refinery recovered oil and “suitable” for use in petroleum products.

Petrochemical and refinery recovered oil samples are “similar,” i.e., they are comprised essentially of hydrocarbons with a desirable distillation range and hydrocarbon types for recovery into refinery product pools. The results are not surprising because the petrochemical recovered oil is composed of hydrocarbons that generally originate from feedstocks supplied by the refinery. Differences in hydrocarbon type reflect the different sources of hydrocarbons that feed into the recovered oil systems.

In addition to being “similar,” the petrochemical recovered oil is “suitable” for use in the refinery recovered oil systems. Recovered oils have been sent to a refinery for many years to be made into the same products that refineries manufacture from its other feedstocks. To illustrate, Attachment 3 of CMA’s comments, for one facility, which petroleum product pools would receive the various fractions from the petrochemical or refinery recovered oil samples. Refinery recovered oil fractions are sent to the motor gasoline pool, the heating/diesel oil system, or to the fuel oil system. Petrochemical recovered oil would also be sent to motor gasoline or heating/diesel oil. Thus recovered oil from both petrochemical and refinery sources are sent to the same refinery product pools. The different percentages of each fraction sent to different product pools reflect the different hydrocarbon make-up of the recovered oil streams.

Table 1 (CMA)

Facility/ description	Case	SIC Codes	Volume gals/D	Appearance	Spec Gravity (@15.6 c	Distillation (°F)			Flash Point (°F)	Hydrocarbon Type, vol%			Sulfur wt%	Ash wt%	Chlorine ppmw
						IBP	50%	FBP		Aromatic	Olefin	Saturat e			
Facility 1															
Petrochemicals	Co-located; Same company	2821, 2822 2865, 2869	139000	Opaque, black	0.920	212	348	573	<65	95.4	1.4	3.3	0.20	0.001	<10
Refinery		2911	-	Opaque, black	0.882	108	423	777	<46	43.7	0	56.3	0.83	0.073	13
Petrochemicals (2nd set)	Co-located; Same company	2821, 2822 2865, 2869	139000	Bright, clear	0.894	67	326	746	<60	93.0	3.9	3.0	0.23	<0.001	34
Facility 2															
Petrochemicals	Co-located; Same company	2822, 2649	45000	Dark brown	0.912	<97	399	955	<72	83.1	<0.3	16.9	0.0056	0.009	160
Refinery		2911	-	Dark brown	0.896	97	511	775	<72	78.1	<0.3	21.9	0.520	0.0	<1
Facility 3															
Petrochemicals	Co-located; Intercompany	2869	2700	Golden color	0.61	21	194	372	<60				ND	0.03	3300

ND: not detectable

...To comply with EPA's request, analyses were run and the results of the comparison to the used oil specifications are summarized in Table A(CMA). Table A(CMA) includes analytical results for the same petrochemical and refinery recovered oil streams described in Table 1(CMA). Again, these are co-located/same company or co-located/intercompany cases. For the petrochemical recovered oil samples and the refinery recovered oil samples, analyses were run for arsenic, cadmium, chromium, lead, total halogens and flash point. Analytical results can be summarized as follows:

Table A(CMA): Comparison of Recovered Oil to Used Oil Specifications

<i>Parameter</i>	<i>Used Oil Spec</i>	<i>Refinery Recovered Oil</i>	<i>Petrochemical Recovered Oil</i>
Arsenic	5 ppmw max.	<0.04 to 0.932	<0.04 to 2.7
Cadmium	2 ppmw max.	<0.04 to 0.595	<0.04 to 0.84
Chromium	10 ppmw max.	<0.04 to 3.93	<0.04 to 0.12
Lead	100 ppmw max.	<0.04 to 46.1	<0.04 to 1.9
Total Halogens	4000 ppmw max.	<10 to <20	<10 to 3400
Flashpoint	1000 F min.	<46' to <72' F	<60 to <72' F

Note: "<" represents detection limit for test conducted

As shown, all results, except for flashpoint, met the used oil specifications and were generally either significantly below the specification level or below detection limits for the tests. For flash point, the measured levels did not meet the used oil specification. This is because the heavier fractions of crude oil have already been removed from the recovered oil. The rationale for the flash point specification for used oil was to protect unsophisticated fuel oil burners from potential materials handling problems, see 50 FR 49187; November 29, 1985 - a concern that does not apply in the context of petroleum refineries or associated facilities handling recovered oils. Such facilities are sophisticated in handling these materials. For refineries, the lower flash point of the recovered oil provides an important physical property indicating the presence of the lighter, more combustible hydrocarbon components. These are the hydrocarbon types valued for motor gasoline, which is a higher valued refinery product. Thus, these recovered oil petrochemical streams do not contain any of the toxic constituents that the Agency identified as important contaminants of used oil. See 50 FR 49182 (November 29, 1985).

NPRA

Petrochemical facilities use processes that are similar to refining operations and therefore recovered oil from petrochemical operations is comparable to oil recovered from refining operations. Data supporting this position were provided to EPA from Morgan, Lewis, and Bockius on September 13, 1995. NPRA, which has both petrochemical and refining members, agrees with the data provided by Morgan, Lewis, and Bockius and supports EPA's proposal to

exclude oil that is recovered from petrochemical operations and inserted into co-located or commonly owned refining operations.

The petrochemical exclusion is based on the same principles mentioned previously for petroleum refineries concerning not storing the oil-bearing materials on land, not accumulating the oil-bearing materials speculatively before returning it to the process, and the resulting coke product not exceeding the toxic characteristic levels.

Justification for the petrochemical exclusion is based on the following practices at petrochemical facilities:

- The high quality requirements of petrochemical operations ensures that the recovered oil from these operations do not contain non-hydrocarbon contaminants not already found in petroleum feedstock which could jeopardize the integrity of the refinery product.
- In cases where petrochemical and petroleum refining operations share a common wastewater treatment system, the volume of wastewater from the petrochemical operations typically comprises only a small portion of the total refinery wastewater volume.
- The quality of the refining feedstock is important to the integrity of the petroleum refining operations. A refinery would not insert into its refining process metals or chemicals which would cause equipment fouling or costly turnarounds, costly downtime or result in the increased production of unwanted byproducts.

EXXON CHEMICAL AMERICA

In response to EPA's request, ECA petrochemical recovered oil quality parameters were compared to the used oil specifications. The total halogen content, arsenic, cadmium, lead, and chromium levels of recovered oil were all less than the used oil specifications. Flash points of the samples were below the used oil minimum, but this was to be expected since heavier fractions of material are generally removed. This allows for recovery into higher value products such as motor gasoline. The analytical results are included in CMA's submission.

Response: The EPA concludes from the data that the composition of recovered oil from petrochemical operations may be similar to crude oils, but the data submitted to the Agency does not provide evidence that the residuals are not potentially contaminated with additional hazardous constituents, or "toxics-along-for-the-ride." The data submitted by commenters do not precisely identify the specific wastes that were sampled and do not provide information on the presence or concentration of other hazardous constituents (beyond those included in the used oil specification) contained in the wastes. Given the Agency's lack of understanding of the types of wastes that could qualify for a broad exclusion for recovered oils and given that these wastes, if provided the exclusion, would be allowed to be stored for a period of time greater than 90 days in tanks or containers that do not have to meet RCRA subtitle C storage standards and could be transported any distance without being accompanied by a hazardous waste manifest, the Agency has decided

not to extend the proposed exclusion to off-site, non co-located facilities, or to facilities other than co-located organic chemical manufacturing facilities (SIC code 2869).

It is the Agency's understanding that co-located facilities often share wastewater treatment systems. In these cases, given the predominance of petroleum refining wastewater, the Agency believes that the recovered oil exclusion appropriately applies to oil recovered from shared petrochemical/petroleum refining wastewater treatment systems. In addition, a petroleum refiner that is co-located with a chemical manufacturing facility should have sufficient knowledge of the recovered oils, or the processes from which the recovered oil are generated, and have knowledge of any potential risks associated with the management of the oils to ensure that they can be reused safely within its refinery process. The Agency believes that there will be significant incentives to minimize the levels of potentially toxic and hazardous constituents in the recovered oil. In general, the Agency believes that co-located facilities provide an opportunity for the recycling of recovered oil without imposing significant risks to human health and the environment. In addition, the degree of integration between a petrochemical facility and a petroleum refinery that are co-located helps to ensure that each owner/operator is familiar with the other's manufacturing processes, composition of products and intermediates, and administrative procedures. These attributes go beyond the strict commercial relationship that is more typical of transactions between buyers and sellers of various secondary materials, by-products, and intermediates.

The Agency decided not to expand the exclusion to recovered oils generated at off-site organic chemical plants, even in cases where the off-site facility may be commonly owned by the refinery accepting the recovered oil. The Agency has not been able to develop a definition of "common ownership" that would be clear and workable. As part of EPA's continuing efforts to redefine solid waste, defining common ownership (as a possible means of describing certain intracompany relationships) also has been explored and has proven very difficult. This is largely because of the many complex ways in which 'ownership' can be defined from both a financial and a legal perspective. EPA believes that to attempt to do so here would not prove effective. However, EPA does believe that the concept of 'co-located' is more or less understandable and reflects physical boundaries as well as a degree of integration that would help ensure more control by each facility over the transfer of materials throughout the combined facility. Co-located in today's rule means that the petroleum refinery and the organic chemical manufacturing facility are physically adjacent to one another, or otherwise share a common boundary. In situations where the facilities consider themselves co-located but they are not physically adjacent nor do they share a common boundary, the Agency is further clarifying co-located to include facilities that have a high degree of integration with one another, as evidenced by things such as: shared wastewater treatment systems; shared manufacturing units; transfer of materials via dedicated piping; environmental permits that cover both facilities; facilities share common emergency response equipment, procedures, and planning; etc. These examples can be typical of physically co-located facilities, and therefore can be used to clarify cases where for one reason or another an integrated petrochemical and petroleum refinery do not actually share a common boundary.

The Agency also is limiting the exclusion for recovered oils generated at co-located petrochemical plants to those recovered oils that are hazardous only because they exhibit the characteristic of ignitability (as defined in 40 CFR 261.21) and/or toxicity for benzene (40 CFR 261.24, waste code D018). The Agency is limiting the exclusion in this manner because the Agency has concerns regarding the possibility that certain hazardous wastes may end up in the petrochemical recovered oils either through inadvertent or intentional mixing. Specifically, there are many secondary materials that EPA has explicitly listed as hazardous (e.g., K-wastes at 40 CFR 261, Subpart D, under "Organic Chemical Industry"). Many of these wastes are highly-halogenated residuals, and EPA studied each of these waste streams at the time they were listed and determined that they posed certain risks. EPA believes that these wastes are clearly distinct from the recovered oils discussed here, and that the industry's intent is not to send these materials to petroleum refineries in any event. The high levels of halogens in certain samples indicate that this concern may be more than just theoretical. Absent accurate documentation of the precise source of the halogens, EPA believes it prudent to limit the scope of the exclusion.

