

ENVIRONMENTAL PROTECTION AGENCY

40 CFR Parts 261, 264, 265, 266, and 271

[SWH-FRL 2910-1]

Hazardous Waste Management System; Burning of Waste Fuel and Used Oil Fuel in Boilers and Industrial Furnaces

AGENCY: Environmental Protection Agency.

ACTION: Final rule.

SUMMARY: On January 11, 1985, EPA proposed under Subtitle C of the Resource Conservation and Recovery Act (RCRA) to begin regulation of hazardous waste and used oil burned for energy recovery in boilers and industrial furnaces. The proposal provided administrative controls for those persons who market and burn hazardous waste and used oil fuels. Most of the requirements are being finalized as proposed, but some modifications have been made in response to comment.

The final rule prohibits the burning in nonindustrial boilers of both hazardous waste fuel and of used oil that does not meet specification levels for certain hazardous contaminants and flash point. It also provides administrative controls to keep track of marketing and burning activities. These controls include notification to EPA of waste-as-fuel activities, use of a manifest, or, for used oil, an invoice system for shipments, and recordkeeping. Hazardous waste fuels, including processed or blended hazardous waste fuels, are also subject to storage requirements.

DATES: Effective Dates: The effective dates for the regulations are:

1. *Prohibitions.* The prohibitions on marketing and burning of hazardous waste fuel and off-specification used oil fuel in nonindustrial boilers in §§ 266.31(a) (2) and (b), and 266.41 (a) (2) and (b) are effective on December 9, 1985. To implement and enforce the prohibitions, the following provisions are also effective on December 9, 1985:

(a) The used oil fuel specification in §266.40(e), except for the specification level for lead which is effective May 29, 1986.

(b) The rebuttable presumption of mixing hazardous halogenated wastes with used oil in §266.40(c); and

(c) The used oil analysis requirements and attendant record keeping requirements in §§266.43(b) (1) and (6), and 266.44 (d) and (e);

2. *Storage Controls.* The storage controls for hazardous waste fuels in

§§266.34(c) and 266.35(c) are effective on May 29 1986; and

3. *All Other Provisions.* The effective date for all other provisions of these regulations (e.g., manifests and, for off-specification used oil fuel, invoice requirements for shipments; certification notices to suppliers; and recordkeeping of manifests or invoices, and certification notices) is March 31, 1986. At that time, the manifest or invoice requirements supersede and apply in lieu of the warning label requirements of RCRA section 3004(r).

Compliance Dates: The compliance dates for the regulation are:

1. *Notification.* Marketers and burners of hazardous waste fuel and off-specification used oil fuel are required to notify EPA regarding their waste-as-fuel activities under §§ 266.34(b), 266.35(b), 266.43(b)(3), and 266.44(b). These persons must so notify either EPA or States authorized by EPA to operate the hazardous waste program by January 29, 1986; and

2. *Submission of Part A Permit Applications.* All existing marketers and burners (see provisions in 40 CFR 270.2 and 270.70(a)) who store hazardous waste fuels and who are not currently operating pursuant to interim status (section 3005(e) of RCRA), must file a notification of their storage activities with EPA by January 29, 1986 and submit a Part A permit application to EPA by May 29, 1986.

In addition, marketers and burners already operating pursuant to interim status, but who operate existing hazardous waste fuel storage facilities newly subject to regulation by today's rule, must file a notification of their storage activities with EPA by January 29, 1986 and submit an amended Part A permit application to EPA (with an informational copy to the authorized State) by May 29, 1986.

Explanation for these effective dates and compliance dates is provided in Part Five, section III of this preamble.

ADDRESSES: The official record for this rulemaking is in Room S-212, U.S. Environmental Protection Agency, 401 M St., SW., Washington, DC 20460. The record may be viewed from 9:00 a.m. to 4:00 p.m., Monday through Friday, excluding holidays.

FOR FURTHER INFORMATION CONTACT: RCRA Hotline, toll free, at (800) 424-9346 or (202) 382-3000. For Technical information, contact Robert Holloway, Waste Combustion Program, Waste Management and Economics Division, Office of Solid Waste, WH-565A, U.S. Environmental Protection Agency, 401 M St. SW., Washington, DC 20460. Telephone: (202) 382-7917. Single copies

of the final rule can be obtained by calling the RCRA Hotline number above.

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Today's preamble is organized into five major sections. Part I contains background information that summarizes major provisions of the rule. It also describes how the rule fits into the Agency's strategy for regulating other types of used oil recycling and disposal and for regulating the actual burning of hazardous waste and off-specification used oil in industrial boilers and industrial furnaces. In addition, this section discusses nonregulatory approaches to the problems considered by EPA.

Part II describes when a waste is burned for energy recovery and identifies those hazardous wastes and used oils subject to this regulation. It also discusses the basis for exempting a number of waste-derived fuels and for not exempting others. In addition, it describes the test for distinguishing between used oil and hazardous waste fuels. Further, this section defends the risk assessment used to identify used oil constituents included in the specification, and explains the basis for the final specification. Finally, this section responds to a number of comments regarding allowing the blending of used oil fuel to meet the specification, availability of analytical procedures for used oil, and the regulatory status of combustion residuals.

Part III identifies those boilers and industrial furnaces subject to this regulation and explains the basis for

regulating nonindustrial boilers immediately. It also discusses how nonindustrial boilers can continue to burn hazardous waste under permit standards for hazardous waste incinerators. Finally, this section discusses controls for used oil space heaters and EPA's intent to provide additional controls for these devices in future rulemakings.

Part IV discusses the administrative controls on marketers and burners that provide a tracking system for shipments and otherwise provide for implementation and enforcement of the prohibitions. This section also discusses the basis for applying the storage standards to all hazardous waste fuels and general permit procedures. Finally, this section provides examples of how the rule operates.

Part V discusses how the rules operate immediately, even in states authorized to operate the hazardous waste program. This section also discusses the economic impacts on the regulated community, and particularly, the used oil recycling industry.

PART ONE: BACKGROUND

I. Legal Authority

These regulations are promulgated today under the authority of sections 1006, 2002(a), 3001, 3002, 3003, 3004, 3005, 3007, 3010, and 3014 of the Solid Waste Disposal Act as amended by the Resource Conservation and Recovery Act of 1976, the Quiet Communities Act of 1978, the Solid Waste Disposal Act Amendments of 1980, the Used Oil Recycling Act of 1980, and the Hazardous and Solid Waste Amendments of 1984, 42 U.S.C. 6905, 6912(a), 6921, 6922, 6923, 6924, 6925, 6927, 6930, and 6932.

II. Overview of the Final Rule

With today's rulemaking, EPA begins to regulate those hazardous wastes and used oil that are marketed and burned for energy recovery. The chief purpose of these rules is to prohibit the burning of hazardous waste and contaminated used oil in nonindustrial boilers. The prohibitions are implemented and enforced by placing administrative controls on marketers and burners of these fuels.

Today's rule also establishes a rebuttable presumption that used oil that contains more than 1000 ppm total halogens is mixed with halogenated hazardous waste and, therefore, is a hazardous waste. The presumption may be rebutted by showing the used oil has not been mixed with hazardous wastes (e.g., by showing it does not contain significant levels of halogenated

hazardous constituents). Used oil presumed to be mixed with hazardous waste is subject to regulation as hazardous waste fuel when burned for energy recovery.

In addition, the rule establishes a specification for used oil fuel (i.e., used oil not mixed with hazardous waste) that is essentially exempt from all regulation and may be burned in nonindustrial boilers. The specification sets allowable levels for designated toxic constituents, flash point, and total halogens.

Burning of hazardous waste fuel and off-specification used oil fuel in industrial and utility boilers and industrial furnaces continues to be exempt from regulation. The Agency intends to regulate such burning under permit standards to be proposed in 1986, as discussed below.

Administrative requirements such as notification, receipt of identification number, and compliance with manifest or invoice (for off-specification used oil fuel) systems are being promulgated today to enforce the prohibitions on burning of hazardous waste fuel and off-specification used oil in nonindustrial boilers.

Today's rule also applies RCRA hazardous waste storage standards to facilities storing hazardous waste fuels. Such waste-derived fuels have heretofore been exempt (on an interim basis) from storage standards when produced by a person other than the generator. See §§ 266.30(a) and 266.34(c), 50 FR at 667 (January 4, 1985).

Several modifications have been made to the proposed rule in response to comments. These include: the rebuttable presumption of mixing hazardous halogenated solvents with used oil is based on a total halogen level of 1000 ppm rather than a total chlorine level of 4000 ppm; a specification for total halogens is added to the used oil fuel specification at a level of 4000 ppm; and the effective date of the lead specification level (set at 100 ppm) is deferred for six months, while the other specification parameters are effective ten days after promulgation.

The Agency is also developing two other rulemakings that will regulate the blending and burning of used oil and hazardous waste for energy recovery. EPA will soon be proposing a rule that would list used oil as hazardous waste and establish special management standards for recycled oil, including oil burned for energy recovery. Those rules would go beyond today's final rule by providing standards for used oil generators and collectors, and by regulating the transportation and storage of used oil. Today's final rule

places administrative controls only on marketers and burners of used oil burned for energy recovery, and does not regulate the transportation and storage of used oil.

In 1986, we are scheduled to propose permit standards for the actual burning of hazardous waste and used oil in boilers and industrial furnaces. Under those permit standards, hazardous waste could be burned in any boiler or industrial furnace, irrespective of purpose (i.e., hazardous waste could be burned for energy recovery, material recovery, or destruction).¹ Burning of contaminated (i.e., off-specification) used oil would be permitted under special permit-by-rule standards.

III. Nonregulatory Alternatives

EPA carefully examined a number of nonregulatory strategies for managing used oil, but failed to identify any that would be as protective as these regulations. See 50 FR at 1687 (January 11, 1985). The most promising approach considered was a tax rebate system. Under this system, a tax on virgin lube oil would be rebated to "acceptable" users of used oil (e.g., rerefiners, "acceptable" burners). We explained in the proposal, however, why a tax rebate system would be ineffective in protecting human health and the environment and impractical to implement.

In response to EPA's discussion on nonregulatory alternatives, one commenter suggested a program whereby "do-it-yourself" oil changers would voluntarily bring their used oil to gas stations to be sold to rerefiners. While the Agency is strongly in favor of rerefining, EPA's objective in promulgating today's regulations is to begin to regulate used oil management to ensure that it is managed in an environmentally acceptable manner. See RCRA section 3014. This provision does not authorize EPA to determine preferential recycling approaches and to direct used oil to those approaches, provided alternative types of recycling are conducted in a manner that protects human health and the environment.²

¹ Hazardous waste may be burned for destruction, previously and under today's rule, only under RCRA hazardous waste incinerator standards found in 40 CFR Parts 264 and 265.

² We believe that today's regulations will, in fact, result in a substantial increase in used oil rerefining. Used oil that does not meet the specification and that is currently burned for energy recovery in nonindustrial boilers must either be blended to meet the specification or diverted to industrial or utility boilers or industrial furnaces. We expect that a substantial amount of this oil will find its way to rerefiners. We note also that EPA anticipates proposing in Spring 1986 Federal procurement

PART TWO: MATERIALS THAT ARE REGULATED

I. Overview

Today's rules apply to hazardous waste and used oil burned for energy recovery. When so recycled, these wastes, and materials that are produced from or otherwise contain these wastes as a result of blending, processing, or other treatment, are termed hazardous waste fuel or used oil fuel. These terms are defined in this section. We also discuss how to determine when a waste is burned for energy recovery and the applicability of these rules to burning for materials recovery. In addition, we discuss when combustion residuals from boilers and industrial furnaces burning hazardous waste and used oil are subject to regulation as hazardous waste. Finally, we discuss, in response to comments, our plans to give special consideration to regulating the on-site burning of *de minimis* quantities of hazardous waste fuel and off-specification used oil in the development of permit standards for boilers and industrial furnaces scheduled to be proposed in early 1986.

In defining "hazardous waste fuel", we discuss the basis for exempting certain hazardous waste fuels from these regulations—petroleum refinery fuel products derived from hazardous waste produced by refining and ancillary operations, and coke and coal tar derived from hazardous waste produced by coal coking operations in the iron and steel industry—and why we are rejecting arguments by some commenters to exempt or exclude other hazardous waste fuels.