4. The Agency requested additional information on refinery limitations that may preclude the introduction of toxic constituents from recovered oil generated from chemical manufacturing operations.

Three commenters provided information regarding feedstock parameters and issues. (CMA, 00018; Shell, 00047; Valero, 00051)

Comment 1:

CMA

Product quality management is a critical activity in the petroleum industry. Refineries need to avoid equipment and catalyst fouling and process unit down times and maintain the integrity of final products. Poor product quality, e.g., solids or potential gum-forming constituents, can have an immediate and widespread impact on customers by affecting, for example, automobile performance. Therefore, feedstock quality management programs, including recovered oil, are an integral part of a petroleum refinery's operation. The quality of recovered oil is routinely evaluated and its contribution to refinery product performance determines its acceptability and value. This is true even if the recovered oil comes from an associated petrochemical facility or a third party through an arms length transaction. It is important to note that recovered oil is assessed, not from a solid waste perspective, but from a product performance standpoint.

For facilities that have recovered oil streams that are being considered for transfer to a refinery recovered oil system, sampling and analysis is often conducted to supplement operating experience and process knowledge. Potential receiving refineries are interested in parameters relevant to their refinery process and product quality. Common quality parameters assessed are water content and bulk solids. Other quality parameters evaluated may include specific gravity, bromine (an indicator of olefins content and potential fouling due to polymerization), emulsions, and metals.

Overall it is clear that operating practices, process knowledge, and selected sampling/analysis programs ensure that recovered oil is suitable for processing into oil based products and is similar to refinery recovered oil that is sent to the petroleum refinery process.

SHELL

Coker units must be operated to avoid using a feed mix which creates asphaltenes precipitation in the heater tubes, cause piping and/or stripper corrosion, or result in any premature/unscheduled decoking operation.

Some of the feedstock parameters and specifications that are evaluated at Shell locations include the following:

- Specific Gravity
- Sodium
- Metals
- Microcoulometry ASTM D4929 (organic & inorganic)
- Ion Chromatography
- BS&W: 1% max
- Chlorides: 10 ppm max
- Hydrocarbon %
- Flash Point
- pH
- TOC
- Sulfates
- Formic Acid and DI-Acids of C1 - C4
- Monoacids C2 - C4

The results of residual feedstock analysis are often compared to crude assays to determine the suitability for use in the coker.

VALERO

Because the coker is a critical part of the refining process, operators would not intentionally insert incompatible materials into the coker because of fear of the disruption of its operation and the resulting loss of significant revenue. Further, the data provided to EPA by Unocal [note to reviewers: there are no Unocal comments...] substantiates that the oil bearing materials which are proposed for exclusion from the definition of solid waste are substantially similar to normal feedstock to the coker. Therefore, returning oil-bearing residuals to the refinery coker can be achieved without raising the hazardous constituent concentrations to levels of concern in the final coke co-product.

Response: From the remarks, the Agency notes that feedstocks returned to refinery process must be compatible materials or the facility risks disruption of operations and resulting loss of significant revenue. However, the data submitted to the Agency does not provide evidence that the recovered oils generated at non-petroleum refining facilities are not potentially contaminated

with additional hazardous constituents beyond those included in the used oil specification. In addition, the data submitted by commenters do not precisely identify the specific wastes that were sampled and do not provide information on the presence or concentration of other hazardous constituents (beyond those included in the used oil specification) contained in the wastes. Given the Agency's lack of understanding of the types of wastes that could qualify for a broad exclusion for recovered oils and given that these wastes, if provided the exclusion, would be allowed to be stored for a period of time greater than 90 days in tanks or containers that do not have to meet RCRA subtitle C storage standards and could be transported any distance without being accompanied by a hazardous waste manifest, the Agency has decided not to extend the proposed exclusion to off-site, non co-located facilities, or to facilities other than co-located organic chemical manufacturing facilities (SIC code 2869).

See response to comments in Section II.E.3 above.

5. Further Expansion of Proposed Exclusion

Comment 1: If EPA limits the recovered oil exclusion to SIC Code 2869, it may have a significant impact on large complexes with multiple SIC codes. Segregating recovered oil systems within a complex could be prohibitively expensive (involving capital investment to modify piping/connection and distribution systems for different units within a complex) and is clearly not warranted due to recovered oil quality and recovery value. Oil that is recovered from these sources is not discarded. Ironically, excluding these sources of recovered oil may force these facilities *to discard* recovered oil - even though it has a lot of value to their integrated manufacturing system.

Based on current practices at petrochemical/refinery facilities, the commenter suggests that EPA characterize the regulatory exclusion in terms of "recovered oil from a petrochemical facility," with no specification of SIC codes. The SIC codes were not designed to differentiate manufacturing units for purposes of segregating recovered oil systems. Use of an artificially limiting SIC code will result in unnecessarily limiting the amount of recovered oil that can be refined into valuable product with no increased environmental benefit. It will also cause confusion at large petrochemical complexes that are implementing the regulations.

Alternatively, should EPA decide to maintain a SIC code limitation, the commenter recommends that the limitation be expanded to include SIC codes 2821, 2822, 2865, and 2869. If EPA decides to maintain an exclusion referenced to SIC code 2869, it should be clarified that the exclusion is for petrochemical complexes with this primary SIC code, even if other contributing SIC codes are present. This clarification is necessary to address the issue at complexes with multiple SIC codes.

As part of its data request, CMA asked members who operate in these other SIC Codes to supply information regarding the quality of their recovered oil to see if recovered oil from such facilities were similar to other recovered oil and suitable for refinery use. Table 3 (see original comment) provides analytical results by SIC codes. All of these streams are currently utilized in refineries to

produce valuable hydrocarbon products. As explained previously, petroleum refineries have procedures in place to ensure feedstocks and recovered oil streams are suitable for use in refinery processes and finished products. These quality control procedures themselves, along with site process knowledge, should be the determining factor whether a petrochemical recovered oil stream is acceptable to a refinery complex.

Some of these streams are shown with SIC codes more specific than SIC Code 2869, indicating a particular type of petrochemical source unit. It should be noted that SIC Code 2869 is the primary SIC code for the aggregated streams at these facilities and the most representative SIC Code for general petrochemical operations.

Key observations on the SIC code-specific data are as follows:

- *Appearance* of the petrochemical recovered oil samples ranged from either bright/clear to opaque/black. The bright clear appearance generally indicates a narrower cut of material versus an aggregated stream. All the streams are acceptable based on appearance.
- *The distillation 50%* data for the petrochemical recovered oil streams ranged from 157 to 589 degrees F. These are well within the range of the refinery recovered oil distillation range in Table 1(CMA) (108 to 777 degrees F) and indicates that the petrochemical streams will be processed similar to refinery recovered oil streams.
- *On hydrocarbon types*, for most of the samples the aromatics and saturates content was over 90%, which is consistent with refinery recovered oil. One sample has an aromatics/saturates level of 51%, the remaining content consists of 49% olefins which are acceptable for processing in the refinery; refinery systems produce olefins, typically in a catalytic cracking unit.
- The sulfur content of petrochemical recovered oil ranged from 0.0011 to 0.35 wt. %, which are all low levels.
- *Ash* levels were also very low for the petroleum recovered oil (<0.001 to 0.009)

The comparison to used oil specifications can be summarized as follows:

Table B: Comparison of Recovered Oil From Associated Non-Organic Chemical Facilities To Used Oil Specifications

	<i>Used Oil Spec.</i>	<i>Refinery Recovered Oil</i>	<i>SIC Code-Specific Petrochemicals Recovered Oil</i>
Arsenic	5 ppmw max.	<0.04 to 0.932	<0.4 to <0.4
Cadmium	2 ppmw max.	<0.04 to 0.595	<0.04 to 1.36
Chromium	10 ppmw max.	<0.04 to 3.93	<0.4 to <2.0
Lead	100 ppmw max.	<0.04 to 46.1	<4.0 to <2.0
Total Halogens	4000 ppmw max.	<10 to <20	2.2 to 3890
Flash point	100" F. min.	<46°to <72°F.	<52°to 126°F.

Note: "<" represents detection limit for test conducted

Table B shows that all results for metals and total halogens were less than the used oil specifications, and were generally either significantly below the specification level or below detection limits for the tests. Again, flashpoint was acceptable to refineries. (CMA, 00018, supported by API, 00066)

Response: In the proposed rule, EPA stated that it would consider broadening the proposed exclusion to include hydrocarbon streams from certain other organic chemical manufacturing facilities, including plastic materials and resins (SIC Code 2821), synthetic rubber (SIC Code 2822), and cyclic crude and intermediate producers (SIC Code 2865), if sufficient analytical data were received to support such a broadening. At this time, the Agency has not received sufficient information on the composition of the hydrocarbon streams produced by these industries that are typically sent to petroleum refineries, therefore the administrative record does not support extending the exclusion to these specific materials.

The Agency is limiting the exclusion from the definition of solid waste for recovered oils to recovered oils generated at *co-located* organic chemical manufacturing facilities. Although the Agency proposed to extend the exclusion to both co-owned and co-located facilities, the Agency has not been able to develop a definition of “common ownership” that would be clear and workable.

As part of EPA’s continuing efforts to redefine solid waste, defining common ownership (as a possible means of describing certain intracompany relationships) also has been explored and has proven very difficult. This is largely because of the many complex ways in which ‘ownership’ can be defined from both a financial and a legal perspective. EPA believes that to attempt to do so here would not prove effective. However, EPA does believe that the concept of ‘co-located’ is more or less understandable and reflects physical boundaries as well as a degree of integration that would help ensure more control by each facility over the transfer of materials throughout the combined facility. Co-located in today’s rule means that the petroleum refinery and the organic chemical manufacturing facility are physically adjacent to one another, or otherwise share a common boundary. In situations where the facilities consider themselves co-located but they are not physically adjacent nor do they share a common boundary, the Agency is further clarifying co-located to include facilities that have a high degree of integration with one another, as evidenced by things such as: shared wastewater treatment systems; shared manufacturing units; transfer of materials via dedicated piping; environmental permits that cover both facilities; facilities share common emergency response equipment, procedures, and planning; etc. These examples can be typical of physically co-located facilities, and therefore can be used to clarify cases where for one reason or another an integrated petrochemical and petroleum refinery don’t actually share a common boundary.

Given the Agency’s decision to restrict to the exclusion for recovered oils to co-located facilities, the commenter’s concerns regarding impacts on large complexes with multiple SIC codes and the need to segregate recovered oil systems may be moot. However, the Agency does not understand the commenter’s assertion that the Agency’s decision not to grant an exclusion for recovered oils

generated at these facilities (i.e., the Agency is not excluding materials that currently are not excluded) will provide cause for such facilities to now discard their recovered oils. Given that no regulatory change is being finalized, the result should be no impact (either positive or negative) to the industry.

Comment 2: EPA proposes extending the recovered oil exclusion to associated organic chemical manufacturing facilities that are either physically co-located or under common ownership with the refinery at which the recovered oil is inserted into the petroleum refining process. The Agency should also extend the exclusion to “intercompany, not co-located” situations as well. An example would be a petrochemical company desiring to send recovered oil, by truck or rail car, to a non-affiliated refinery at a different location for purposes of fractionating and recovering product value from the recovered oil.

Such an expansion of the exclusion is a logical outgrowth of the rule. Fundamentally, there is no reason not to extend the recovered oil exclusion to this case. Many of the recovered oil streams for this case are the same type as those at co-located or same company facilities; consequently, stream quality is comparable. In addition, there is no need to discard the material, since it has a desirable hydrocarbon value to a receiving refinery. The same economic incentives and precautions that are taken to ensure that the recovered oil is suitable for insertion into the refinery process will exist. A quality assessment/acceptability analysis would be done and the receiving refinery would assess the appropriate process insertion point to maximize product recovery. In addition, the recovered oil allows a receiving refinery to reduce alternate feedstock purchases.

The following table presents analytical results for recovered oil from intercompany/not co-located facilities that is available to be processed at petroleum refineries. These streams are from petrochemical operations and are all suitable for recovery by a refiner.

Key observations on the data for specific constituents analyzed are as follows:

- *The distillation 50%* data for the petrochemical recovered oil streams ranged from 338 to 585°F. These are well within the range of the refinery recovered oil distillation range in Table 1(CMA) (108 to 777 °F) and indicates that the petrochemical streams will be processed similar to refinery recovered oil streams.
- The sulfur content of petrochemical recovered oil ranged from non-detect to 0.613 wt. %, which are all levels that are acceptable to a refiner.
- *Ash* levels ranged from <0.009 to 1.2 weight %. While the 1.2 weight % ash content is higher than what is typically found in refinery recovered oil, this is not a problem to the refinery; the material will be processed within the refinery to optimize hydrocarbon disposition.

The comparison to used oil specifications can be summarized as follows:

Table C: Comparison of Recovered Oil From Non-Associated Industrial Facilities To Used Oil Specifications Oil

	<i>Used Oil Spec</i>	<i>Refinery Recovered Oil</i>	<i>Sic Code-Specific Petrochemicals Recovered Oil</i>
Arsenic	5 ppmw max.	<0.04 to 0.932	Non-detect <5
Cadmium	2 ppmw max.	<0.04 to 0.595	Non-detect to <50
Chromium	10 ppmw max.	<0.04 to 3.93	Non-detect to 33
Lead	100 ppmw max.	.04 to 46.1	Non-detect to <4.0
Total Halogens	4000 ppmw max.	<10 to <20	40 to <1000
Flashpoint	1000°F. n-dn.	<46° to <72°F.	<200 to 1500 F.

Note: "<" represents detection limit for test conducted

The analytical results indicated that the arsenic, cadmium, chromium, lead, and halogen content of the streams was generally below used oil specifications. One sample had a chromium content of 33 ppmw. The refiner's product control program would note this value and the refinery would make a decision whether this recovered oil is suitable for use. In four cases the analytical results for cadmium were below detection limits that were above the used oil specifications; the data provided was from previous analysis that did not require lower detection limits since the metals are not expected to be a concern to a refiner even at the higher detection limits.

The recovered oil streams presented in Table C are all suitable for use in a refinery process and represent valuable hydrocarbons. EPA should encourage this activity. (CMA, 00018; supported by Amoco, 00062; CMA, 00018; Exxon, 00035; Exxon Chemicals, 00041; Mobil, 00033; Phillips, 00055; Shell, 00047)

Response: The Agency notes that the final exclusion applies only to recovered oils generated at organic chemical plants that are co-located with petroleum refineries. The Agency has not been able to develop a definition of "common ownership" that would be clear and workable. As part of EPA's continuing efforts to redefine solid waste, defining common ownership (as a possible means of describing certain intracompany relationships) also has been explored and has proven very difficult. This is largely because of the many complex ways in which 'ownership' can be defined from both a financial and a legal perspective. EPA believes that to attempt to do so here would not prove effective. However, EPA does believe that the concept of 'co-located' is more or less understandable and reflects physical boundaries as well as a degree of integration that would help ensure more control by each facility over the transfer of materials throughout the combined facility.

Co-located in today's rule means that the petroleum refinery and the organic chemical manufacturing facility are physically adjacent to one another, or otherwise share a common boundary. In situations where the facilities consider themselves co-located but they are not

physically adjacent nor do they share a common boundary, the Agency is further clarifying co-located to include facilities that have a high degree of integration with one another, as evidenced by things such as: shared wastewater treatment systems; shared manufacturing units; transfer of materials via dedicated piping; environmental permits that cover both facilities; facilities share common emergency response equipment, procedures, and planning; etc. These examples can be typical of physically co-located facilities, and therefore can be used to clarify cases where for one reason or another an integrated petrochemical and petroleum refinery don't actually share a common boundary.

In the proposed rule, EPA stated that it would consider broadening the proposed exclusion to include hydrocarbon streams from certain other organic chemical manufacturing facilities, including plastic materials and resins (SIC Code 2821), synthetic rubber (SIC Code 2822), and cyclic crude and intermediate producers (SIC Code 2865), if sufficient analytical data were received to support such a broadening. At this time, the Agency has not received sufficient information on the composition of the hydrocarbon streams produced by these industries that are typically sent to petroleum refineries, therefore the administrative record does not support extending the exclusion to these specific materials.

In the case of recovered oil from off-site facilities, the Agency believes that there are significant opportunities for "recycling" to serve as a shield for the treatment or destruction of wastes or hazardous constituents. The Agency does not have sufficient data to adequately define "recovered oil" as it applies to the organic chemical industry and so as to minimize the potential for "toxics-along-for-the-ride." In the case of facilities that are co-located, the Agency believes that there is a greater potential for facility owner/operators to have accurate understanding of the composition of the recovered oil being recycled and there will be significant incentives to minimize the levels of potentially toxic and hazardous constituents in the recovered oil.

The Agency did not receive sufficient data to support expanding the proposed exclusion to recovered oils generated at intercompany off-site facilities. Although the Agency received some data comparing recovered oil samples against the used oil specification criteria, the data submitted does not precisely identify the specific waste that was sampled and does not provide information on the presence or concentration of other hazardous constituents contained in the waste. Given the Agency's lack of understanding of the types of wastes that could qualify for such an exclusion and given that these wastes, if provided the exclusion, would be allowed to be stored for a period of time greater than 90 days in tanks or containers that do not have to meet RCRA subtitle C storage standards and could be transported any distance without being accompanied by a hazardous waste manifest, the Agency has decided not to extend the proposed exclusion to recovered oils generated at non-affiliated facilities.

Comment 3: Commenters support the expansion of the recovered oil exclusion to allow the movement of such feedstock from all petrochemical plants to all refineries, regardless of ownership or location... The exclusion would appropriately recognize the integrated nature of the petroleum industry and the in-process, un-discarded nature of hydrocarbon-bearing materials

produced in various parts of the industry and sent to petroleum refineries for insertion into the refining process. (Amoco, 00062; Shell, 00047)

Response: See responses to comment 1 and 2 above.

Comment 4: The list of petrochemical plants eligible for the exclusion should be broadened to include SIC Code 2821 (plastics and resins) and 2822 (synthetic rubber). Lube Oil Plants, SIC 2992, should be added to the list of oil related industries that are eligible for the exclusion. A mechanism for including additional SIC Codes in the list of approved codes should be established. (Shell, 00047)

Response: In the proposed rule, EPA stated that it would consider broadening the proposed exclusion to include hydrocarbon streams from certain other organic chemical manufacturing facilities, including plastic materials and resins (SIC Code 2821), synthetic rubber (SIC Code 2822), and cyclic crude and intermediate producers (SIC Code 2865), if sufficient analytical data were received to support such a broadening. At this time, the Agency has not received sufficient information on the composition of the hydrocarbon streams produced by these industries that are typically sent to petroleum refineries, therefore the administrative record does not support extending the exclusion to these specific materials.

It is not the Agency's intent in expanding the current exclusion from the definition of solid waste for recovered oils materials inserted into the petroleum refining process as feedstocks to allow for the widespread shipment of oil-bearing residuals between third parties. Such an expansion of the exclusion provided for oil-bearing residuals could result in residuals being handled by facilities whose ability to properly manage the residuals is uncertain. EPA does not have the extensive waste generation data or waste management information necessary to evaluate such an extensive expansion of the current exclusion. Therefore, EPA is not expanding the scope of the exclusion to include oil-bearing residuals generated at facilities that are not petroleum refineries or co-located organic chemical manufacturing plants.

Comment 5: The proposed recovered oil exclusion discourages smaller operations and petroleum residual generators from recycling. As proposed, the expansion of the recovered oil exclusion would benefit the larger petroleum refining operations which have onsite activities that allow return of the recoverable oil materials to various processes. However, many facilities do not have the processing capabilities to recover that hydrocarbon value from an onsite recoverable oil. Recoverable oils from these facilities would therefore be subject to full Subtitle C regulation, even if sent to a facility that recycles the material to recover its hydrocarbon value.

The EPA's stated purpose for the exclusion is to "promote environmentally sound recycling of oil-bearing residuals." This goal can be achieved by encouraging recycling of the oil bearing wastes at any facility that has the equipment and capability to properly manage such wastes. This is especially true given the fact that the exclusion is not limited to the recycling of onsite oil bearing wastes, and in fact allows for the transport of offsite oil bearing wastes to petroleum refineries.

Limiting the exclusion to petroleum refineries results in an inequitable situation, favoring larger, more complex operations and pushing other generators of recoverable oils to less desirable management approach (i.e., lower on the EPA's waste management hierarchy). However, the problem could be remedied by applying the recovered oil exclusion to recoverable oils sent to off-site, third-party recycling facilities.