In defining "used oil fuel", we define used oil and explain the difference between used oil and "oily waste." In addition, we discuss the specification for used oil that may be burned in nonindustrial boilers, and explain why we added total halogens to the proposed specification at a level of 4,000 ppm and why PCBs were deleted from the proposed specification. We also respond to comments regarding why other parameters were not added to the specification and why certain specification levels were selected. We also discuss how to distinguish between hazardous waste fuel and used oil when the used oil may have been mixed with hazardous halogenated solvents, when used oil may be mixed with small quantity generator hazardous waste, and when used oil exhibits a characteristic of hazardous waste. Finally, we respond to comments on

guidelines under authority of RCRA Section 6002 regarding procurement of recycled lubricating oils.

allowing blending of used oil to meet the specification, banning all burning of used oil in nonindustrial boilers, and the availability of analytical testing procedures to determine conformance with the specification.

II. Determining When a Waste is Burned for Energy Recovery

Today's regulations apply to hazardous waste and used oil burned for "energy recovery." This limitation raises two questions: how to distinguish burning for energy recovery from burning for destruction, and determining how to regulate if burning is conducted to recover materials.

In the January 11, 1985 proposal (see 50 FR at 1690), we explained that the Agency had already addressed what is meant by burning for legitimate energy recovery. We explained that burning of low energy hazardous waste as alleged fuel is not considered to be burning for legitimate energy recovery, even if the low energy hazardous waste is blended with high energy materials and then burned. Thus, boilers and industrial furnaces burning low energy wastes (i.e., having less than 5,000–8,000 Btu/lb heating value, as generated)³ could be considered to be incinerating them, and so be subject to regulation as hazardous waste incinerators.

Although today's rule prohibits the burning of hazardous waste fuel and off-specification used oil fuel in nonindustrial boilers, the principles of the statement remain in force. We have indicated, however, that if we were to apply the Enforcement Policy Statement to industrial (and utility) boilers and industrial furnaces, we would seek to enforce in situations where low energy hazardous waste adulteration was deliberate and massive. This is because we have said that larger industrial boilers are more efficient at recovering energy and so could be deemed, more often, to be burning lower energy wastes legitimately. (See 48 FR at 11159 (March 16, 1983).)

A second question is the scope of these regulations when burning involves material recovery. Normally, the purpose for which a material is burned makes no difference in environmental effect. Hence, EPA envisions an ultimate regulatory scheme where regulation of burning applies (as may be necessary to protect human health and the environment) regardless of purpose in all situations within the Agency's jurisdiction. We now address this

³ See Statement of Enforcement Policy issued January 18, 1983 (printed at 48 FR 11157 (March 16, 1983)).

question as it applies to burning in boilers, burning for a dual purpose in industrial furnaces, and burning in industrial furnaces solely for material recovery.

We explained in the January 11, 1985 preamble that since boilers, by definition, have as their primary purpose the recovery of energy, if materials are also recovered, this recovery is ancillary to the purpose of the unit, and so does not alter the regulatory status of the activity. (See also definition of "boiler" in 50 FR at 661 (January 4, 1985).) We also explained that the regulations apply when an industrial furnace burns the same material for both energy and material recovery (e.g., when blast furnaces burn organic wastes to recover both energy and carbon values).

Today's regulations, however, do not apply to hazardous wastes burned in industrial furnaces solely for material recovery. In large part, this is because the primary focus of today's regulations is on waste burning in nonindustrial settings (apartment buildings, hospitals, etc.). In addition, as discussed in the January 4, 1985 preamble to the definition of solid waste and the preamble to the proposed rule in this proceeding, there are certain situations where control of burning for material recovery in industrial furnaces could lead to an impermissible intrusion into the production process and so be beyond EPA's authority under RCRA. See 50 FR 630, 1690. These situations are limited, and involve circumstances where the secondary material being burned is indigenous to the process in which the industrial furnace is used, for example, because the secondary material contains the same types and concentrations of constituents (particularly hazardous constituents listed in Appendix VIII of Part 261) as the raw materials normally burned in the industrial furnace. *Id.*⁴ In EPA's forthcoming regulations establishing permit standards for burning in boilers and industrial furnaces, EPA will establish permit standards for industrial furnaces burning for material recovery (as well as for energy recovery or destruction) in all situations not beyond EPA's regulatory authority.

⁴ An example could be a smelting furnace resmelting one of its own listed process residues. In such situations, the secondary material would not be a solid waste at the time of burning in the industrial furnace even though it is classified as a solid waste for purposes of storage prior to burning. Note further that the derived-from rule (§ 261.3(c)(2)(i)) thus would not apply to wastes generated by the burning.

III. Hazardous Waste Subject to Regulation

A. Definition of Hazardous Waste Fuel

1. *Hazardous Waste Fuel.* With certain exceptions discussed below, these rules apply to hazardous wastes (and fuels that are produced from or otherwise contain hazardous waste as a result of processing, blending, or other treatment), that are burned for energy recovery in a boiler or industrial furnace that is not operating under RCRA standards for hazardous waste incinerators.⁵ Such fuel is termed "hazardous waste fuel".⁶

Certain commenters questioned whether these rules (and by extension RCRA section 3004(q)) would apply when energy recovery from burning hazardous wastes is merely incidental, or when energy recovery is not the principal purpose of burning. Today's rules apply where energy recovery is significant or purposeful. The Agency stated as long ago as 1983 in a Statement of Enforcement Policy (48 FR 11159 (March 16, 1983)) that ordinarily burning low energy (less than 5,000 Btu lb.) hazardous waste is not considered to involve energy recovery, in spite of incidental energy release. See also 50 FR at 630 (January 4, 1985), and 50 FR 1690

⁵ If a waste that is hazardous only because it exhibits a characteristic is used as an ingredient in a fuel, and the waste-derived fuel does not exhibit a characteristic, the waste-derived fuel would not be considered to be a hazardous waste. (See § 261.3(d)(1).)

⁶ Several commenters suggested that "hazardous waste fuel" is an inappropriate term to use to describe these fuels since it creates a stigma that will discourage the use of the fuel because of the perceived increased risks associated with hazardous waste. Commenters believed that the negative association of hazardous waste with the fuel would cause many users to stop burning such fuels and, therefore, depress the business of those marketing these fuels, particularly used oil mixed with hazardous waste. Several commenters suggested that the Agency use a different term with less negative connotation (e.g., "regulated" or "RCRA-regulated fuel").

We acknowledge that we have previously (see § 261.6(a)(1), 50 FR 665 (January 4, 1985)) termed hazardous wastes that are recycled as "recyclable materials". We continue to believe, however, that hazardous waste burned for energy recovery should be termed "hazardous waste fuel" for a number of reasons. The warning label provision of section 3004(r) of the Hazardous and Solid Waste Amendments of 1984 (HSWA) requires that an invoice or bill of sale for hazardous waste fuel bear a statement that the fuel contains hazardous waste. Although that provision is superseded by the manifest requirement promulgated today, we believe that Congress intended that EPA controls for such fuels make it clear that the fuels are, or contain, hazardous waste. In addition, although the January 4, 1985 promulgation termed recycled hazardous waste as "recyclable materials", that rule also provided basic controls for hazardous waste burned for energy recovery (expanded by today's rule) and, in fact, first defined such waste as "hazardous waste fuel". See Subpart D of Part 266, 50 FR 667.

(January 11, 1985) reiterating this principle. Thus, if boilers or industrial furnaces burn hazardous wastes containing organic constituents these rules would not invariably apply.

These rules do apply, however, if hazardous wastes (*viz.* any hazardous secondary material (see § 261.2(c)(2), January 4, 1985 and August 20, 1985)) are burned in industrial furnaces or boilers both to recover energy (i.e., to provide substantial, useful heat energy) and for some other recycling purpose, even if energy recovery is not the predominant purpose of the burning. EPA already has taken this position in the rules codifying section 3004(q) of RCRA. 50 FR 28724 (July 15, 1985). In addition, as noted above, the Agency is moving away from tests based on purpose because the purpose of burning normally is unrelated to its environmental effect. Indeed, the argument that these rules (as well as RCRA section 3004(q)) should apply only where energy recovery is the principal purpose of burning would resurrect the discredited "primary purpose" test formerly used by EPA to distinguish recycling from incineration. As both the Agency and the Congress have stated, this standard was largely irrelevant for evaluating environmental effects of burning, and proved exceedingly difficult to administer. See 48 FR 14483 (April 4, 1983); S. Rep. No. 284, 98th Cong. 1st Sess. at 36 (1983). Nor is section 3004(q) of RCRA limited to situations where energy is the principal purpose of burning, the plain language of the statute applying to hazardous waste burned "for purposes of energy recovery" (RCRA section 3004(q)(1)(B)), or "burned to recover useful energy" (RCRA section 3004(q)(2)(B)). The statute also classifies hazardous waste-derived petroleum coke as a section 3004(q) fuel (see RCRA section 3004(q)(2)(A)), even though petroleum coke is burned for several purposes, only one of which (and not necessarily the most important) is energy recovery. See S. Rep. No. 284, *supra* at 39.⁷

Consequently, these rules apply where hazardous wastes are burned in boilers or industrial furnaces and provide substantial, useful heat energy. Such burning is considered to involve a hazardous waste fuel within the meaning of RCRA section 3004(q).

2. Eliminating Certain Existing Regulatory Exemptions for Hazardous Waste Fuels. These rules expand the

⁷ Section 3004(q) also applies on its face to cement kilns burning hazardous waste even though these industrial furnaces do not burn wastes for the sole purpose of energy recovery. RCRA section 3004(q)(2)(C).

universe of hazardous waste subject to RCRA regulation when burned for energy recovery by removing two exemptions. Although the Agency has jurisdiction to regulate under RCRA all spent materials, sludges, by-products, and § 261.33 commercial chemical products, all fuels to which these materials are added, and all fuels derived from or otherwise containing these materials when they are transported, stored, and burned for energy recovery (see 50 FR 630 (January 4, 1985), and 50 FR 33541 (August 20, 1985)), EPA currently regulates the storage and transportation of hazardous waste burned for energy recovery only on a limited basis. Thus, the following hazardous waste fuels are provisionally exempt: (1) Spent materials and by-products exhibiting a characteristic of hazardous waste; and (2) hazardous waste fuels produced from hazardous waste by blending or other treatment by a person who neither generated the waste nor burns the fuel. (See §§ 266.30 and 266.36 in 50 FR 667 (January 4, 1985).) Under the first exemption, only listed wastes and sludges (both listed and characteristic) are currently regulated.⁸ Thus, nonsludge, characteristic-only wastes are currently exempt. Under the second exemption, waste-derived fuels produced by off-site, third-party marketers are currently exempt. Today's rules remove both of these exemptions so that the transportation, storage, and other controls apply to *all* hazardous waste fuels.

We have also explained why neither exemption is environmentally justifiable. See 50 FR 1705 (January 11, 1985). There is no general distinction between potential adverse effects of burning listed or characteristic hazardous wastes. Nor is there any general distinction between hazardous waste fuels marketed directly by generators or by marketers unrelated to those generators. These exemptions, in fact, have always been provisional, and exist because of the Agency's initial uncertainty (in 1980) about an appropriate regulatory regime for recycled wastes. *Id.* Although the Agency promulgated a regulatory regime for many recycling activities on January 4, 1985, we decided to remove these exemptions in today's rulemaking dealing solely with burning for energy

recovery rather than in the January 4, rulemaking to avoid confusion or disruption that would result from extensive, piecemeal changes of the current (i.e., May 19, 1980) rules. See 50 FR 632 (January 4, 1985).

B. Consideration of Exemption for Ignitable-Only Hazardous Waste

In the proposed rule, we solicited comments on whether wastes that are hazardous only because of their ignitability should be exempted from the prohibition on burning in nonindustrial boilers. (See 50 FR 1701 (January 11, 1985).) We also asked if these "ignitable-only" wastes should be exempt from all controls (including storage and transportation), or just the prohibition on burning in nonindustrial boilers.

We reasoned that burning such wastes would not pose any greater danger of fires or explosions than commercial fuel oils if the minimum flash point was limited to 100° F. However, we also noted that ignitable-only wastes may actually contain significant levels of toxic compounds because the Agency has not completed its listing of wastes that are hazardous because of their toxicity. Therefore, we indicated that as a part of any exemption scheme those toxic compounds of concern must be identified, acceptable concentrations must be determined, analysis procedures must be prescribed, and recordkeeping procedures must be required.

For a number of reasons, today's rule does not provide an exemption for ignitable-only hazardous waste. Although commenters acknowledged the need to ensure that the waste does not contain significant levels of toxic constituents, they were not helpful in suggesting a rational approach for setting safe levels for the constituents or an implementation scheme that would avoid the expense of analyzing shipments for virtually every compound on Appendix VIII of Part 261. Several commenters suggested that the presence of Appendix VIII compounds that occur naturally in virgin fuel (e.g., toluene, xylene, benzene, metals) should be considered in setting acceptable levels for an exemption. For "non-fuel" compounds, several commenters suggested a maximum level of 100 ppm while one commenter suggested 1 ppm, and another suggested that acceptable levels be based on assessment of risk. As we indicated in the proposal, 100 ppm may be an appropriate level for some constituents while a lower level, perhaps 1 ppm, would be appropriate for the more toxic constituents.

Commenters provided no insight on how acceptable levels would be assigned to the various compounds of concern. Moreover, even if it were assumed that acceptable levels for all Appendix VIII compounds could be determined, commenters did not focus on the analytical burden they would face to ensure that shipments met the conditional exemption.

We have concluded that a conditional exemption would be very difficult to develop and very expensive to the regulated community to implement. Moreover, it is not clear that a substantial amount of hazardous waste would even be eligible for an exemption conditioned on the presence of only very low levels of the Appendix VIII constituents not normally present in virgin fuel oil.

We note, however, that we are considering whether special permit standards would be appropriate for ignitable-only wastes under the Phase II permit standards for boilers and industrial furnaces to be proposed in 1986. Such special standards could be fashioned after the current standards for burning ignitable-only waste in incinerators. See §§ 264.340(b) and (c). Under the incinerator standards, site-specific factors such as quantity of waste and location of the facility may be used to determine if measurable, but low, levels of Appendix VIII compounds may pose a hazard to public health or the environment. Wastes found to be ignitable-only with insignificant levels of Appendix VIII compounds are exempt from the performance and operating standards for incinerators. Although waste analysis is required, the analytic burden is minimized by considering only the Appendix VIII compounds that could reasonably be expected to be found in the waste. Thus, consideration of an exemption on a case-by-case basis as part of a permit proceeding provides a rational approach to consider the significance of low levels of Appendix VIII compounds and allows for cost-effective (i.e., limited) waste analyses.

C. Regulation of Fuels Derived From Petroleum Refinery Waste

1. *Petroleum Refineries that Reintroduce Hazardous Wastes From Petroleum Refining, Production, and Transportation to the Refining Process.* EPA solicited comment on the status of fuels from petroleum refineries that reintroduced oil-bearing hazardous wastes from petroleum refining, production and transportation to the refining process. See 50 FR 1689-1690. Although we proposed to define these materials as hazardous waste fuel, we

⁸ Listed commercial chemical products, however, are not solid wastes (or hazardous wastes) when burned for energy recovery if they are themselves fuels or normal components of commercial fuels. See 40 CFR 261.33, 50 FR 28744 (July 15, 1985). An example is pipeline interface generated from the transport of toluene, when the interface is burned for energy recovery.

solicited comment on the extent to which the hazardous waste contaminants are removed by the refining process, or are so diluted by the process that they do not significantly increase the level of contaminants present in fuel. *Id.* If this is the case, EPA believes it has the ultimate authority to exclude the derived fuels from being solid wastes, since the more waste-derived fuels from a process are like products from the same process produced by virgin materials, the less likely EPA is to classify the waste-derived fuel as a waste. (It is clear, however, that EPA possesses jurisdiction under RCRA to make these determinations. See RCRA section 3004(r).) The American Petroleum Institute (API) submitted relevant data on these points which EPA noticed for public comment on June 26, 1985. 50 FR 26389.

These data, though limited, seem to indicate that at large, sophisticated refineries, these recycling practices do not significantly contribute to metals levels in the refined fuels. However, EPA cannot as yet determine whether this is due to the refining process itself, or whether the amounts of waste reintroduced into the process are so low as to be diluted. In particular, API's data indicated that less than one percent of hazardous waste (*i.e.*, chiefly oil reclaimed from hazardous wastes) is reintroduced into the refining stream at a crude petroleum refinery. Based on these data, they show that the increase in metals content in the final product is minimal. For example, cadmium levels increased from 0.11 ppm to 0.12 ppm while lead levels increased from 0.89 ppm to 0.91 ppm. (See Table 3, p. 16 of API's submission on comments on reopening of comment period dated June 12, 1985.) Thus, when only a small percentage of waste is reintroduced back into the refining process, it does not appear to appreciably effect metals levels in the final refined products. However, the Agency is concerned that if contaminants are simply being diluted, then if there were a significant increase in the amount of hazardous waste feed, resulting fuels could be significantly contaminated since the wastes being reintroduced contain concentrations of toxic metals far greater than those in most crude oils. In fact, the Agency has some preliminary data from its petroleum refining industry study which indicates that for at least some metals—arsenic and cadmium—the distillation process does not necessarily remove the metals from the fuels.

The Agency is considering an approach which would indicate that if the amount of hazardous waste that was reintroduced back into the petroleum

refinery was minimal (*i.e.*, less than one percent), the fuel produced at the refinery would be excluded (*i.e.*, would not be a solid waste). In the short term there are certain implementation difficulties with this idea, particularly the difficulties of determining compliance for each batch since refining is a continuous process. The Agency is continuing to evaluate this possibility, however.

Rather, EPA believes that more time is needed to study these questions. In particular, EPA intends to examine further the question of whether removal actually occurs as a result of refining. This would have bearing not only on the question of whether regulation is justified, but also on the question of whether resulting fuels should be classified as products or as wastes. EPA particularly wishes to examine the extent to which these wastes can influence the composition of fuels from smaller, less sophisticated refineries which may remove fewer metals from the wastes, and also may use a higher percentage of wastes as feedstocks.

At present, however, since there is no persuasive evidence that reintroduction of these indigenous hazardous wastes into the refining process actually contributes significant concentrations of metals to the resulting fuels, EPA is leaving in place the existing exemption for such fuels contained in § 261.6(a)(3)(v).⁹ See 50 FR 33542 (August 20, 1985). Another factor influencing continuation of the exemption is that fuels produced only from virgin crude oil can have higher levels of toxic metals than fuels partially produced from these hazardous wastes.¹⁰ See 50 FR 1695 (January 11, 1985).

Thus, fuels produced from refining of indigenous, oil-bearing hazardous wastes at a petroleum refining facility will continue to be exempt. By "petroleum refining facility" EPA means to include any facility that produces hydrocarbon products (*e.g.* gasoline, kerosene, distillate fuel oils, residual fuel oil, etc.) from crude oil or its

⁹As explained in detail in the preamble to the proposed rule, this provision does *not* exempt the hazardous wastes before they are reintroduced into the refining process (50 FR at 1689).

¹⁰EPA also considers these waste-derived fuels to remain petroleum, rather than hazardous substances, for purposes of the comprehensive Environmental Response, Compensation, and Liability Act (CERCLA). See CERCLA section 101(14) (excluding petroleum from definition of hazardous substances). In light of the widespread nature of these recycling practices, to do otherwise would potentially read the exclusion for petroleum out of CERCLA. In addition, there is no indication that Congress meant for these waste-derived fuels to be considered hazardous substances when it added sections 3004(r) (2) and (3) to RCRA (which provisions indicate that such fuels remain hazardous wastes).

immediate fractionation products through straight distillation of crude oil or other intermediate products (*e.g.*, gas oils, naphtha, etc.) (This is the definition of the Petroleum Refining Standard Industrial Classification (SIC 2911)). For these hazardous wastes to be considered to be refined, they must be inserted into a part of the process designed to remove contaminants in the normal operation of the refining process. See 50 FR 28725 (July 15, 1985). As we explained there, this would mean insertion of the wastes prior to distillation or catalytic cracking. (The distillation process is used to split the feedstock into fractions based on the various boiling points of the feedstock components. The data submitted by API indicates that most of the metals concentrate in the heavier (high boiling point) fractions. Many times these fractions are not used for fuels but rather to produce asphalt or petroleum coke. Therefore, there is a significant probability of contaminant removal from many fuel fractions if there is distillation in the process.) In addition, without distillation or insertion of the wastes into another part of the process designed to remove contaminants, there will be no removal of contaminants at all, and Congress regarded some removal as one of the prerequisites for exemption. See RCRA sections 3004 (r)(2)(B) and (r)(3)(A), and 50 FR at 28725 (July 15, 1985). Consequently, if a facility takes an oil-bearing hazardous waste and processes it without distillation to produce a fuel, the resulting fuel is *not* covered by this exemption and so could be subject to regulation. Similarly, if a refinery inserts the waste into a part of the process after distillation or catalytic cracking (as explained above), resulting fuels are *not* automatically exempt.¹¹

Under EPA's proposal, such fuels (*i.e.*, fuels derived from petroleum refining wastes which fuels are produced by processes *not* using distillation, or the fuels resulting when petroleum refining waste are inserted into the refining process after points at which any contaminant removal can occur) were classified as hazardous waste fuel (assuming they were derived from listed refinery wastes, or exhibit a hazardous

¹¹Incidentally, certain used oil-based processes produce used oil fuel from processes that use distillation. These processes are not refining operations (in spite of the use of distillation) because they do not produce fuels *from crude oil*. Fuels from such a process thus are not automatically exempt from regulation, but would be if they meet the specification for used oil fuel. If this type of processor should also use oilbearing petroleum refining hazardous waste as a feed material, the resulting fuels would be exempt if they meet the used oil fuel specification, since the operation is comparable to those described in the following paragraph in the text.

waste characteristic) subject to all the regulatory requirements for such fuels. EPA has modified this position in the final rule so that such fuels are *not* subject to regulation if they meet the same specification applied to fuels produced from processing used oil—a very similar operation. (In fact, the Agency is aware of operations that blend petroleum refining hazardous wastes and used oil.) We have added an exemption to § 261.6(a)(3) to make this point. This will ensure that the resulting fuels will pose no greater environmental hazard than the virgin fuels that would be burned in their place.¹² ¹³ EPA thus believes this is the proper means of controlling this potential problem. If the waste-derived fuel should exceed the fuel specification, it would be subject to all of the rules applicable to hazardous waste fuels. (As a hazardous waste fuel which is not completely derived from used oil, the fuel is not eligible to be regulated under the special standards reserved for used oil. See RCRA section 3014. This position is consistent with the one taken in the proposed rule.)

2. Oil Recovered from Petroleum Refining Hazardous Wastes that is Returned to the Refining Process. A related question is the status of oil that is recovered from hazardous wastes generated during normal petroleum refining, production, or transportation practices. The recovered oil is usually returned to the refining process as a substitute for crude oil but can also be burned directly as a fuel. Under amended § 261.3(c)(2) (see 50 FR 664 (January 4, 1985) and 50 FR (August 20, 1985)), such oil remains in the hazardous waste system (if it is to be used to produce fuel or is burned for energy recovery). EPA solicited additional comment on this issue on May 13, 1985 (50 FR 19956).

EPA is not yet able to amend the rules to state under what circumstances reclaimed oil might not be considered to be a waste. This is largely because

¹² See preamble section IV-C of Part Two for discussion on basing the used oil fuel specification levels for metals on levels found in virgin fuel oils. It should be noted that the specification level for lead is higher than levels found in virgin fuel. EPA is subjecting nonexempt fuels derived from petroleum industry wastes to the higher lead specification, at least as an interim measure, because many of the facilities potentially affected also process used oil. For the moment, therefore, EPA will apply all of the used oil fuel specification to the resulting fuels. The Agency, however, is studying this question further in preparing its Phase II rules.