EPA should expand the scope of the facilities that can recycle petroleum refinery wastes under the recovered oil exclusion from the definition of solid waste, to allow off-site recycling and to include petroleum re-refineries under SIC Code 2992. Safety-Kleen believes that the applicability of the recovered oil exclusion should be a function of the receiving facility's function, process, and controls, rather than a function of the location and SIC code of the receiving facility. The proposed rule would allow oil bearing residuals from specified petroleum refining sources to be exempt from the definition of solid waste if inserted into the petroleum refining process. Other companies that can utilize these residuals directly as ingredients in manufacturing processes to make new products or directly as effective substitutes, for commercial products, should be allowed to do so with the residuals similarly exempted from the definition of solid waste.

Safety-Kleen's East Chicago, Indiana oil re-refinery is capable of providing efficient and environmentally sound recycling of recoverable oil and other petroleum residuals for their hydrocarbon values and properties. However, because it is not associated with any specific refineries and petrochemical facilities generating the petroleum residuals, any recoverable oil sent to this facility for re-refining or recovery would have to be managed as a listed hazardous waste under the requirements of this proposed rule. Safety-Kleen believes that the restriction of the recovered oil exclusion to co-located or commonly owned recovery operations unnecessarily limits recoverable oil recycling opportunities, and puts mid- to small-sized businesses who cannot qualify at an economic disadvantage. In addition, some offsite, third party facilities (such as our facility) are equipped and managed to handle the residual in an environmentally protective and beneficial manner, due to the facilities being designed to meet the used oil management standards or even the hazardous waste management standards. (Safety-Kleen, 00032)

Response: The final exclusion for recovered oils generated by organic chemical manufacturing facilities that are inserted into the petroleum refining process is limited to recovered oils generated by organic chemical manufacturing facilities that are co-located with the refinery that is using the recovered oils. The Agency is limited the exclusion to co-located facilities because the Agency is not able to develop a definition of "common ownership that would be clear and workable and due to the fact that the Agency does not have sufficient data to support an additional expansion of the exclusion to recovered oils generated by other types of petrochemical facilities (outside SIC code 2869).

The scope of the Agency's proposal was limited to the petroleum refining industry. EPA specifically crafted the exclusion at 40 CFR 261.4(a)(12) for petroleum refineries, because this industry is in the business of fuels production the exclusion obviously benefits refineries; that was its intent. The Agency's rationale for the exclusion did not originally include facilities that re-

refine used oils. The Agency considers the expansion of the proposed exclusion to re-refineries to be beyond the original scope of the rulemaking.

The Agency previously promulgated separate standards for the management of used oil at 40 CFR 279 and for the management of residuals from the storage, processing, or refining of used oil (see §279.59). It is not the Agency's intent in expanding the current exclusion from the definition of solid waste for oil-bearing materials returned to the petroleum refining process as feedstocks to allow for the widespread shipment of refinery residuals between third parties. Such an expansion of the exclusion provided for oil-bearing residuals could result in residuals being handled by facilities whose ability to properly manage the residuals is uncertain. EPA does not have the extensive data or management information necessary to evaluate such an extensive expansion of the current exclusion. Therefore, EPA is not expanding the scope of the exclusion to include the management of oil-bearing residuals at non-petroleum refining facilities that can recycle petroleum refinery wastes or to any other off-site third party recycling operations. Oil-bearing materials transferred to off-site facilities other than a refinery do not meet the conditions of the exclusion, as promulgated with today's final rule.

Comment 6: The petroleum residuals proposed to be excluded from the definition of solid waste in many instances exhibit characteristics similar to used oils. Therefore, the EPA should require management standards to guarantee that handling of these petroleum residuals is done in a manner that is protective of human health and the environment. (Safety-Kleen, 00032)

Response: As noted in the proposal, used oils that are to be burned as fuels and that are within the used oil specification limits for used oil fuels are considered by the EPA to be comparable to crude oil for regulatory purposes (60 FR 57756).

The Agency does not find the imposition of separate regulatory management standards to be warranted for recovered oils or secondary oil-bearing materials, as these materials are being excluded from the definition of solid waste when they are inserted into the petroleum refining process as feedstocks. The Agency notes that these materials will be subject to the same storage and spill prevention requirements that govern other commodity-like petroleum feedstocks.

Comment 7: The manufacturing process operated by CRI-MET at their Braithwaite facility, is unique and separate from other spent hydroprocessing catalyst recycling operations and their processes. CRI-MET operates the only hydrometallurgical processing application for spent hydrotreating catalysts which does not rely on thermal destruction, incineration, to remove recoverable oil entrained within the spent hydroprocessing catalysts. The recoverable oil, i.e., valuable petroleum products consisting of catalytic cracking feed, naphthas, middle distillates, gas oils, and other intermediates, often represent a significant percentage volume of spent hydroprocessing catalysts. In place of incineration, the CRI-MET process separates recoverable oil, which would function as a process inhibitor in the CRI-MET process, from the catalysts. Since the recovered oil is managed separately following separation from the catalysts, it is

appropriate to consider its reuse as a product. Following separation from the catalysts, the recovered oil is capable of being reinserted in petroleum refining processes.

By comparison, the oil recovered from spent hydroprocessing catalysts, is by far, superior to oil recovered from "dry" process streams within the organic chemical industry. The recovered oil is composed entirely of hydrocarbons that originate from petroleum refining feedstocks used by the petroleum industry. CRI-MET therefore requests the Agency to exempt oil separated from spent hydrotreating and hydrorefining catalysts, to allow for its beneficial reuse within the petroleum refining process. Without such an exclusion, which has already been proposed by the Agency for an extensive variety of oil bearing residuals encompassing a wide range of SIC codes (see Section III.E.2.b.2. of the proposed rule), CRI-MET will be required to omit this element of their facility's waste minimization program and incinerate a beneficial commodity as a solid waste.

Therefore, CRI-MET requests the Agency to amend their proposed regulatory language under 40 CFR 261.4(a)(12) to include SIC Code 2819, or modify 40 CFR 261.4(a) to include an additional entry. Proposed regulatory language would read as follows: (redlined items indicate CRI-MET's proposed amendments)

40 CFR 261.4 Exclusions

(a) Materials which are not solid wastes. The following materials are not solid waste for the purpose of this part:

* * * * *

(Number to be assigned) Recovered oil from an associated metals manufacturing facility which is to be inserted into the petroleum refining process (SIC Code 2911) along with normal process streams, unless the material is placed on the land, or speculatively accumulated before being so recycled. An "associated metals manufacturing facility" (SIC Code 2819) is either a physically co-located facility or a facility under common ownership with the refinery at which the recovered oil is inserted into the petroleum refining process.

* * * * *

(CRI-MET, 00031)

Response: It was not the Agency's intent in expanding the current exclusion from the definition of solid waste for oil-bearing materials returned to the petroleum refining process as feedstocks to allow for the widespread shipment of oil-bearing residuals between third parties. Such an expansion of the exclusion provided for oil-bearing residuals could result in residuals being handled by facilities whose ability to properly manage the residuals is uncertain. EPA does not have the extensive waste generation data or waste management information necessary to evaluate such an extensive expansion of the current exclusion. Therefore, EPA is not expanding the scope of the exclusion to include oil-bearing residuals generated at facilities that are not petroleum refineries or co-located petrochemical operations.

Comment 8: The commenter urges EPA to broaden the proposed exclusion to include certain intercompany, inter-location transfers of hydrocarbon streams. These should include cracking

byproducts from the production of olefins from hydrocarbon feedstocks. These materials meet the same basic rationale for exclusion as the materials already proposed for exclusion: namely, they are hydrocarbon mixtures which are suitable for use as petroleum refinery feedstocks. (Union Carbide, 00056)

Response: In the proposed rule, EPA stated that it would consider broadening the proposed exclusion to include hydrocarbon streams from certain other organic chemical manufacturing facilities, including plastic materials and resins (SIC Code 2821), synthetic rubber (SIC Code 2822), and cyclic crude and intermediate producers (SIC Code 2865), if sufficient analytical data were received to support such a broadening. After reviewing limited information submitted by commenters on streams from these other SIC codes, it became evident that these streams can be produced by petrochemical units located within the larger facility, which overall is classified as SIC Code 2869. In other words, petrochemical facilities are vertically integrated such that a unit from SIC Code 2869 (organic chemical manufacture) might receive a petroleum feedstock, and produce a chemical that is in turn fed to an adjacent unit classified as SIC Code 2821 (plastics and resins), all as part of normal manufacturing within the facility. Both units may generate an oil stream that represents excess unreacted feedstock, or a by-product not usable within the facility, and these streams are often co-mingled and returned to a co-located petroleum refinery for insertion into refinery units. Therefore, upon recognition that the separate SIC Codes discussed in the proposed rule do not necessarily reflect separate facilities but can actually co-occur within the same facility, the Agency has modified the final exclusion to allow for recovered oil from these other SIC Codes (2821, 2822, and 2865) provided the units producing these petrochemical recovered oils are located at a petrochemical facility that is overall classified under SIC Code 2869.

6. Cokers are integral to refining and are not waste management units

Comment 1: In expressly stating that the “recovered oil” exclusion would encompass oil-bearing materials used as feedstocks to petroleum cokers, the proposed rule correctly recognizes that petroleum cokers are integral refinery process units, and not waste management units 60 FR 57754. Similarly, the proposed rule acknowledges, appropriately, that oil-bearing residuals fed to cokers are valuable feedstocks and not wastes.

As API has explained elsewhere [see original comment for citations], the principal function of a petroleum coker is to upgrade hydrocarbons of lower value into middle and light end hydrocarbons, which in turn are used to produce valuable fuels, including gasoline, jet fuel, and kerosene. The coker also produces petroleum coke, itself a valuable fuel or, in some cases, a valuable component in the production of electrodes.

As EPA points out, the upgrading conducted by the coker is significant enough that in many cases, the economic viability of a refinery depends upon the coker. 60 FR 57754. Thus refiners would not risk adversely affecting the operation of their cokers by using incompatible materials as feedstocks.

The Agency is also correct in stating that the oil-bearing hazardous residuals used as coker feedstocks are substantially similar in composition to other coker feedstocks. The use of such residuals as feedstocks does not measurably affect levels of toxic metals in the product coke. The residuals are typically managed from generation through insertion to the coker in non-land-based units, just as virgin raw materials are managed. For all of these reasons, the oil-bearing residuals fed to cokers are properly viewed as undiscarded, in-process materials, and certainly are not part of the waste disposal problem.²⁹ Additionally, API agrees with EPA's conclusion that the use of oil-bearing residuals as coker feedstocks does not pose any significant incremental risks as compared to the use of other raw materials. (API, 00033)

Response: EPA acknowledges the commenter's support of the proposed exclusion from the definition of solid waste for oil-bearing materials returned to the refining process. As finalized, oil-bearing secondary materials generated by the petroleum refining sector (SIC code 2911) and recovered oils generated by co-located organic chemical manufacturing facilities (primary SIC code 2869) that are inserted into the refining process at any point, including the coker, are excluded from the definition of solid waste. Both exclusions are restricted to those situations where the secondary materials (or recovered oils) are not placed on the land prior to reinsertion into the refinery process and to cases where the residuals are not accumulated speculatively. In addition, the insertion of oil-bearing secondary materials into the coker must not result in the coke product exhibiting a characteristic of hazardous waste.

Comment 2: The commenter supports EPA's proposal regarding the exclusion covering insertion of CSO sediment into the refinery process (including the coker). (BP Oil, 00019; Mobil, 00033)

Response: EPA acknowledges the commenter's support of the proposed exclusion from the definition of solid waste for oil-bearing secondary materials returned to the refining process. As finalized, oil-bearing residuals generated by the petroleum refining sector (SIC 2911) are excluded from regulation as solid waste when they are returned to the refining process at any point, including the coker. The exclusion is restricted to those situations where the residuals are not placed on the land prior to reinsertion into the refinery process and to cases where the residuals are

²⁹While API strongly supports EPA's decision to codify in the RCRA regulations an exclusion for oil-bearing materials used as coker feedstocks, it is API's position that the undiscarded status of such materials was determined as a matter of law in *AMC I*, and that the definition of solid waste currently does not apply to such materials. For the same reason, API believes that EPA technically lacks the authority to condition the exclusion upon the coke product not exhibiting a hazardous waste characteristic. However, API agrees with EPA that the existing characteristics (including the TCLP) are sufficiently protective and adequate to avoid any significant risks from the coke product. The use of the characteristics as a standard also is consistent with a longstanding regulation (40 CFR Section 261.6(a)(3)(vi)) implementing RCRA Sections 3004(q)-(s).

not accumulated speculatively. In addition, the insertion of oil-bearing secondary materials into the coker must not result in the coke product exhibiting a characteristic of hazardous waste.

7. Exclusion of Oil-bearing Wastewater

Twelve commenters disagreed with EPA's decision not to exclude oil-bearing wastewaters. (API, 00046; ARCO, 00054; BP, 00019; Caufield, 00009; Coastal, 00048; Mobil, 00033; NPRA, 00015; Pennzoil, 00053; Phillips, 00055; Total, 00039; Valero, 00051; WIRA, 00024)

In Section III.D of API's comments, API argues that the exclusion should include oil-bearing wastewaters destined for oil recovery. The major elements of API's arguments include EPA's lack of jurisdiction with respect to: (1) case law³⁰; (2) whether wastewaters are analogous to process feedstocks; (3) designation of API separators as process or wastewater treatment units; (4) need to retain LDS for surface impoundments; and (5) risk. These five elements of API's comments, and EPA's responses, are provided below as Comments 1 through 5, respectively.

Comment 1:

[Case law]

[API paragraph 2] As discussed above, [need to cross-reference comment] the decision in *AMC I* prohibits EPA from asserting RCRA jurisdiction over materials that have not been discarded, e.g., in-process secondary materials. At a minimum, this includes secondary materials involved in continuous, ongoing manufacturing processes. See *AMC II*, 907 F.2d at 1186; API, 907 F.2d at 741. Oil-bearing wastewaters destined for oil-recovery certainly meet this description. More significantly, however, such oil-bearing wastewaters were among the very materials at issue in the *AMC I* case. Thus, whatever discretion EPA may have to construe the definition of solid waste in other contexts is severely limited in the context of the recycling of oil-bearing wastewaters at refineries.³¹

Response: EPA continues to consider refinery wastewaters to be discarded materials and therefore solid wastes potentially subject to regulation under RCRA. The *AMC II* decision established that EPA has jurisdiction over materials that are recycled when the management of such materials includes an element of discard. The Court in *AMC II* held that "discarded" is an ambiguous term that EPA may interpret in a reasonable manner. Nor does EPA view wastewater treatment operations as part of the petroleum refining process, notwithstanding that the water contains minute concentrations of hydrocarbons which are skimmed as part of the initial stages of

³⁰API believes that the case law argument makes the remaining EPA arguments irrelevant, but provides a response to each of EPA's considerations.

³¹While cases decided after *AMC I* may provide some guidance on the definition of solid waste as it applies to materials in other industries, those cases have no bearing on issues specifically litigated and determined in *AMC I*.

wastewater treatment. Wastewater treatment systems exist to purify discarded wastewaters from the refining process and the wastewaters are ultimately discharged, the wastewaters are not returned to the petroleum refining process as feedstocks. Petroleum refinery wastewaters clearly are discarded, and therefore are solid wastes. See AMC II, 907 F. 2d at 1186-87.

The Agency thus disagrees with the commenter's assertion that wastewater treatment operations in which oil is skimmed and oil-bearing sludges are separated from plant waters are part of the ongoing refining process. Petroleum refining wastewaters differ from both recovered oil and oily sludges that are separated from wastewaters in that, unlike these secondary materials, the wastewaters themselves are not analogous in composition to normal petroleum refining feedstock material and consequently are not reinserted into the petroleum refining process to produce petroleum products. Instead, petroleum refining wastewaters from which oily materials have been removed are discharged (i.e., discarded), and are thus not eligible for exclusion as a petroleum refining process feed. As explained in the preamble to the recovered oil rule (59 **FR** 38539), primary wastewater treatment operations exist to treat plant wastewater. The main purpose of wastewater treatment is to purify discarded wastewaters from the refining process so that they can ultimately be discharged pursuant to Clean Water Act requirements, not to recover secondary materials for recycling back into an ongoing manufacturing or industrial process.

Comment 2: [3] The fundamental flaw in EPA's argument that "the wastewaters themselves are not analogous in composition to normal petroleum refining feedstock material" (60 **FR** 57755) is that to one degree or another, nearly all raw materials have some component that will ultimately be discarded. For example, oil-bearing sludges are often processed to separate the oil from solids and water. The solids are discarded, but this does not render the pre-oil recovery sludges solid wastes. For that matter, even crude oil itself is produced with substantial amounts of water and sediments. Yet the presence of components that will be separated and disposed of does not transform crude oil from a raw material into a solid waste. (Thus, EPA's claim that oil-bearing wastewaters are not analogous to feedstock materials is both incorrect and off point.) [see also Mobil, 00033]

[In a related comment, WIRA, 00024, argued that "Refinery wastewater is analogous in composition to refinery feedstocks. Much of the refinery wastewater is generated by the dehydration of incoming crude oil or during the washing (desalting) of crude oil prior to the start of the refinery process. The majority of the rest of the stream either is steam condensation, boiler blowdown, (these streams are essentially salty water which is similar to formation water), or cooling tower blowdown. WIRA believes that wastewater treatment systems exist to recover oil from wastewater.]

[4] Moreover, the fact that wastewaters "from which oil-bearing materials have been removed" are discharged, id., has no bearing on whether the oil-bearing waters prior to oil recovery should be considered solid wastes. API has not disputed (and does not dispute) that the non-oil-bearing wastewaters that remain after oil recovery and that are treated and later discharged from wastewater treatment systems are solid wastes. To the contrary, it is the presence of oil, and the ongoing recovery and use of that oil, that distinguishes pre-recovery process water streams from

discarded, post-recovery waste water streams.³² [see also Mobil, 00033; Total, 00039; Valero, 00051]

Response: The Agency maintains that wastewater treatment systems exist to purify discarded wastewaters from the refining process. In addition, these systems typically use land-based treatment units (e.g., impoundments in which biological treatment occurs) and the Agency considers materials placed in such units to be discarded, and hence solid wastes. The Agency understands that refinery wastewaters may be analogous to some produced oil/water, but these wastewaters generally contain significantly less oil than the "as received" crude oil, which has generally undergone separation of formation water. EPA continues to maintain that wastewater treatment systems recover oil as a means to improve the efficiency of subsequent processes to remove oxygen depleting chemicals from the water that is ultimately discharged and to achieve compliance with discharge standards (e.g., Clean Water Act standards). What oil or oil-bearing material -- indeed minuscule -- that is recovered as a result of the primary and secondary oil/water/solids separation is small relative to the high volume of water used in refinery operations which is destined for discard. It would be anomalous indeed if 1 ppm of oil could suddenly transform millions of gallons of wastewater into an in-process material, and transform wastewater treatment into an on-going refining process. Wastewaters simply have been discarded from the refining process. AMC II, 907 F. 2d at 1186-87.

Wastewater in a wastewater treatment system does not become an in-process material just because it happens to contain trace amounts of hydrocarbons. If the commenter's reasoning were followed, even impoundments holding hazardous sludges such as F037/F038, or an aquifer contaminated with petroleum, would be considered 'hydrocarbon storage units' because the sludges and wastewater contained a small amount of oil. It is clear that impoundments are waste management units and that materials in them can be classified as solid wastes. AMC II, 907 F. 2d at 1186. Similarly, wastewater treatment tanks can reasonably be classified as something other than part of the petroleum refining process. Their chief function is to treat wastewater, through the separation of oil from oil-bearing materials and other co-disposed wastes destined for discard. The vast

³²EPA has recognized this principle in the context of tank water draws:

"In determining the regulatory status of the petroleum product/water mixture *before* recovery, EPA would not generally differentiate between the two individual components.

...

After the product has been separated and recovered from the water, the water would be evaluated on its own merit Assuming the contaminated water will be treated and/or disposed of, the water would become a solid waste once the product has been recovered.

Letter from D. Clay (EPA) to A. Buchman (Conoco Inc.), June 14, 1991, Enclosure at 1 (emphasis added).

majority of the material processed in wastewater treatment tanks is wastewater comprised of neutralized corrosive wastes and processed waters which no longer have beneficial use at the source process unit. Further, failure to designate these wastewater treatment tanks as waste management units could result in a lack of treatment of hazardous constituents in the characteristic waste streams that are managed in wastewater treatment systems which utilize impoundments. Third Third opinion, 976 F. 2d at 16, 23. Such a failure would strike at a core RCRA concern. Id. at 23.