¹³ EPA could not normally apply this logic to fuels derived from hazardous wastes because the types of hazardous constituents potentially present are much more numerous, and could be present in much higher concentrations, than those found in oil-bearing wastes from petroleum refining, production, and transportation (or in used oil). See 50 FR 1691 n.14. Hazardous constituents in other wastes also would not correspond to hazardous contaminants in virgin fuels.

available data (which are limited) show that the oil can contain higher metals levels than virgin fuel oil.¹⁴ EPA thus needs to study further the particular means of oil recovery from these wastes, and the composition of the resulting oils in relation to composition of virgin fuels.¹⁵

EPA is prepared, however, to continue the existing exemption (in § 261.6(a)(3)(vi)) for these recovered oils, and for fuels from petroleum refining which are partially produced from these recovered oils. The data submitted by API appear to show that the recovered oil does not contribute significant levels of metals to the refined fuels. (The Agency is continuing to investigate whether this is due to dilution or removal incident to refining.) Nor does the Agency believe it appropriate at this time to regulate the recovered oil prior to reintroduction to the refining process in light of the incomplete characterization of the oil's composition, the likelihood of similar handling practices for recovered oil as for crude oil, and the possibility of disproportionate impact of such regulation on off-site facilities recovering oil from these wastes vis-a-vis refineries recovering oil from their own wastes (which recovered oil is almost invariably piped directly back to the refining process and so would not be regulated under current EPA rules.¹⁶

However, if the recovered oil is to be burned directly as a fuel, EPA has determined that the oil should be regulated as a hazardous waste fuel unless the oil meets the specification for used oil fuel. The situation is exactly analogous to hazardous waste fuels

¹⁴ See comments from American Petroleum Institute (Table 3, p. 16) dated June 12, 1985.

¹⁵ EPA solicited comment on the applicability of the variance for closed-loop processes contained in amended § 260.31(b). It is possible that a parallel variance (to be applied on an industry-wide basis if appropriate) for materials that are reclaimed but must be reclaimed further before final recovery (§ 260.31(c)) is appropriate. The Agency also is continuing to assess the relationship of these situations to RCRA section 3004(r) (2) and (3). Other comments to the Agency's notice (particularly those on the existing regulatory status of recovered oil and on whether there is any difference in fuels "produced from" or "containing" hazardous waste) were answered in the Agency's August 20 notice. See 50 FR 33541.

¹⁶ As noted above, hazardous wastes from which oil is recovered are regulated until the point of oil recovery. Distinguishing between recovered oil and listed hazardous wastes (i.e., API Separator Sludge, Slop Oil Emulsion Solids, etc.) will not always be an easy decision. In making this distinction, the Agency will consider a number of factors, including water content, solids content, and, in some cases, metals content. Thus, wastes with high water or solids content will generally be perceived as hazardous wastes subject to regulation and not as recovered oil. For example, if an oily waste is sent off-site to be dewatered, this material would not be considered a recovered oil (exempt from regulation) but a waste subject to regulation, if this material were also hazardous.

produced by processing (rather than refining) these oil-bearing wastes. We have explained above why it is appropriate to apply the fuel specification to these waste-derived fuels, rather than (as at proposal) to regulate them as hazardous waste fuels regardless of composition. We also are including an exemption in § 261.6(a)(3) for recovered oil burned directly that meets the used oil fuel specification.

4. Statutory, Conditioned Exemption of Coke Derived from Indigenous Petroleum Refinery Wastes. The petroleum refining industry also produces coke from refinery process wastes. If the coke is produced from or contains listed hazardous waste, the coke produced from such wastes is a hazardous waste. The Hazardous and Solid Waste Amendments (HSWA) of 1984, however, exempted from regulation as hazardous waste fuel such-derived coke provided: (1) The Hazardous waste used to produce the coke is indigenous to petroleum refining; (2) the coke is produced at the same facility that generated the hazardous waste; and (3) the coke does not exhibit a characteristic of hazardous waste. (See section 3004(q)(2)(A). This statutory exemption is codified at § 266.31(b)(2)¹⁷ and is redesignated in today's rule as § 266.1(a)(3)(ix).

D. Exemption of Coke and Coal Tar Produced From Coal Tar Decanter Sludge by the Iron and Steel Industry

EPA indicated in the proposed rule that it would consider granting an exemption to coke produced from coal tar decanter sludge [EPA Hazardous Waste K087] if commenters provided data that demonstrate that hazardous contaminant levels in the coke are not appreciably increased by recycling the tar sludge. (See 50 FR 1690.) Today's rule exempts such waste-derived coke (a hazardous waste fuel even though not burned exclusively or necessarily primarily for energy recovery (see section III.A.1 above)) from regulation as hazardous waste and also excludes coal tar produced from coal tar decanter sludge.

Tar decanter sludge is generated during the recovery of a coal tar by-product produced during the production of coke from coal. The sludge is listed as hazardous waste because of high levels (about 1%) of phenol and naphthalene. The sludge is frequently recycled by mixing it with coal before it is charged to a coke oven to produce coke. The coke product is typically used as a fuel in steel blast furnaces. In addition, the sludge is sometimes mixed back into the coal tar by-product which is also

¹⁷ See 50 FR 26751 (July 15, 1985).

frequently used as a fuel. Both of these waste-derived fuels are exempted from today's rules for the reasons discussed below.

The American Iron and Steel Institute (AISI) and Koppers Company, Inc. provided comments explaining the coking operation and how tar decanter sludge is recycled. In particular, when the sludge is mixed with coal before it is charged to the coke oven, the hazardous constituents in the sludge (phenol and naphthalene) are driven off during the coking process along with other volatile compounds formed by the thermal cracking of organic compounds in the coal. These volatile compounds are condensed to recover a coal tar by-product. The tar decanter sludge is produced during recovery of the coal tar and consists of coal tar and "inert carbonaceous material carried over from the coking operation". (See AISI comments, page 3.) AISI and Koppers provided analyses of the waste-derived coke product indicating that phenol and naphthalene were not detected in the coke at detectable levels ranging from less than 1 ppm to as high as 20 ppm.

We conclude that phenol and naphthalene are not present in such coke at levels that would pose substantial risk to human health and the environment, particularly considering that the coke is burned as fuel and that any trace levels of these compounds would be readily combustible.

AISI also indicates that the same principle (i.e., if recycling a waste does not increase levels of toxic constituents in a waste-derived product, the product should be exempt from regulation) should be applied to coal tar mixed with tar decanter sludge. AISI states that when tar decanter sludge is mixed back into the coal tar (after passing through a ball mill to produce a uniform material), the phenol and naphthalene content of the coal tar by-product is not significantly affected. AISI argues that coal tar itself contains significant levels of these hazardous compounds (typically 1% phenol and 10% naphthalene), and that tar decanter sludge is simply a mixture of coal tar and carbonaceous material. Further, the sludge is mixed with the coal tar in small volumes representing about 1% of the coal tar by-product. We, therefore, conclude that such recycling does not increase levels of phenol and naphthalene in the coal tar by-product, and the coal tar should be exempt from today's rules when burned for energy recovery.

These exemptions apply only to the waste-derived products, and only when derived from tar decanter sludge. Thus, tar decanter sludge is subject to full

RCRA regulation prior to recycling, and the exemption does not extend to coke or coal tar derived from hazardous waste (e.g., spent solvents) other than tar decanter sludge designated as EPA Hazardous Waste KO87.

E. Status of Gas Recovered from Landfills

We are indicating that today's final rules on hazardous waste fuels do not apply to gas recovered from landfills that is burned for energy recovery in boilers or industrial furnaces. Although it is clear that EPA has authority to regulate gaseous emissions from hazardous wastes (see, e.g., RCRA Section 3004(n)), EPA has not yet addressed whether there are any limits on this authority, and, if there are limits, what the extent might be. Nor has the Agency received comment on these questions sufficient to make a considered decision. In light of the absence of a record and the potential difficulty of the question, we are not deciding the question in today's rule but instead are indicating that recovered landfill gas is not regulated under today's rules.

F. Request for Exclusion of Cadence Product 312

Several commenters requested EPA to exclude Cadence product 312 from regulation as a hazardous waste fuel. Cadence product 312, better known under its former trademark name of "CHEM-FUEL" (hereinafter termed "Cadence product"), is a blend of hazardous spent solvent recovery still bottoms and other hydrocarbon-based hazardous waste that is patented for use in blast furnaces by Cadence Chemical Resources, Inc. (hereinafter termed "Cadence").

Cadence product is produced by licensees of the Cadence process who blend spent solvents generated by others as well as solvent recovery still bottoms that they generate by their reclamation activities. The licensees ensure that the blend meets specifications set by furnace operators for parameters including heating value (10,500-14,000 Btu/lb) and chlorine content (1-5%). Thus, the mix can contain up to 5% chlorinated spent solvents, most of which are carcinogenic. The entire mix is then sent to the blast furnace for burning. Many commenters argued that Cadence product is not subject to regulation as a hazardous waste fuel because it is not burned in the blast furnace for energy recovery. Rather, they argue that Cadence product is burned as an ingredient in the iron-making process to provide carbon,

hydrogen, and chlorine and that it only provides incidental energy to the furnace. Commenters further argue that Cadence product is a valuable product used in a major commodities market, and, hence that EPA does not have authority under RCRA to regulate it. They assert that it is a commercial product with recognized specifications and procedures for its production.

For the reasons given below (and as provided further in the Response to Comment Background Document), we either disagree with the commenters' claims or find them irrelevant to the question of whether Cadence product is subject to regulation as a hazardous waste fuel. Specifically, we find that Cadence product is burned partially for energy recovery because the heat energy contributed by the product to a blast furnace is substantial and useful. In addition, the Cadence product has the attributes of an inherently waste-like material, and is the type of secondary material EPA is empowered to investigate and regulate as may be necessary to protect human health and the environment. Both of these points are discussed below.

1. *Cadence Product is Burned Partially for Energy Recovery.* Cadence argues that their product is burned in a blast furnace to provide ingredients necessary to drive furnace reactions and to enhance furnace operations. In particular, Cadence argues, and we agree, that the product has the beneficial effect of *cooling* flame temperatures in the combustion zone of the furnace and of providing hydrocarbons that are converted to gases needed to react with the iron ore to produce iron. Cadence also argues that the chlorine in the product has a beneficial effect on furnace operations, and, thus, also acts as an ingredient.¹⁸ Cadence also argues, however, that the heat energy released from burning the product in a blast furnace is "incidental and unavoidable" (Cadence comments dated March 12, 1985, p. 11), and, thus, the product is not burned for energy recovery. We disagree with Cadence on this point and will show below that the

¹⁸ Cadence claims that the chlorine from the product reacts with "alkali compounds to prevent their deleterious action on the coke and ore particles" and to prevent furnace wall scale. See statement by John Elliot dated March 11, 1985 (pp. 3-4) attached to Cadence comments dated March 12, 1985. Although not relevant to EPA's argument that Cadence product is burned partially for energy recovery, EPA questions whether such chlorine results in substantial improvement in furnace operations and, thus, constitutes a *bona fide* (i.e., necessary) ingredient given that it is not common practice to inject chlorine-bearing materials in a blast furnace.

product, in fact releases substantial, useful heat energy to a blast furnace and, thus, is burned partially for energy recovery within all reasonable understanding of the term. Although we agree that energy recovery is not the sole purpose for burning Cadence product in a blast furnace, the fact that substantial, useful energy is recovered subjects Cadence product to regulation as hazardous waste fuel. (See discussion above in section III.A.1 where we explain that regulation of burning for energy recovery does not turn on the sole or primary purpose of burning.)

a. *General Description of Blast Furnace Operations.* Iron blast furnaces are used to smelt iron ores to produce crude iron (pig iron) suitable for steelmaking. The iron blast furnace is a large, shaft (vertical) reactor. Iron ores along with coke and fluxes such as limestone and dolomite are charged into the top of the reactor. A large volume of air preheated to 2000 °F (termed "hot blast") is injected into the bottom of the furnace to burn the coke to produce the heat and reducing gas needed to drive furnace reactions. Temperatures in the combustion zone at the bottom of the furnace range from 3700–3900 °F. The coke provides both the primary source of heat and the primary source of carbon used to produce the reducing gas carbon monoxide. The carbon monoxide reduces the iron ore by (net) energy absorbing reactions to produce pig iron. About 1000 lbs of coke are required to produce a ton of pig iron. Gases drawn off the top of the furnace contain excess carbon monoxide to give the gas a heating value of about 90 Btu/ft³. About one third of this furnace gas is used as a fuel in stoves to preheat the combustion air (i.e., the hot blast). The remainder of the furnace top gas is used as a fuel in a boiler plant or in other heating applications within the steel plant. Melted iron and liquid slag are drawn off from the bottom of the furnace.

b. *Modern Methods of Reducing Coke Rates.* Coke has become increasingly expensive since the early 1960's because of the rising price of metallurgical coals needed to produce suitable coke and the rising cost of coking operations because of environmental and other concerns. Reducing coke rates is also advantageous because furnace productivity is increased by increasing the iron ore to coke volume ratio charged to the furnace (i.e., coke can be replaced by iron ore, thus increasing iron output).