Comment 3: [5] Second, EPA argues that the recovery of oil from wastewaters is merely secondary to the “wastewater treatment” function of API separators. (60 FR 57755.) See also, 59 FR 38539 (July 28, 1994).³³ In fact, oil recovery is a principal purpose and function of API separators, and such oil recovery has been practiced in the refining industry since long before RCRA or the NPDES program under the Clean Water Act came into effect.³⁴ EPA’s own engineering experts have concluded that units such as API separators serve a dual function of oil

³³In part, EPA may base this argument on the assumption that the concentrations of oil in refinery wastewater streams are insubstantial and, thus, that oil recovery from such streams is not significant. See 59 FR 38539 (July 28, 1994). However, the concentrations of oil in refinery wastewater streams are not as insubstantial as EPA has suggested. API has provided EPA with data establishing that wastewaters typically contain significant quantities of recoverable oil. See API, “Fact Sheet: Impact of Revisions of Definition of Solid Waste on Refinery Operations” (Oct. 1994.) What is more, the total quantities of valuable oil actually recovered from refinery wastewater streams are, in fact, very substantial. A survey of 20 refineries revealed oil recovery (as a percentage of total API separator throughput) ranging from 0.05% to 1.0%. *Id.* It is not uncommon for a single refinery to recover on the order of 1000 barrels of oil per day from the wastewater system. Thus, EPA’s suggestion that such oil recovery operations are inconsequential is incorrect.

³⁴EPA’s rationale suggests that mere placement of a secondary material in a system called a “wastewater treatment system” *ipso facto* renders the material a solid waste. No such conclusion is possible. Just because something is commonly referred to as a “wastewater” does not mean it fits the RCRA definition of “solid waste” that Congress crafted so carefully. Indeed, the legislative history shows that Congress hesitated to use the very word “waste” because it feared the statute would be misconstrued to regulate *undiscarded* material:

Waste itself is a misleading word in the context of the committee’s activity. *Much industrial and agricultural waste is reclaimed or put to new use and is therefore not a part of the discarded materials disposal problem the committee addresses.*

H.R. Rep. No. 1491, 94th Cong., 2d Sess. 2, reprinted in 1976 U.S. Code Cong. & Admin. News 6240 (emphasis added.)

recovery and wastewater treatment. See, e.g., Memorandum from Ben Smith, P.E. (EPA Office of Solid Waste) to EPA Docket No. F-87-SWRP-FFFFF (Nov. 17, 1987). [see also WIRA, 00024]

Response: The Agency disagrees. API separators and other oil/water/solids separators are designed to remove oil and solids from wastewaters. Without such removal, down stream treatment capacity would need to be considerably increased to be able to achieve discharge limitations. While considerable quantities of oil-bearing residuals may be recovered, the amount recovered is small relative to the treated volume of wastewater. The oil that is contained in the wastewaters is just commingled with the wastewater discarded from the refining process.

EPA considers the wastewater treatment system's primary function to be contaminant removal for compliance with Clean Water Act requirements, rather than hydrocarbon recovery for the purpose of refining crude oil. In the Agency's view, the ongoing petroleum refining process ends when the process of producing petroleum ends. EPA is not seeking to regulate hydrocarbon fractions moving between fractionating columns that produce, in sequence, fuels, kerosene, and gasoline. The wastewater treatment system, however, is not part of this production process, as residuals containing some recoverable oil are co-managed with residuals destined entirely for discard. In addition, the Agency maintains that oil recovery from refinery wastewaters occurs for the purpose of treatment and notes that much of this treatment occurs in land-based units, even though many facilities have moved to treatment in tanks. EPA has specifically excluded wastewaters from the realm of materials to be considered oil-bearing on the basis that the Agency considers these wastewaters to be discarded materials.

Comment 4: [6] Finally, EPA asserts that labeling all refinery wastewaters as "solid wastes" is necessary to assure "treatment of hazardous constituents in characteristic waste streams ... managed in wastewater treatment impoundments (e.g., impoundments in which biological treatment occurs) in accordance with the land disposal restriction (LDR) requirements." (60 FR 57755). It appears that EPA has misstated its argument in this instance, since EPA cites for support the 1994 recovered oil rule preamble discussion of wastewaters (59 FR 38540) which actually addressed the potential risks associated with placement of decharacterized wastewaters, not currently characteristic wastewaters, in biological treatment surface impoundments.³⁵

³⁵If the quoted passage in the current preamble were taken literally, it would prove nothing. It is a given that any currently characteristic wastewaters that might be deposited in biological treatment surface impoundments -- which are downstream of oil recovery operations -- would, at this time, be subject to LDS. See *Chemical Waste Management v. EPA*, 976 F.2d 2 (D.C. Cir. 1992), *cert. denied*, 113 S.Ct. 1961 (1993). However, that is entirely irrelevant to the status of oil-bearing waters upstream of oil recovery that have not yet been discarded. Moreover, the *Chemical Waste Management* decision has been overturned by act of Congress as it applied to decharacterized wastewaters in Clean Water Act surface impoundments. H.R. 2036, 142 Cong. Rec. H1965 (March 7, 1996).

Assuming that EPA in fact meant to raise concerns about the placement of decharacterized wastewaters in biological treatment surface impoundments, those purported concerns provide no justification for classifying all refinery wastewaters -- including pre-recovery oil-bearing streams -- as solid wastes. First, the assertion that any secondary material should be labeled as a solid waste in order that LDR requirements would apply is completely circular, and would stand the statute on its head. Under Section 3004(m) of RCRA, 42 U.S.C. Section 6924(m), LDS are triggered only by the land placement of materials that are, in fact, solid (and hazardous) wastes. In other words, the LDR requirements do not even come into question unless the material is first determined to be a solid waste. Thus, to state that because it might be desirable to apply LDS to a material, the material must therefore be a solid waste, reverses the order of analysis prescribed by law. [see also Mobil, 00033]

[8] Second, even if EPA's attempt to bootstrap the regulation of wastewaters by invoking the LDR's were valid as to refinery wastewaters when placed in biological treatment surface impoundments, that would beg the relevant question of whether undiscarded oil-bearing waters upstream of oil recovery operations should be excluded from the definition of solid waste. That is because, in refinery operations, biological treatment in surface impoundments occurs downstream of oil recovery units. API does not claim that wastewaters from which oil recovery is already complete, and which may in fact be discarded, should be excluded under the proposed exclusion. However, the RCRA status of such post-oil recovery wastewaters has no bearing on the status of oil-bearing streams before oil recovery.

[9] Lastly, to the extent EPA relies in this rulemaking on the alleged risks associated with placement of decharacterized wastewaters in biological treatment impoundments to justify labeling refinery wastewaters as solid wastes, such reliance is beyond EPA's authority because (as discussed above), the relevant criterion for identifying solid wastes under RCRA is whether a material is discarded, not whether EPA believes the material poses a risk. Beyond this, the purported risks from management of wastewaters in biological treatment impoundments that EPA cited in the 1994 recovered oil rule (and the asserted need to subject the impoundments to LDR requirements) simply do not exist. In a recent LDR rulemaking, EPA focused specifically on management of decharacterized wastewaters in surface impoundments. See 60 FR 43654 (Aug. 22, 1995) ("Phase IV" LDR proposal.) Under the EPA favored options under that proposal, EPA determined that the risks from biological treatment impoundments (that are part of a Clean Water Act treatment train) at refineries are so low that they do not warrant imposition of LDR requirements. *Id.*; Technical Support Document - Options for Standards for Leaks, Sludges and Air Emissions from Surface Impoundments Accepting Decharacterized Wastes, July 1995. PHYP-S001; Regulatory Impact Analysis of the Phase IV Land Disposal Restriction Rule, June

13, 1993. PHYP-S0054, p. 2 - 4 53.54.JJ.³⁶ In fact, regulation under RCRA prior to oil recovery is simply not necessary to ensure the quality and safety of water down-stream of oil recovery.

[10] The toxicity characteristic and the accompanying land disposal restrictions would apply to the wastewater should there be any remaining significant risk. Thus, EPA has offered no valid reasons for declining to exclude from the definition of solid waste oil-bearing refinery wastewaters that are destined for recycling in ongoing oil recovery operations as part of the refining process.³⁷

Response: Discarded plant wastewaters up to and including the primary wastewater treatment step, can contain high loadings of hazardous constituents that may pose environmental harm if released. Primary wastewater treatment also is sometimes conducted in land-based or in-ground

³⁶EPA itself asserted in the Phase IV LDR proposal that the *Chemical Waste Management* decision did *not require* pretreatment of wastewaters managed in biological treatment impoundments that are part of a Clean Water Act treatment train. See 60 FR 43656-57 (Aug. 22, 1995).

³⁷API notes that although EPA does not explicitly rely on any allegations of risk from the oil-bearing wastewaters upstream of oil recovery in the November 20, 1995 proposal, it did do so in the July 28, 1994 "recovered oil" rule (which also failed to exclude oil-bearing wastewaters). 59 FR 38540. As discussed above, those concerns do not satisfy the statutory criterion for determining what materials are solid wastes. In any event, the risk-related arguments raised in the 1994 recovered oil rule do not withstand scrutiny and would not support a determination that oil-bearing waters are solid wastes (even if environmental or health risk were a valid basis for such a determination). For example, EPA suggested that benzene air emissions from oil-bearing wastewater in a treatment system are a source of concern. *Id.* However, even if that were so in the past, EPA thoroughly addressed that concern in 1993 with a risk-based emission standard for benzene under section 112 of the Clean Air Act that specifically covered such operations. 58 FR 3072, 3095-3105 (Jan. 7, 1993); 55 FR 8292, 8346-61 (March 7, 1990) (the so-called "benzene waste NESHAP," in which EPA explicitly acknowledged that "wastes" under the Clean Air Act are not necessarily "solid wastes" under RCRA, *id.* at 8318, 8322-23) Thus, the air emissions issue has been rendered largely academic.

Similarly, in the 1994 recovered oil rule, EPA suggested that potential contamination from land-based wastewater treatment units was a significant reason for not excluding oil-bearing wastewaters, but cited for support only the background document for the listing of "primary sludge." (See 59 FR 38540 n.10.) Yet, despite that purported concern, primary sludges themselves would be excluded under the proposed new exclusion if recycled in the refining process even though wastewaters would not. Thus, EPA again has failed to provide any rational basis for treating oil-bearing wastewaters differently from other recycled oil-bearing secondary materials.

units, which can (and have) resulted in environmental contamination. Therefore the Agency asserts that these operations can be part of the waste management problem.

In addition, petroleum refineries frequently generate individual wastewater streams that exhibit characteristics of hazardous waste, the streams are mixed together so that the characteristic is removed. These aggregated wastewater streams may still contain high volumes of hazardous constituents, however, because aggregation (i.e., dilution) and primary treatment do not significantly remove or destroy all hazardous constituents. The aggregated wastewaters are then managed in surface impoundments, where biological treatment occurs.