The two principle methods of reducing coke rates are to increase hot blast

temperatures and to inject fuels¹⁹ through tuyeres (i.e., firing nozzles) into the combustion zone at the base of the furnace. Both approaches generally are employed together because fuel injection enables operators to control flame temperatures in the combustion zone (raised by increasing hot blast temperatures) to optimum levels. In addition, the injection of hydrocarbon fuels replaces the carbon in the displaced coke and ensures that appropriate furnace gas composition conducive to iron ore reduction is maintained. The heat energy of the hydrocarbon fuels also replaces the heat energy of the displaced coke. Given that coke is both the primary fuel and the primary source of reducing gas (carbon in the coke is converted to the reducing gas carbon monoxide), when the coke rate is decreased substantially (i.e., by increasing hot blast temperature and using fuel injectants) the heat energy and source of reducing gas supplied by the displaced coke must be provided by some other source.^{20 21} This source is the tuyere-injected fuels like the Cadence product.

c. *Although Fuel Injectants Cool Flame Temperatures, They Provide Substantial, Useful Heat Energy.* Before we explain how liquid fuel injectants with substantial heating value like No. 6 fuel oil or Cadence product contribute substantial heat energy to a blast furnace, we will explain how they, at the same time, actually cool flame temperatures in the combustion zone. Combustion zone temperatures are maintained at 3700–3900 °F by the combustion of coke in the presence of the 2000 °F hot blast (i.e., preheated combustion air). The net reaction of injected fuels is endothermic (heat absorbing) in this zone. Injected liquid fuels first undergo endothermic vaporization, then exothermic combustion to (ideally) carbon dioxide and water where sensible heat is released, and finally, endothermic dissociation²² and reduction in the

presence of excess carbon provided by the coke to form the reducing gases carbon monoxide and hydrogen.

Cadence argues that these liquid fuel injectants are not burned for energy recovery because tuyere-injected fuels undergo net endothermic (i.e., heat-absorbing) reactions in the combustion zone which reactions actually cool flame temperatures, and that any heat energy released from subsequent reactions is incidental and unavoidable. Cadence's argument ignores the fact that fuel injectants first behave as *bona fide* fuels by combusting to (ideally) carbon dioxide and water. The amount of sensible heat released during this combustion phase is measured by a fuel injectant's heating value in Btu/lb. Immediately after the fuel is combusted, the combustion products act as ingredients to furnace reactions by being converted to the reducing gases carbon monoxide and hydrogen during endothermic reactions. The fact that fuel injectants release substantial heat energy while providing hydrocarbons for reactions enables operators to reduce coke rates.²³ (As noted above, coke is both the primary fuel and primary source of carbon to the blast furnace.)

The heat energy released from subsequent (i.e., outside the combustion zone) reactions of fuel injectant hydrocarbons is in fact substantial, intentional, and useful contrary to Cadence's claim that it is incidental and unavoidable. As discussed above, furnace top gas is used as fuel in stoves to heat the hot blast, in a boiler plant, or in other heating applications within the steel plant. The excess reducing gas contained in the top gas that was not used to reduce the iron ore gives the top gas substantial heating value. The excess reducing gas is contributed by

readily available, and it introduced hydrogen for reduction. (Hydrogen supplements carbon monoxide as a reducing gas in the furnace.) The use of steam as an injectant, however, consumes coke in the combustion zone thereby reducing the overall effectiveness of any increase in blast temperature. Fuel oil injection, however, not only acts as a coolant, allowing the use of higher blast temperatures, but also replaces a portion of the coke. Source: "Fuel-Oil Injection Into Blast Furnaces: A Literature Review", Journal of the Institute of Fuel, vol. 49, n 399, June 1976, p. 73.

²² At the 3700–3900 °F temperatures in the combustion zone, a fraction of the carbon dioxide and water vapor is thermally dissociated to form carbon monoxide, hydrogen, and oxygen. See Babcock and Wilcox, *Steam, Its Generation and Use*, 1978, p. 6–7.

²³ "Injection of hydrocarbons through the tuyeres of a blast furnace is carried out (a) to replace coke by cheaper sources of fuel and reductions; (b) to increase (by lowering the proportion of coke in the charge) the amount of iron ore in the furnace shaft." Source: Peacey, J.C. and Davenport, W.G., *The Iron Blast Furnace*, p. 140, included in comments submitted by Cadence on October 25, 1985.

¹⁹ Cadence's terminology notwithstanding, tuyere-injected materials with substantial heating value are invariably termed fuels in the technical literature.

²⁰ "The same atoms of carbon are involved in reactions that generate the heat for the furnace as are involved as the reducing agent (as carbon monoxide) to convert the ore to metallic iron." Statement by John Elliot in reference to his review of an EPA internal, deliberative, draft document. Mr. Elliot's comments are contained in correspondence from counsel to Cadence, to Winston Porter, Assistant Administrator for the Office of Solid Waste and Emergency Response, dated October 31, 1985. (Release of this internal, post comment period EPA document was not intended.)

²¹ Steam had been a popular (nonfuel) injectant in the 1960's because it was relatively cheap and

the coke and fuel injectants, roughly in proportion to the amount of hydrocarbons each provides to the furnace. As shown in the table below, furnace top gas is a substantial fuel source in that only about one-third of the fuel gas is used to heat the hot blast while two-thirds is available for other uses.

Empirical demonstration that burning fuel injectants supplies substantial energy to blast furnaces is provided by standard literature references. The table below shows an energy balance for a modern 28-foot diameter hearth furnace operating at a hot blast temperature of 2000 ° F with a coke rate of 870 lb/ton of hot metal (i.e., pig iron) and using fuel oil injected at a rate of 170 lb/ton of hot metal. The fuel injectant provides about 22% of the heat input to the furnace. The amount of coke needed to supply this energy (and reductants) to a furnace producing 4,000 tons per day of hot metal would be more than 300 tons per day. Thus, it is clear that fuel injectants provide substantial, useful heat to the furnace.

BLAST FURNACE ENERGY BALANCE

	Millions of Btu per ton of hot metal
Energy input:	
Calorific value of coke	10.9
Calorific value of tuyere-injected fuel oil	3.1
Total.....	14.0
Energy output:	
Calorific value of top gas.....	1(5.2)
Top gas consumed in heating blast air	1(1.8)
Net top gas energy available for other uses..	3.5
Heat for chemical reactions, heat loss, and sensible heat of hot metal and slag.....	10.5
Total.....	14.0

¹ Energy obtained from coke and fuel oil (in the form of excess carbon monoxide and hydrogen) and partially recycled as hot blast.

Source: Based on data in Kirk-Othmer Encyclopedia of Chemical Technology, v 13, p. 742. (1981).

Injectants that have no heating value like steam, or minimal heating value,²⁴ provide no or minimal heat energy to the furnace and, thus, are not considered to be fuel injectants. Thus, injectants with no or minimal heating value are not considered to be burned for energy recovery.

Cadence's argument in fact proves too much. It is clear that net furnace reactions are endothermic—heat from the coke and fuel injectants is required to drive reactions that reduce iron ore to metallic iron. Under Cadence's logic that a material involved in an endothermic reaction is not a fuel irrespective of its heating value, the coke would not be a fuel. Yet it is the primary fuel source to the furnace. The fact is that both coke

²⁴ The Agency always considers a material with a minimum heating value of 5,000–8,000 Btu/lb to be a *bona fide* fuel. See section II in the text.

and fuel injectants like the Cadence product serve a dual purpose of providing substantial needed energy and reductants.

d. *Use of Cadence Product as a Fuel Injectant.* Cadence product is blended with No. 6 fuel oil in a volume ratio of about 50/50 for use as a fuel injectant. Cadence product is a fuel injectant, rather than a nonfuel injectant (e.g., steam), because it has a heating value by specification of 10,500 to 14,000 Btu/lb, which is comparable to the heating value of coke and coal. Cadence product, like other liquid fuel injectants, cools flame temperatures in the combustion zone. It also provides hydrocarbons for conversion to the reducing gases carbon monoxide and hydrogen, provides substantial, useful heat energy to the blast furnace, and thus enables operators to reduce the coke rate.²⁵

In addition, we note that Cadence itself has informed the Agency, the Congress, and the public on many occasions that Cadence product is burned by blast furnaces (at least partially) as a fuel. Cadence's President Mr. Reese so stated in testimony to Congress. Cadence's comments to the Agency in the definition of solid waste rulemaking (Cadence comments dated August 1, 1983, p. 16) refer to the product as "CHEM-FUEL" and stressed this point:

... *CHEM-FUEL, like coke, is both a raw material and an energy source when used in the blast furnace. Its principal components are hydrocarbons which provide the essential carbon and hydrogen for ore reduction and energy generation.* (Emphasis original)

Cadence's licensees also stressed this point when dealing with EPA's enforcement officials, making the emphatic point that high Btu hazardous wastes were utilized so that the burning legitimately recovered energy. Cadence's patent application states that the material is used to support combustion in blast furnaces. Even in the present rulemaking, a number of Cadence's suppliers indicated that the Cadence product (to which their hazardous wastes contributed) "is used as a fuel by steel producers . . .". (Comments of Detroit Edison, March 11, 1985; to the same effect, see comments 37, 73, and 87 to this rulemaking.) Indeed, the Cadence material was marketed for years under the tradename "CHEM-FUEL". The Agency thus

²⁵ "There is no question that Cadence Product 312 adds to the sensible heat of the heat and material balance of the process and that energy is recovered." Source: Nickel, Melvin E., "Comments on the Injection of Auxiliary Fuels in the Tuyeres of the Iron Blast Furnace", September 30, 1985, p. 4 (unpublished report).

believes that the company's own pronouncements, as well as those of its licensees and customers, indicate strongly that Cadence product is burned (partially) for energy recovery.

2. *Cadence Product Is the Type of Recycled Material Over Which EPA has Jurisdiction.* Stepping back for the moment from the intricacies of blast furnace operations, it is apparent to the Agency that the Cadence product is the type of material EPA is empowered to evaluate and regulate if necessary to protect human health and the environment due to the nature of the Cadence product, its similarity to other waste-derived fuels concededly within EPA's authority, and the nature of the end recycling practice. Cadence product is produced by Cadence's licensees essentially by the simple blending of hazardous solvent still-bottoms and other hydrocarbon-based hazardous wastes to meet a specification for parameters of concern to blast furnace operators, including heating value and chlorine content. Some of the hazardous wastes are collected from generators while other hazardous wastes (e.g., solvent recovery still-bottoms) are generated by the licensee. The specification limits heating value of Cadence product to 10,500–14,000 Btu/lb and chlorine content to 1–5%. Thus, Cadence product is similar (or, according to companies in the blending business, identical) in production and content to hazardous waste fuels burned in other industrial furnaces like cement kilns.

Cadence claims that: the waste-derived materials used to manufacture Cadence Product 312 are not suitable for direct use in blast furnaces; they first must be analyzed and then fully processed to finished goods specifications in a Cadence manufacturing facility. The production of Cadence Product 312 is completely analogous to many well-recognized manufacturing operations. These unsupported assertions overstate the sophistication of the Cadence "manufacturing process". In fact, we understand that, other than simple blending, the only processing that is sometimes used at facilities that produce Cadence product is the distillation of spent solvents to recover solvent. This process, wholly unrelated to the "manufacture" of Cadence product, generates still bottoms that are blended with other petroleum-based wastes to produce the product. Although Cadence licensees conduct analyses of waste feedstocks and blended product to ensure conformance with specifications, other waste blenders that market hazardous waste fuels (e.g., for use in cement kilns) also conduct analyses of feedstocks and fuel product

to meet a specification. Thus, the blending of wastes to produce Cadence product is similar to other waste-derived fuel operations.

Cadence's operations thus raise the troubling question of what degree of processing can transform a waste into a product. The Cadence process involves relatively minimal processing. No significant resources are recovered from the Cadence product until it actually is burned. The Agency always has been leery of the notion that minimal processing of hazardous wastes prior to recovery of resources from them (in this case, energy) transforms wastes into products. It was for this reason that EPA amended § 261.3(c) (2) on January 4, 1985 to state that materials reclaimed from hazardous wastes remain hazardous wastes when burned for energy recovery, and indicated in the same rule that hazardous wastes that are partially but not fully reclaimed remain hazardous wastes (see § 260.30(c).) These provisions illustrate the general principle that minimal processing before final recovery does not ordinarily transform a hazardous waste into a product. Cadence's process appears to raise analogous problems of using a relatively minimal processing step as a means of insulating hazardous waste recycling from RCRA jurisdiction. When this fact is coupled with the fact that the form of end recycling of the Cadence product closely resembles incineration (in the sense that hazardous wastes are burned by controlled flame combustion), it is apparent to the Agency that RCRA jurisdiction over the burning exists.