EPA's interpretation of the regulatory status of refinery wastewaters does not result in an assertion that RCRA jurisdiction is extended to any refining operations that process hydrocarbons into products, nor over hydrocarbons that are lost from process vessels and are gathered for return to refining. Rather, the Agency is stating that up to and including primary wastewater treatment, plant wastewaters are just that, and their management is subject to applicable Subtitle C controls.

Comment 5: [11] Ironically, with the exception of purported concern about biological treatment impoundments, EPA does not appear to base its proposal not to exclude oil-bearing wastewaters explicitly on the basis of perceived elevated risk. See 60 FR 57755. As discussed above, risk is not the appropriate criterion for determining whether a material is a solid waste. Nonetheless, there is no basis to conclude that oil-bearing wastewaters upstream of oil recovery pose any greater level of environmental risk than do other oil-bearing refinery residuals that EPA has already excluded, or proposed to exclude, including oil-bearing sludges from recovery units, that remove oil from the oil-bearing waters, See 60 FR 57754-55. (API, 00046; Caufield, 00009; NPRA, 00015; Valero, 00051)

Response: Discarded plant wastewaters up to and including the primary wastewater treatment step, can contain high loadings of hazardous constituents that may pose environmental harm if released. Primary wastewater treatment also is sometimes conducted in land-based or in-ground units, which can (and have) resulted in environmental contamination. Therefore, the Agency asserts that these operations can be part of the waste management problem. Wastewaters are discarded materials, and therefore are solid wastes.

Comment 6: If EPA is truly concerned about the treatment of refinery wastewater in surface impoundments, it could have proposed a conditional listing similar to the one it is proposing for clarified slurry oil. However, WIRA does not believe that this is necessary in light of the D.C. Circuit's Decision in *AMC II (American Mining Congress vs. EPA*, 907 F.2d 1179 DC (1990)) which prohibited the storage of secondary materials in surface impoundments. (WIRA, 00024)

Response: EPA infers that the commenter is advocating that oil-bearing wastes be excluded from classification as solid waste, provided they are not managed in surface impoundments. Such an exclusion would be analogous to the proposed regulation of CSO sediment provided it was not managed in land treatment units. Although the fact that refinery wastewaters may be treated in

land-based units reinforces EPA's argument that these wastewaters are "discarded" and are part of the waste management program, EPA asserts that refinery wastewater treatment systems are treatment systems used to manage wastes that are being discarded, regardless of whether the treatment system includes the use of surface impoundments.

8. Miscellaneous Comments on Recovered Oil Topics

a. Laboratory Wastes

Comment 1: The commenter requested that EPA clarify it's position on lab wastes. (Caufield, 00009)

Response: While samples collected for the purpose of testing to determine a waste's characteristics or composition are exempt from the definition of solid waste, provided the conditions of 40 CFR 261.4(d) are met, residues resulting for such analysis are not exempt. In the example the commenter cited, the mixture composed of a test sample and the toluene remaining after testing was complete is a spent solvent mixture. When discarded, the lab waste is subject to all RCRA regulations and may potentially be regulated as a F003 and D001- ignitable waste in the case described.

b. 261.6 Modifications

Comment 1: EPA states that, "It should be noted that certain existing exclusions provided under §261.6 that pertain specifically to petroleum refining wastes would become unnecessary as a result of today's proposal. The Agency will amend these provisions as necessary in its final rulemaking." Since the exclusions in §261.6 are carefully crafted and critical to our industry, EPA should provide opportunity for industry to comment on any modifications. The commenter supports appropriate revisions to any outdated exclusions; however, any decision to proceed without industry involvement will likely result in unnecessary confusion and delay as EPA and industry work to agree on the appropriate wording of any revisions. (Exxon, 00035)

Response: EPA will specifically propose any regulatory amendments found necessary to remove outdated exclusions.

c. Exclusion of Reprocessed Plastics

Comment 1: EPA's proposal recognizes the jurisdictional parameters of the Agency's existing regulatory program under RCRA, 42 U.S.C. § 6901 *et seq.*, need clarification insofar as the application of the program to secondary materials destined for recycling is concerned (60 FR 57749). The need for such classification is at the core of the Agency's ongoing reexamination of the definition of solid waste occurring outside of this rulemaking. The NPR proposes revisions to the definition of secondary materials in recognition of the problems created by the narrowness of the existing exclusion from the definition of solid waste where the primary material is a fuel.

APC's Comments will focus on this aspect of the NPR. In this regard, APC encourages EPA to apply the principles proposed in this NPR to a broader revision of the definition of solid waste in the nonhazardous waste context as applied to the reprocessing of plastics diverted from the waste stream into a fuel or refinery/petrochemical feedstock (from which fuels may be produced).

Identification of the Issue in the NPR

As the NPR noted, materials are subject to regulation under RCRA only if they meet the definition of "solid waste." Moreover, "secondary materials" may be excluded from the definition of solid waste, and therefore from regulation under RCRA, if they are "recycled." Although RCRA itself does not contain a definition of "recycling," to date EPA has defined recycling to exclude energy recovery with the result that secondary materials used to produce fuels are generally not excluded from the definition of solid waste.

The NPR recognizes this limitation on the scope of the secondary materials' exclusion from the definition of solid waste poses special problems where the primary materials themselves are a fuel or a raw material from which fuels are produced, as is the case with petroleum. Accordingly, the NPR proposes to continue the expansion of the secondary materials' exclusion for certain petroleum wastes that the agency began in its July 28, 1994 Final Recovered Oil Rule. The NPR would extend the secondary materials exclusion to reprocessing of certain oil-bearing wastes to produce a fuel. Moreover, the NPR would expand somewhat on the traditional limitation of the secondary materials exclusion to materials destined for immediate reuse in another phase of the industry's ongoing production process by applying the exclusion to wastes acquired by a refiner from a third party in an intercorporate transaction.

APC supports this aspect of the proposed rule. APC concurs with EPA's conclusion that this proposal is consistent with the waste management hierarchy established in the Pollution Prevention Act of 1990 ("P.P.A."), 42 U.S.C. §13101, *et seq.* In this regard, APC believes the waste management hierarchy of the P.A. must be applied flexibly, consistent with the nature of the materials involved. Moreover, APC believes that beyond this rulemaking, the artificial bright line sometimes drawn by EPA between recycling (to produce a product other than a fuel) and disposal (where reprocessing of materials produces a fuel) cannot be supported ***where the primary materials themselves are a fuel or are produced from a fuel.***

The Expansion of the Secondary Materials Exclusion Proposed in the NPR Should Be Extended To The Definition of Solid Waste Generally.

A major focus of APC's activities are programs directed at improving the recycling of plastic products. In a remarkably short period, plastics have been added to literally thousands of community recycling programs. Significant increases have occurred in the recycling of many plastic products, most notably soda bottles and milk jugs. APC's continuing involvement in recycling programs throughout the country has identified many remaining challenges. Meeting these challenges is an important focal point of APC's research, development, and demonstration programs.

Those programs suggest that among the most cost-effective means recycling of mixed plastic resins are:

- (1) processes which chemically or thermally break down the plastic polymers thereby recovering the more fundamental hydrocarbons comprising the monomers from which plastic polymers are produced;³⁸ and
- (2) processes which combine waste plastic materials and/or industrial plastic scrap with waste paper and/or industrial paper scrap to produce PEF, sometimes also called pellet fuels.

APC's initiatives in these areas, however, have been hampered by EPA's narrow definition of secondary materials. The definition threatens to preclude these processes from qualifying as recycling and unnecessarily triggers application of various RCRA regulatory requirements without any environmental benefits.

As demonstrated below, EPA's general limitation on the definition of secondary materials that are exempt from being considered solid waste only to materials reprocessed into products other than fuels threaten to impede expanded recycling of plastic resins. Foreclosing production of a fuel from plastics segregated from MSW from qualifying as recycling cannot be justified on statutory or policy grounds because the raw materials from which plastics are produced, principally crude oil or natural gas, are themselves fuels or feedstocks from which fuels are produced.

In a very real sense, plastics are "borrowed energy." If reprocessed into a fuel, the time spent by hydrocarbons in the form of a plastic resin represents a temporary diversion of the hydrocarbons from their primary destiny as a fuel. Reprocessing of discarded products manufactured from plastics into fuels provides an opportunity for the hydrocarbon resources from which the plastic was made to serve a dual function:

- (1) as the product manufactured from the plastic with its attendant use benefits; and
- (2) as a fuel that, but-for the temporary conversion of the hydrocarbons into a plastic resin, would have been the only use for the hydrocarbon resource.

This life-cycle analysis approach to the role of plastics recycling in the hydrocarbon cycle is consistent with the resource conservation and source reduction goals of both RCRA and the P.A.. Moreover, to the extent that conventional recycling technologies may be uneconomic for waste streams comprised of mixed plastic resins, reprocessing of such mixed plastics to produce fuels or

³⁸The hydrocarbons produced by these processes commonly take the form of a liquid similar in many respects to crude oil, one of the most likely markets for which is as a feedstock for petroleum refineries for further processing into highly marketable conventional fuels or other products.

fuel feedstocks should constitute "recycling" because of the consistency of this activity with the resource-conservation and source reduction goals of RCRA and the P.A.. The alternative is likely to result in disposal of these mixed plastics in a landfill -- a consequence with two undesirable side-effects from a resource conservation viewpoint: increased burden on the nation's waste disposal system; and increased consumption of virgin fuel resources in lieu of the fuels that could have been produced from reprocessed plastics.

EPA has recently recognized this principle in its municipal waste combustor rulemaking where the Agency recognized that pyrolytic processing of plastic materials otherwise destined for disposal to produce a refinery (or petrochemical) feedstock constitutes recycling and such facilities should not be regulated as waste incinerators. 60 FR 65382 (Dec. 19, 1995).

The Current Regulatory Definition of "Solid Waste" Hampers Expanded Co-Firing of PEF and Produces Negative Environmental Consequences.

APC is actively investigating the economic and technological viability of expanded use of plastic materials recovered from industrial scrap and/or from municipal solid waste streams to produce PEF. This engineered fuel would be co-fired with coal or other conventional fuel supplies in industrial and utility combustors. Process engineered fuels are designed to satisfy demanding performance criteria enabling them to be co-fired with conventional fossil fuels in combustors where predictability of combustion characteristics is demanded. PEF is produced from a mixture of industrial and/or commercial plastic scrap plus other industrial and/or commercial scrap materials. It can also be produced from plastic and other materials diverted from the household waste stream. Optional binding agents and additives may be used. The proportions of the major plastic and other components can be varied to yield a pellet fuel possessing the desired combustion characteristics. The choice of binding agent(s) and additives is a function of the composition and proportions of the major plastic and other components of the fuel and of the desired properties of the fuel.³⁹

PEF is designed to provide a highly predictable and uniform Btu content, burn rate and flame temperature, all characteristics desirable to managers of industrial and utility combustors. In addition, PEF of a particular composition will yield ash and air emissions with predictable characteristics, contributing to the desirability of PEF as a fuel source. These characteristics distinguish PEF from ordinary refuse derived fuel ("RDF"), the composition and combustion characteristics of which differ and generally vary more widely than is acceptable for PEF. To meet these performance criteria, the streams of materials used to produce PEF may be required to

³⁹PEF may come in pellet form, or as a briquette, cube or in other form.

undergo far greater separation, grading, and processing than is typical for RDF produced from raw or minimally processed municipal solid waste (MSW), further distinguishing PEF.⁴⁰

Expanded co-firing of PEF with other fuels, particularly coal, could provide significant environmental benefits. Combustion of PEF typically produces virtually no SO₂ emission potential. Thus, co-firing up to 30% MSW derived PEF⁴¹ with coal could be an alternative means of achieving SO₂ emission reductions that would not require switching to more costly sources of coal or the need to install expensive scrubbers and other emission control devices.⁴² Additional benefits from co-firing of PEF include the conservation of resources and reduction in the amount of solid waste requiring landfill disposal. Accordingly, expanded co-firing of PEF with coal in industrial and utility boilers is also consistent with the express policy established by Congress in the waste management hierarchy of the P.A.. Therefore, co-firing of PEF produced from plastic scrap and other scrap materials and/or from plastic and other materials diverted from the waste stream may provide twofold environmental benefits: (1) a cost-effective means of achieving SO₂ emission reductions, while (2) reducing the quantity of solid waste requiring disposal.

However, regulatory impediments at the federal level need to be resolved if the full SO₂-emission-reduction-potential and other environmental benefits of PEF are to be realized. The primary, regulatory issue involves RCRA regulation of disposal of ash from co-firing of PEF with coal. Unless resolved, the ash disposal issues threaten to limit the source of materials for production of PEF to **industrial** scrap and foreclose utilization of materials separated or diverted from residential sources to produce PEF. This would prevent the expanded use of PEF from helping solve the Nation's solid waste disposal problem and becoming a creative mechanism for reducing SO₂ emissions.

This impediment is the consequence of the overly-broad definition of solid waste that is, in part, the subject of this rulemaking. Specifically, ash from combustion of coal in industrial and utility boilers may be disposed in landfills that are exempt from RCRA subtitle C regulation because coal

⁴⁰PEF, as a manufactured product with standards and specifications, does not contain certain materials commonly found in MSW, such as batteries and household hazardous wastes. One of APC's ongoing programs is to document the air emissions and ash residue consequences of combustion of PEF.

⁴¹The 30% limitation is the maximum percentage of MSW-derived fuel, including feedstock diverted from the MSW stream, that may be co-fired in an industrial or utility combustor without subjecting the combustor to the stringent regulations applicable to MWCs under section 129 of the CAA, 42, U.S.C. 7429(g)(5).

⁴²Expanded co-firing of PEF with coal in industrial and utility boilers is consistent with the express policy established by Congress in the Clean Air Act. In section 129 of the CAA, 42 U.S.C. § 7429(g)(5), Congress provided that the more stringent air emission standards applicable to municipal waste combustors would not apply to combustion units which co-fire up to 30% MSW or fuels derived from MSW, with conventional fuels such as coal.

combustor ash qualifies as a "Bevill waste" under 42 U.S.C. § 6921(b)(3)(A)(I). Typically, therefore, industrial or utility coal-combustor ash is disposed in landfills meeting the requirements of EPA's Regulations on Criteria for Classification of Solid Waste Disposal Facilities and Practices, 40 CFR Part 257. This result does not change if PEF produced from industrial process scrap materials (plastic and paper) is co-fired with coal -- the resulting PEF/coal-ash can still be disposed in accordance with the Part 257 criteria.⁴³ However, if the PEF is produced from plastic or paper materials *recovered or diverted from MSW*, a different result threatens to occur under EPA's regulations.

Under RCRA, EPA established Criteria for Municipal Solid Waste Landfills, 40 CFR Part 258 (1995). These regulations are far more extensive and costly to comply with than the requirements applicable under Part 257. For example, Part 258 includes disease vector controls (section 258.22), ground water monitoring and corrective action requirements (Subpart E), and closure and post-closure regulations (Subpart F) which make disposal in an MSW and post-closure regulations (Subpart F) which make disposal in an MSW landfill far more expensive than disposal in a landfill subject to Part 257.

Under Part 258, MSW landfills are those which receive "household waste." Household waste is, in turn, defined as "any solid waste ... *derived* from households. . . ." 40 CFR § 258.2 (1995) (emphasis added). The preambles to both EPA's proposed MSW Landfill Criteria rules and to the final rules adopting the MSW Landfill Criteria indicated that landfills which receive "M.C. ash" (undefined) are regulated under Part 258 as MSW landfills, presumably because this ash is a solid waste "derived from" households and therefore is itself a "household waste" rather than an industrial waste.

This interpretation was apparently developed with ash derived from mass-burn incineration of unprocessed MSW, including household wastes potentially containing batteries and small quantities of household hazardous waste that may affect the composition of the resulting ash, in mind. However, this rule threatens to have environmentally counterproductive results where co-firing of PEF is concerned. If PEF is "derived" from MSW, ash from co-firing of PEF with coal would likewise be deemed to be "derived" from MSW and, therefore, subject to EPA's requirement that such ash be disposed in an MSW landfill meeting the requirements of Part 258 rather than disposed in accordance with Part 257. The unintended consequences of this aspect of the rule is made more apparent because combustor ash from co-firing of PEF produced from industrial *waste* or scrap materials may be disposed in compliance with Part 257 and is not subject to the more stringent and costly requirements of Part 258. The implications of this consequence on expanded co-firing of PEF produced in part from plastics derived from MSW (rather than purely from industrial scrap) are heightened because the requirement for disposal under Part 258

⁴³A question may arise as to whether this ash would not enjoy a Bevill waste exclusion and would, therefore, be subject to RCRA subtitle C regulation if the ash exhibited any hazardous characteristic, even though those characteristics were identical to those of "pure" coal-ash qualifying for Bevill waste status.

may apply to *the entirety of the ash produced*. This occurs even though only a small portion of the ash may actually be attributable to plastics from household waste and the great bulk of which would be attributable to the coal with which the PEF is co-fired⁴⁴.

Whatever the merit for such a disposal requirement may be in the context of MWCs which mass-burn largely unprocessed MSW (including household waste that may contain batteries and small quantities of other hazardous household wastes), the same cannot be said for applying more stringent MSW landfill criteria of Part 258 to ash generated by co-firing of PEF with coal *where the PEF is manufactured from materials separated or diverted from MSW, in the course of which batteries and other hazardous materials have been removed from the PEF feedstock*.

EPA's Used Oil Policies Provide Additional Support for Rationalizing the Definition of Solid Waste in Connection with Recycling of Plastic Materials to Produce Fuels.

The NPR implicitly recognizes an additional limitation on the secondary material exclusion which limits the exclusion to process scrap materials that have not previously been disposed. Within the context of the petroleum industry, this limitation is not as constraining as is the case for other materials because of EPA's used oil recycling rules. In particular, section 279. 10(e)(1) is especially important for breaking the solid waste characterization linkage. This section provides:

- (e) Materials derive from *used oil*.
 - (1) Materials that are reclaimed from used oil that are beneficially used and are not burned for energy recovery or used in a manner constituting disposal (e.g., re-refined lubricants) are:
 - (I) Not used oil and thus are not subject to this part, and
 - (ii) Not solid wastes and are thus not subject to the hazardous waste regulations

40 CFR § 279. 10(e) (1995). This rule affords a potential additional precedent for rationalizing the definition of "solid wastes" in other contexts.

The NPR recognizes that the regulatory limitation on the exclusion from the definition of solid waste for secondary materials presents a special problem for the petroleum industry since fuels are that industry's primary product. For that reason, the NPR proposes to expand the existing exclusion for secondary materials to include reprocessing of certain petroleum wastes to produce fuels. The special rules applicable to energy recovery from used oil, 40 CFR §§ 279.60-.66 (1995), reduced the need for the NPR in this DOCKET to address the problems created by the limitation of the secondary materials exclusion to materials that have not been "disposed." APC believes that any more comprehensive re-examination of the definition of solid waste, such as that

⁴⁴The same issue identified in the previous footnote may also arise with respect to the Bevill-waste status of PEF/coal-ash generated by co-firing of MSW-derived PEF.

urged by APC in these Comments, must take into account both the limitation on the definition of secondary materials to materials that have not been disposed and the limitation which excludes reprocessing to produce a fuel.

CONCLUSION

Currently, plastic or paper materials recovered or diverted from household wastes to produce PEF do not qualify as exempt from the definition of solid waste. This occurs because PEF is a fuel and the recycling exclusion that could break the household waste characterization does not extend to reprocessing to produce a fuel. For the same reasons that EPA proposes to expand the definition of secondary materials to include certain petroleum wastes reprocessed in a refinery to produce fuel, EPA should likewise expand the exclusion from the definition of household wastes for plastic materials recycled to produce a refinery feedstock or PEF.

APC supports the principles EPA relied upon in the NPR to preclude oil bearing wastes reprocessed into fuels from being defined as solid wastes. Such wastes would be considered secondary materials and thus exempted from the definition. APC urges EPA to use these same principles to avoid PEF from being considered "household wastes." This would preclude the counterproductive application of Part 258 MSW Landfill Criteria to ash from co-firing of PEF with coal.

Response: The commenter's request is beyond the scope of the current rulemaking. The Agency's proposal, and today's final rule, are limited to determining the regulatory status under RCRA of oil-bearing secondary materials generated by petroleum refining and recovered oils generated by organic chemical manufacturing facilities that are re-inserted into the refining process. The commenter's request that the Agency expand the exclusion from the definition of solid waste for household wastes in the case of plastic materials that are recycled to produce a refinery feedstock or PEF, such that fuels may also be produced from pelletized or pyrolyzed plastics may fit more appropriately within the scope of the Agency's ongoing development of amendments to the current definition of solid waste and the hazardous waste recycling regulations.

In addition, any person may petition the Agency to consider granting a variance from classification as solid waste, on a case-by-case basis, for any specific material and recycling process. Petitioners must follow the provisions for submitting rulemaking petitions provided in 40 CFR Subpart C.