Even more fundamentally, EPA does not believe that the question of jurisdiction over the Cadence product (or other similar waste-derived materials) need turn narrowly on the question of whether it is burned partially for energy recovery. Cadence product is composed of toxic chlorinated solvent still bottoms which (on a nationwide basis) are typically disposed of or incinerated. These still bottoms are not similar to raw materials customarily used in the iron-making process (i.e., toxic chlorinated solvents are not a typical feed or energy source to the iron-making process). The recycling practice, as well as prior transportation and storage has the potential to cause substantial harm to human health and the environment if conducted improperly.²⁶

²⁶ Preliminary results of EPA's emissions test for a blast furnace burning Cadence material indicate that these devices may be able to destroy 99.99% of toxic organic constituents in the material. If confirmed, this means that these devices may be

EPA believes that recycling of hazardous secondary materials that are so different from the raw materials customarily utilized in the process is a prototypical situation it is empowered to control under RCRA Subtitle C. This is particularly true in this case because the recycling involves burning (viz. controlled flame combustion), and so resembles incineration. The recycling activity also is not part of a continuous industrial process, but rather involves unrelated parties and processes (i.e., the hazardous waste generators who generate spent solvents and hazardous still bottoms, intervening processors (who not only process but add additional hazardous still bottoms to the mixture), and the steel mill), in addition to involving secondary materials normally unrelated to the ironmaking process. For these reasons, EPA is prepared to exercise its authority to designate Cadence product, and all similar materials, as solid wastes pursuant to § 261.2(d) when recycled via controlled thermal combustion in processes not customarily utilizing chlorinated toxicants as a fuel or raw material should this ever prove necessary. In light of the Agency's judgment that Cadence product is burned partially for energy recovery and so is subject to regulation as hazardous waste fuel, it is unnecessary to exercise this authority at the present time.²⁷

able to safely burn toxic organic wastes under appropriate conditions. This does not mean, however, that these devices could always be expected to achieve 99.99% destruction efficiency, absent regulatory controls on operating conditions. Storage of Cadence Product also has the potential to cause substantial harm. As discussed in the text in section II of Part Four, the fact that a hazardous waste fuel is being stored as a commodity is insufficient to prevent substantial risk.

²⁷ There is another point in Cadence's presentation that is deeply troubling to the Agency. Cadence is arguing that when they blend and process chlorinated hazardous wastes, the resulting processed material is a product excluded from RCRA so long as there are specifications (such as for total chlorine) on the end "product" and so long as all components of that "product" are put to beneficial use when burned. This argument applies with equal force if the chlorinated hazardous wastes being processed were dioxin or chlorophenoxy pesticide wastes (rather than carcinogenic solvents): the blended product would still be used as a reducing agent in iron-making, toxic organic compounds would provide hydrocarbons to the iron-making process, and chlorine would remove accumulated wall scale within the furnace. Although these types of hazardous wastes are not blended into Cadence product to our knowledge, the point is that their argument does not preclude such use. Cadence's argument would in fact be identical. It thus seems to the Agency that Cadence's argument proves far too much, and seeks to preclude EPA from exercising authority well within the Agency's purview.

3. *Conclusion.* In closing on this issue, EPA stresses that it is not finding that Cadence is engaging in an unsafe or undesirable recycling practice. Quite the opposite—Cadence has found a means of utilizing resources in wastes, coupled with destruction of the wastes toxic constituents, that appears to be environmentally beneficial. What EPA is finding in this proceeding is that the Agency is empowered—that is, has the jurisdiction—to evaluate the potential risks posed by this recycling activity and to prescribe regulatory standards if the Cadence product, managed improperly (see RCRA section 1004(5)), could pose a substantial hazard to human health and the environment. This is how EPA always has read its overriding statutory duty to regulate hazardous waste management "as may be necessary to protect human health and the environment." It may be that due to the mechanics of blast furnace operation, substantially tailored (or even no standards) are needed to ensure waste destruction. EPA is investigating this question as part of its Phase II rulemaking on burning hazardous wastes. EPA is asserting here that it has jurisdiction to make this evaluation.

IV. Used Oil Subject to Regulation

A. Definition of Used Oil Fuel

These rules apply to used oil, and fuels produced by processing, blending, or other treatment of used oil, that are burned for energy recovery in a boiler or industrial furnace that is not operating under RCRA standards for hazardous waste incinerators. "Used oil" means any oil that has been refined from crude oil, used, and, as a result of such use, contaminated by physical or chemical impurities. See RCRA section 1004(36).²⁸ Used oils include the following: (1) Spent automotive lubricating oils (including car and truck engine oil), transmission fluid, brake fluid, and off-road engine oil; (2) spent industrial oils, including compressor, turbine, and bearing oils, hydraulic oils, metalworking oils, gear oils, electrical oils, refrigerator oils, and railroad drainings; and (3) spent industrial process oils.

These rules apply only to used oil and not necessarily to "oily waste". Oily wastes, such as bottom clean-out waste from virgin fuel oil storage tanks, or virgin fuel oil spill clean-up, are not used oils because the oil was never "used" for its intended purpose. Thus, oily waste is not subject to these rules

²⁸ The Agency will soon be proposing to modify the definition of used oil in the Used Oil Listing and Management Standards rulemaking.

(provided it is not mixed with used oil and that it is not a hazardous waste).

Today's rule marks the first time the Agency has used the regulatory authorities created by the Used Oil Recycling Act of 1980 (UORA). (UORA is codified substantially as sections 1004 (36)-(39) and 3014 of RCRA.) UORA requires the Agency to establish "performance standards and other requirements as may be necessary to protect public health and the environment from hazards associated with recycled oil." See RCRA section 3014(a). Burning used oil for energy recovery—the subject of this rule—is an example of recycling. See RCRA, section 1004 (37).

The regulation of used oil fuels raises the legal question of how the provisions of UORA are to be integrated with other RCRA provisions. As we stated at proposal, EPA believes that UORA authorities may be used independent of, or as a supplement to, Subtitle C of RCRA. If recycled used oil (called "recycled oil" under RCRA section 1004 (37)) is not also a hazardous waste, it is subject to regulation under the provisions of section 3014 rather than sections 3001-3006, 3008, and 3010. As noted at proposal, this has significant implications. For example, permits are not necessarily required to manage recycled oil, the criminal enforcement provisions of section 3008(d) do not apply, and the regulatory program cannot be delegated to the States under section 3006. (See Part Five of this preamble for a discussion of the impact of this rule on authorization of State programs.)

If recycled oil is also a hazardous waste, many of the Subtitle C regulations for other hazardous wastes (40 CFR Parts 262-266) may apply. Section 3014, as amended by the Hazardous and Solid Waste Amendments of 1984, provides detailed guidance on regulating recycled oil that is a hazardous waste.

Today's rule establishes a specification for used oil that is substantially excluded from regulation²⁹ and that may be burned without restriction in nonindustrial boilers or any other boiler or industrial furnace. Used oil exceeding any of the specification levels for toxic metals, flash point, or total halogens is termed "off-specification used oil" and is subject to regulatory controls. The

²⁹ The person who first claims used oil burned for energy recovery meets the specification is subject to notification, used oil analysis, and recordkeeping requirements. In addition, he must keep records of the name and address of the facility receiving each shipment, the date of delivery, and quantity delivered. See § 260.43(b) (1) and (6).

specification and issues pertaining to implementing the specification are discussed below.

Of major importance is how to distinguish between used oil and hazardous waste given that used oil has been frequently found to contain hazardous halogenated spent solvents and given that hazardous waste fuel is regulated differently than used oil under today's rule (as well as under the RCRA statutory scheme). For example, hazardous waste fuel is not subject to the specification and so may not be burned in nonindustrial boilers (unless the boiler operates under RCRA hazardous waste incinerator standards), and hazardous waste fuel is subject under today's rules to storage controls.³⁰

Issues pertaining to distinguishing between used oil and hazardous waste are discussed below.

B. Distinguishing Between Used Oil and Hazardous Wastes

A number of commenters took issue with EPA's discussion of how it intends to distinguish between hazardous waste and used oil (or if used oil is listed as a hazardous waste, between used oil and other hazardous wastes). See 50 FR 1690-1693. EPA indicated that there are situations where it is difficult to tell if a waste is used oil or a hazardous waste. The difficulty is in determining whether a used oil was mixed with a hazardous waste, or whether the oil became contaminated during its (the oil's) use. The legislative history of the Used Oil Recycling Act indicates clearly that used oil that is contaminated during use is to be classified as used oil and, if recycled, be subject to regulation under section 3014. See H.R. Rep. No. 96-1415 at 6.

We noted in the proposed rule that the Agency is delegated discretion in determining how to classify these situations, and set out the general principles that will guide the Agency's exercise of discretion. These are: (1) Where possible, clear, objective tests should be used to classify hazardous waste and used oil; (2) the Agency should not adopt a scheme whereby most used oil is classified as a hazardous waste ineligible for regulation under the Section 3014 standards; and (3) any objective test should ensure that massively adulterated used oils are classified as hazardous waste. See 50 FR 1691.

³⁰ As noted at proposal, a hazardous waste fuel specification is not a feasible option because of the hundreds of hazardous constituents that would have to be addressed and the difficulties of analyzing for all of these constituents.

The Agency adheres to this analysis in today's final rule, and indeed, this position had the support of most of the commenters. Several commenters argued, however, that EPA's approach showed an unwarranted bias against regulating used oil as hazardous waste, and so would lead to situations where used oil is not regulated adequately to protect human health and the environment because most of the RCRA Subtitle C standards would not apply. One commenter even went so far as to suggest that the Agency was misreading its legal mandate under the HSWA to regulate used oil as a hazardous waste.

These commenters misapprehend both the law and EPA's stated approach. In the first place, RCRA as amended draws clear distinctions between hazardous waste and used oil. The statute contains a separate provision dealing with used oil as a distinct class and authorizes separate standards for its management. (See RCRA section 3014.) Nor does the statutory directive that EPA decide whether to list used oil as a hazardous waste (RCRA section 3014(b)) obliterate this distinction. Even if EPA lists used oil as a hazardous waste (and the Agency intends to propose such action later this year), used oil would still be subject to regulation under different standards than apply to other hazardous wastes. See RCRA sections 3004(a) and 3014(c), (d). Thus, it remains necessary to distinguish between used oil and other hazardous waste.

It also is clear that EPA has discretion on how to make these distinctions. The legislative history to the 1984 amendments is explicit on this point. See S. Rep. No. 98-284, 98th Cong. 1st Sess. at 36, 38; see also the Conference Report, H. Rep. No. 98-1133, 98th Cong. 2d Sess., which speaks of used oil contaminated with hazardous waste as used oil to be regulated under Section 3014 (i.e., as a used oil, not as a hazardous waste).³¹

EPA takes sharp issue with the commenters' assumption that its proposed (and now final) exercise of discretion in classifying used oil leads to a reduction in environmental protection. With respect to burning used oil, the rule promulgated today establishes a used oil fuel specification that regulates as necessary to protect human health and the environment, within the meaning of RCRA section 3014, when the used oil is burned in nonindustrial boilers. (See

³¹ Specific comments that EPA exercised its discretion improperly with regard to used oil containing halogenated hazardous substances and used oil from small quantity generators are addressed in the preamble sections dealing with these issues.

section IV.C above.) With respect to other management standards for recycled used oil, EPA will soon be proposing cradle to grave management standards for such oil consistent with Section 3014. EPA is not doing so in this rulemaking because the Agency wishes to avoid piecemeal regulation of the used oil management community wherever possible.³² The commenters are incorrect, however, that this temporary deferral will lead to an ultimate reduction in environmental protection.

We discuss below how we apply the principles for distinguishing between used oil and hazardous waste to: Used oil containing halogenated wastes; used oil containing hazardous waste generated by small quantity generators; and used oil that exhibits a characteristic of hazardous waste.

1. *Used Oil Containing Halogenated Wastes.* Today's rule, like the proposed rule, reiterates the principle found in § 261.3(a)(2) of the existing regulations that a hazardous waste mixed with a solid waste is a hazardous waste. Thus, under this rule, mixtures of hazardous waste and used oil ordinarily are classified as hazardous waste. It is not always possible, however, to prove—or even to be sure—that such mixing has occurred, particularly when no one has observed the act of mixing. Used oil containing small amounts of hazardous halogenated compounds is an example where there may be uncertainty.

Since hazardous halogenated compounds—many of them hazardous waste—are frequently found in used oil (see Table 1 in the proposal (50 FR 1686)), the Agency believes (and virtually all commenters agreed) that a simple, objective test is needed to determine when used oil has been mixed with hazardous spent halogenated solvents (or other halogenated hazardous waste) in order to avoid case-by-case confusion as to when mixing has occurred, and to aid in consistent enforcement of the regulation. To this end, EPA proposed, and is adopting today a rebuttable presumption as to when mixing with hazardous wastes has occurred.

a. *The Rebuttable Presumption: The Standard and Means of Rebuttal.* Today's rule establishes a rebuttable presumption that used oil containing more than 1,000 ppm total halogens has

been mixed with hazardous spent halogenated solvents (i.e., EPA Hazardous Waste No's. F001 and F002) or other hazardous halogenated wastes and, therefore, is a hazardous waste under provision of the "mixture rule" of 40 CFR 261.3 (i.e., a mixture of a listed hazardous waste and other material is a hazardous waste unless delisted under provisions of 40 CFR 260.20).

In response to comment that EPA clarify the available means of rebutting this presumption, the final rule states that the presumption can be rebutted by demonstrating to enforcement officials that the oil is not mixed with hazardous waste. One such approach in making this demonstration is to show that the used oil does not contain significant levels of halogenated hazardous constituents. See § 266.40(c). Thus, the presumption can be rebutted successfully even if some hazardous halogenated compounds are present in the oil. We believe that oil containing less than on the order of 100 ppm of any individual hazardous halogenated compound listed as a hazardous spent solvent (i.e., EPA Hazardous Waste Numbers F001 and F002) should not be presumed to be mixed with spent solvent. As the Agency stated at proposal (50 FR 1691) and as confirmed by a number of comments, when these compounds are present at such low levels, it is difficult or impossible to pinpoint the source of the contamination. Such low levels found at the generator's site certainly do not indicate deliberate mixing with solvents.³³ Both used oil and hazardous halogenated solvents are frequently generated by the same facility, and some incidental contamination is probably inevitable. It should be noted that burning used oil with such levels of solvent will not pose significant risk from emissions of either incompletely burned solvents or hydrochloric acid.³⁴

Presence of a compound listed as a hazardous halogenated spent solvent at levels between 100 and 1000 ppm may indicate mixing with spent solvent depending on circumstances specific to individual cases. For example, if the used oil in question is from a large tank at a processing facility where oil from a number of generators has been mixed,

³³ For example, if 100 ppm of a solvent is detected in 200 gallons of used oil (the quantity frequently generated over a month by a service station, prior to pick up by a collector), only 0.002 gallons, or 0.25 ounces of solvent have been mixed. Such small amounts could not possibly represent the monthly quantity of spent solvent from degreasing operations at the service station.

³⁴ PEDCO, Environmental Inc., *A Risk Assessment of Waste Oil Burning in Boilers and Space Heaters*, August 1984, pp. 5-1 through 5-8.

even low solvent levels may be indicative of adulterative mixing. Used oil mixed with significant levels of solvent by a generator may have been diluted with unadulterated oil from other generators, or spent solvent collected from a generator may have been mixed (illegally) into the used oil by a collector or the processor.

Mixing of used oil with *nonsolvent* halogenated hazardous waste, however, could be indicated by the presence of hazardous constituents at levels lower than 100 ppm. For example, if a waste is not typically cogenerated with used oil, incidental contamination is not likely. Other factors include whether the hazardous constituents could be added or formed during use of the oil. Thus, if a used oil contains greater than 1000 ppm total halogens, and some of the halogens are (for example) chlorophenoxy pesticides, the presumption of mixing would not necessarily be overcome by showing that the pesticide is present at levels less than 100 ppm.

b. *Explanation of Changes in the Rebuttable Presumption Between Proposal and Final Rule.* The rebuttable presumption of mixing hazardous halogenated solvents with used oil promulgated today differs from the proposal in two respects: total halogens rather than total chlorine is used as the basic indicator, and the indicator level has been lowered from 4000 ppm to 1000 ppm. Total halogens are used as the indicator because commenters noted that common chlorine tests actually measure total halogens reported as total chlorine. The change, thus, is essentially a technical correction because the used oil analyses available to the Agency and used to support the rule already reported presence of total halogens as total chlorine.

We lowered the indicator level from 4000 ppm to 1000 ppm because many commenters argued that the higher level would allow and even encourage significant mixing of hazardous halogenated solvents with used oil (contravening one of EPA's enumerated principles). More importantly, this level correlates sufficiently well with presence of significant levels of hazardous halogenated spent solvents as to justify use of a presumption, as discussed below. The 1000 ppm total halogen level was in fact recommended by a number of commenters, including the State of New York which has substantial experience with this issue.

We have reviewed the more than eleven hundred used oil analyses available in the record for the proposed rule and the additional data submitted by commenters and concluded that used

³² EPA is adopting the used oil fuel specification for nonindustrial boilers in advance of other rules for recycled oil to meet the most pressing environmental concern with respect to recycled oil management, and because the prohibitions on hazardous waste burning would have little practical significance unless coupled with controls on burning recycled oils.

oil will generally contain less than 1000 ppm of total halogens *unless* it is mixed with hazardous chlorinated solvents or is metalworking oil containing chlorinated additives.³⁵ Eighty-seven percent (87%) of the samples from a wide range of sources—generators, processors, distributors, burners—that contain more than 1000 ppm total chlorine (halogens) also contained significant levels of hazardous chlorinated solvents (e.g., more than 100 ppm of any particular solvent).^{36, 37} Some of the 13% of the samples containing more than 1000 ppm total chlorine but no chlorinated solvents are known to be metal-working oils (either because they were obtained from generators known to be involved in metal-working or because of their extremely high chlorine content) containing nonhazardous chlorinated additives. Others may be mixed with these highly chlorinated metalworking oils such that chlorine levels are greater than 1000 ppm but lower than typical for metalworking oils, or the chlorine may be from some other source.³⁸ Based on

³⁵ Some metalworking oils contain extreme pressure additives that are nonhazardous highly chlorinated paraffinic compounds. Thus, used metalworking oils may contain halogen levels higher than 1000 ppm even though they are not mixed with hazardous halogenated solvents. See discussion in text regarding application of the rebuttable presumption to these metalworking oils.

³⁶ Based on review of analyses in Franklin Associates Ltd., *Composition of Used Oil*, Appendix A. Of the more than 1100 used oil analyses, 311 samples contained more than 1000 ppm of halogens and were analyzed for halogenated solvents. Eighty-seven percent of those samples contained significant levels of solvent. We presumed that samples with high lead levels, no halogenated solvents, and low halogen levels (but more than 1000 ppm of halogens) would contain less than 1000 ppm halogens when lead is phased out of gasoline, because chlorine or bromine is added to gasoline only to scavenge lead from engine components. Thus, halogen levels will fall as lead is phased out of gasoline. Thus, 26 such samples are excluded from the samples containing more than 1000 ppm of halogens.

³⁷ The Texas Air Control Board submitted comments on the proposed rulemaking that included a report entitled, *Analysis of Fuel Oils and Waste Oils for Sulfur, Organochlorides, and Lead*, August 1984. Data in Table VI of that report indicate that 77% of used oils (27 of 35 samples) containing more than 1000 ppm total halogens also contained significant levels of hazardous halogenated solvents.

³⁸ Although used oil samples have been found to contain hazardous halogenated compounds listed in Appendix VIII of Part 261 (e.g., dichloroethane, tetrachloroethane) that are not listed as F001 or F002 hazardous halogenated solvents, these samples invariably also contain significant levels of the F001 or F002 solvents. See Table VI of the Texas Air Control Board report referenced in note 27, and data in GCA Corporation, *The Fate of Hazardous and Nonhazardous Wastes in Used Oil Disposal and Recycling*, October 1983, p. 43.

these data showing a high percentage of correlation, and on the supporting comments, it is EPA's opinion that the 1000 ppm total halogen level is a valid indicator for presence of mixing with listed halogenated hazardous waste.

EPA expressed concern at proposal that certain used oils might contain levels of *inorganic* halogens greater than 1000 ppm, and therefore, that a higher level was appropriate for the presumption. The Agency no longer believes this to be a valid concern. The Agency stated at proposal that used oil, particularly crankcase oil from leaded gasoline engines, could occasionally contain up to 3000 ppm inorganic chlorine (or bromine) levels^{39, 40} and that the higher level of 4000 ppm would indicate mixing with chlorinated solvents. Chlorine or bromine are added to leaded gasoline to "scavenge" lead from engine components and, thus, reduce wear and improve engine performance. The chlorine or bromine form inorganic lead compounds, some of which end up in crankcase oil from engine blow-by. Commenters suggested, however, that little used oil has levels of these inorganic halogens exceeding 1000 ppm. As further corroboration, EPA's own data on used oil sampled at generators' sites (including both crankcase and industrial oil, but excluding highly chlorinated metalworking oil or oil adulterated with hazardous halogenated solvents) indicates that the oil contained less than 1000 ppm total halogens in 32 of 36 cases.^{41, 42} In addition, as lead is phased out of gasoline, chlorine and bromine additives also will be lowered, thus reducing inorganic halogen levels. EPA consequently believes that very few used oils will trip the presumption due

³⁹ NBS Technical Note 1130—*Test Procedures for Recycled Oil Used as Burner Fuel*, August 1980, p. 51.

⁴⁰ Franklin Associates, Ltd., *Composition of Used Oil*, Appendix A.

⁴¹ Based on review of used oil analyses in Franklin Associates, Ltd., *Composition of Used Oil*, Appendix A. We should note that 3 crankcase oil samples contained 1000 to 1500 ppm total halogens (and no halogenated solvents). We presume the halogens were attributable to leaded gasoline additives because those oils had high lead levels—1000 to 3000 ppm. We presume that those oils would in the future contain less than 1000 ppm total halogens as lead is phased out of gasoline (beginning July 1985), and, concurrently and necessarily, halogen gasoline additives are also reduced. Therefore, we believe it is reasonable to exclude these 3 samples from the total halogens so that 35 of 36 unadulterated, nonmetalworking samples containing more than 100 ppm total halogens.

⁴² Data in GCA Corporation, *The Fate of Hazardous and Nonhazardous Wastes in Used Oil Disposal and Recycling*, October 1983, p. 43, also indicate that used oil generally contains less than 1000 ppm total halogens.

to inorganic halogen content of over 1000 ppm. Moreover, as just discussed, there is a strong correlation between halogen levels of 1000 ppm and high levels of hazardous halogenated solvents, even in EPA's present data base which does not reflect the lead phasedown.

Nor do most used oils contain high levels of *organic* halogens without also containing high levels of halogenated spent solvents. The only used oils that might be metalworking oils, which comprise a small segment of the used oil fuel market. See 50 FR at 1692 (January 11, 1985). Metalworking oils can contain extreme pressure additives that are nonhazardous chlorinated paraffinic compounds that can result in organic chlorine levels of several percent. These organic chlorinated compounds are not toxic (i.e., they are not listed as constituents of hazardous waste in Appendix VIII of Part 261), and, thus, the hazard from incomplete combustion of these compounds is not of concern.⁴³ The issue here is application of the presumption to these oils.

We believe that the rebuttable presumption of mixing halogenated solvents with used oil should still apply to persons who manage highly chlorinated metalworking oils. In the first place, these oils can still be mixed with hazardous halogenated solvents (as confirmed both by data and by comments on the proposed rule). Metalworking operations often use large quantities of degreasing solvents. Second, metalworking oils also can be adulterated with halogenated hazardous wastes after leaving the site of generation. Finally, persons managing used metalworking oils that are not adulterated should have readily available means of rebutting the presumption.⁴⁴

c. Additional Response to Comment on the Rebuttable Presumption. (1) Basis for Not Setting the Halogen Indicator Level on Risk. Some commenters maintained that the chlorine level for the presumption of mixing should be based on risk posed by the solvent/oil mixture, rather than on the basis of mixing, *per se*. These

⁴³ We are, however, concerned about the acid-forming potential of these compounds when combusted, and the resultant emissions of hydrochloric acid and the effects of accelerated corrosion on boiler parts and any emission control equipment. These oils will fail the used oil fuel specification for total halogens and are subject to regulation as off-specification used oil (see section IV.C of text).

⁴⁴ As noted earlier, the final rule indicates that one way the presumption may be rebutted is by showing that the oil does not contain significant levels of halogenated hazardous constituents.

comments mistake the Agency's purpose: to distinguish used oil from hazardous waste. As EPA pointed out in the preamble to the proposed rule, the basis of the presumption is not a new concept. Section 261.3(b) says that when a solid waste is mixed with a hazardous waste, the mixture is a hazardous waste unless it does not exhibit a characteristic of hazardous waste, or, if the hazardous waste was a listed waste (like many halogenated solvents), unless the mixture is delisted under petitioning provisions of 40 CFR 260.20 and 260.22. The rebuttable presumption merely provides a simple, objective test for when the Agency will presume such mixing has occurred. The risks posed by burning both hazardous waste (including adulterated used oil) and off-specification used oil are addressed in today's rule with respect to burning in nonindustrial boilers and will be addressed further by the permit standards for burning such fuels in industrial boilers and industrial furnaces.

We note further that a number of commenters erred by considering the rebuttable presumption level for total halogens to fix the level at which used oil containing halogens would be subject to regulation (assuming no other source of adulteration). The rebuttable presumption is not a measure of when regulation is necessary, but a measure of when mixing can be presumed to have occurred. Used oil containing halogens at less than the presumption level could still be regulated as hazardous waste, but the burden would be on EPA to prove that such used oil is a hazardous waste by virtue of mixing with a listed hazardous waste. See 50 FR 1692, n. 22. EPA's burden would not automatically be satisfied by showing evidence of halogen levels in the used oil.

(2) *Organic Versus Total Halogens as the Indicator Level.* Several commenters suggested that organically-bound chlorine (or, more correctly, halogens) rather than total chlorine should be used for the presumption of mixing because it avoids the problems with inorganic halogens discussed above (i.e., some oils with insignificant hazardous halogenated solvent levels may contain more than 1000 ppm total halogens because of presence of inorganic chlorine). After serious consideration, we have decided to base the presumption on total halogen levels due to the problems of implementing a standard based on organic halogens.

We know of no quick, simple method for determining organically-bound halogen levels in used oil. The sample must be "washed" to remove inorganic

halogens before determining organic halogen levels. Moreover, we have only just recently investigated techniques for washing to remove inorganic halogens from used oil and are not yet ready to recommend a procedure. Even if an acceptable technique were available, washing would add substantially to the time required to determine halogen levels. (See discussion of analytical procedures in section IV-F of Part Two of this preamble.) The need for washing also would raise analytical costs unnecessarily.

In addition, organic halogens would be a more accurate measure of presence of hazardous halogenated solvents than total halogens only if used oil often contains more than 1000 ppm of inorganic halogens. We have discussed above, however, that the data indicate that inorganic halogen levels are generally lower than 1000 ppm. Finally, use of organic halogens rather than total halogens does not avoid the problem of occasional false-positives caused by nonhazardous organic chlorine additives found in metalworking oils.

In summary, a presumption based on organic halogen levels offers few advantages and has serious problems.

2. *Used Oil Containing Hazardous Waste Generated by Small Quantity Generators.* EPA proposed that used oil containing hazardous waste generated by small quantity generators be regulated as used oil. 50 FR 1692. The Agency reasoned that in exercising its discretion as to how to classify used oil (i.e., as used oil or as hazardous waste), EPA should avoid a scheme whereby most used oil was classified as hazardous waste ineligible for regulation under the special standards for used oil. EPA was concerned that this might result if small quantity generator hazardous waste-used oil mixtures were classified as hazardous waste. *Id.* At the same time, EPA solicited comments on alternative approaches, including regulating such mixtures as hazardous waste or classifying only automotive oil containing small quantity generator waste as used oil. *Id.* at n. 24.

Comments were divided. Although some commenters supported the Agency, others were critical, maintaining that EPA's proposal could encourage adulteration of used oil, and lead to significant enforcement problems.

EPA has decided to modify its proposal, in part due to the public comments. More importantly, however, our re-evaluation of available data indicates that few small quantity generators are presently mixing

hazardous waste with used oil. Analyses indicate that fewer than 15% of the generators of crankcase oil (who are presumed to be small quantity generators), and fewer than 12% of the generators of industrial oils (some of whom may have been small quantity generators), generate used oil that is mixed with significant levels of halogenated hazardous solvents.⁴⁵ In addition, the average vehicle maintenance shop or service station, according to EPA's data,⁴⁶ produces an average of 50 kg/month of hazardous waste in the form of spent solvents, and 500 kg/month of used oil. Intentional mixing would yield a contamination rate of 10%, or 100,000 ppm. The data in the following table show that actual contamination at the generator site, with few exceptions, is orders of magnitude lower and so probably results from inadvertent, and perhaps unavoidable, contamination during use of the oil or handling of used oil.⁴⁷

⁴⁵ Analysis of 21 samples of crankcase oil known to be obtained from the generator (e.g., service stations, auto repair shops, truck dealer, construction equipment facility), and thus not adulterated with solvents by collectors or processors, reveals that only 3 contain significant levels of hazardous halogenated solvents. Analysis of 26 samples of industrial oil known to be obtained from the generator indicate only 3 contain significant levels of hazardous halogenated solvents. Analysis of data in Franklin Associates, Ltd., *Composition of Used Oil*, Appendix A.

⁴⁶ Industrial Economics, Inc., *Draft Regulatory Analysis for Proposed Regulations Under RCRA for Small Quantity Generators of Hazardous Waste*, February 1985, Draft Report, Exhibit 3-1.

⁴⁷ Several commenters mistakenly criticized EPA's statement at proposal (50 FR 1692) that small quantity generators do not massively adulterate their used oil. They reasoned that because most used oil comes from small quantity generators, and much is adulterated, that the generators are doing the adulteration. In fact, all data indicate that *collectors* and *processors* are the principal source of hazardous waste contamination. Comparison of used oil sampling data from generators and from processing facilities in the table below shows a dramatic increase in halogenated solvent levels at used oil processing facilities.

Solvent Concentrations Increase Dramatically as Used Oil Moves From the Generator to Processing Facilities

	Solvent Concentrations, ppm (90th percentile levels)		
	Solvent A ¹	Solvent B ²	Solvent C ³
Oil sampled at generator site:			
Automotive oil.....	16	11	55
Industrial oil.....	33	33	60
Oil sampled at processing facility:			
Automotive oil.....	6,000	800	3,000
Industrial oil.....	3,500	800	2,200

¹ 1,1,1-Trichloroethane.

² Trichloroethylene.

³ Tetrachloroethylene.

Source: Franklin Associates, Ltd., *Composition of Used Oil*, pp. 3-33 to 3-36.

TABLE 1.—SOLVENT CONCENTRATIONS IN USED OIL AT GENERATOR FACILITIES

Type of generator	Solvent Concentrations, ppm (90th percentile levels)		
	Solvent A ¹	Solvent B ²	Solvent C ³
Automotive oil.....	18	11	55
Industrial oil.....	33	33	60

Notes:
¹ 1,1,1-Trichloroethane
² Trichloroethylene
³ Tetrachloroethylene
 Source: Franklin Associates, Ltd., *Composition of Used Oil*, pp. 3-33 to 3-36.

Consequently, it does not appear that classifying small quantity generator waste-used oil mixtures as hazardous waste would result in classifying large percentages of used oil as ordinary hazardous waste. As a factual matter, EPA's stated concern at proposal thus does not appear to be present.

The final rule thus states that this type of mixture is to be classified as a hazardous waste. (But, as explained below, at least for purposes of this rulemaking, these mixtures are subject to regulation as used oil fuel when burned for energy recovery.) We have decided, however, at least for the time being to regulate this (usually exempt) small quantity generator waste regardless of the quantity generated when it is mixed with used oil as part of a waste-derived fuel. EPA is taking this step for a number of reasons. To do otherwise would create the very situation feared by the commenters whereby the rules would create an incentive to adulterate and be much more difficult to enforce. This is because if small quantity generator waste could be mixed with otherwise-regulated used oil and the mixture was exempt from regulation, people undoubtedly would take advantage of the opportunity to escape regulation, or raise the issue of mixing as a defense in enforcement actions. Potentially large volumes and percentages of recycled used oil could go unregulated, in derogation of Congressional intent.⁴⁸ Thus, the final

⁴⁸ The Agency is also of the initial view that if used oil is listed as a hazardous waste then unrecycled used oil should continue to be regulated, regardless of quantity generated. (Regulation probably would begin once used oil is aggregated.) EPA's reasoning for regulating this type of hazardous waste differently from other small quantity generator hazardous wastes will be set out more fully in the soon-to-be-proposed regulations listing used oil as a hazardous waste and proposing management standards for recycled oil, but in summary:

- Exempting small quantity generator used oil (used oil generated in quantities of 0-100 kg per month) would exempt approximately 9 per cent of all used oil generated. In contrast, the exemption for small quantity generator hazardous waste (hazardous waste generated in monthly quantities of 0-100 kg per month) exempts only 0.007 percent of all hazardous waste. EPA does not believe such a

rule contains an amendment to § 261.5 indicating that small quantity generator hazardous waste-used oil mixtures are not exempt from regulation when burned for energy recovery but are subject to Subpart E of Part 266.

This means that, at least on an interim basis, such mixtures can be burned in nonindustrial boilers if they meet the fuel specification. These mixtures also are subject to the administrative controls for off-specification used oil fuels should they fail to meet the fuel specification. Generators of these mixtures would *not* be subject to regulation unless they are also marketers of used oil fuel. (See Part Four below.)

EPA has not reached a final decision on which controls should apply to this type of hazardous waste. We also wish to examine further, and seek comment on, the impacts on small businesses should all of these hazardous wastes be regulated at various levels of control. See RCRA section 3001(d). Because we believe further comment on an ultimate regulatory regime is appropriate, we have decided to retain as an interim measure the regulatory scheme initially proposed whereby this type of small quantity generator waste remains subject to all of the controls applicable to used oil fuel. This will ensure that there is no outright exemption while the Agency evaluates an ultimate resolution in its consideration of comment on the comprehensive rules for recycled oil soon to be proposed.

3. Used Oil that Exhibits a Characteristic of Hazardous Waste. Used oil itself might be a hazardous waste if it exhibits a characteristic of hazardous waste. The most likely

result consistent with Congressional intent that recycled oil be regulated as necessary to protect human health and the environment, particularly in light of statements of evident legislative intent that crankcase oil (which is generated by small quantity generators) be regulated. See RCRA section 3014(b); H.R. Rep. 96-1415 at 6.

- The total volume of recycled used oil generated by small quantity generators is significantly greater than that of all other small quantity generator hazardous wastes combined: 340,000 tons/year vs. 180,000 tons/year;

- Unregulated small quantity generator used oil could have greater potential for coming into direct human contact than other small quantity generator wastes because such a large volume is burned in the residential market.

Thus, the Agency sees important distinctions between small quantity generator used oil and other small quantity generator hazardous waste. This reasoning also applies to regulating recycled oil in today's final rule—prior to recycled oil being a hazardous waste—without regard for quantity generated. (The Agency is not reaching the question of whether, assuming there was no difference between small quantity generator used oil and other small quantity generator hazardous waste, other hazardous waste generated in volumes of 0-100 kg per month should be regulated.)

possibility is ignitability.^{49, 50} As discussed at proposal (see 50 FR at 1693), EPA intends that used oil that is a hazardous waste solely because it exhibits a characteristic of hazardous waste be regulated as used oil fuel (where so recycled), provided that it is not mixed with a hazardous waste.⁵¹ Ignitable used oil is regulated as used oil under today's rule and is prohibited from burning in nonindustrial boilers when its flash point is less than that of commercial fuel (i.e., 100 °F).

We have considered whether a low flash point serves as a presumptive indication of mixing with hazardous waste, and therefore, that such mixtures should be regulated as hazardous wastes ineligible for regulation under section 3014 standards for used oil. We conclude that low flash point is not an indicator of mixing for a number of reasons and that such oil should be regulated as used oil.

Low flash point may not be indicative of mixing with hazardous waste because the low flash point may be attributable to benzene, toluene, or xylene added to crankcase oil from engine blow-by (these compounds are constituents of gasoline) rather than as spent solvent. Low flash point could also be attributable to mixing gasoline from tank drainings at auto service and repair shops with used oil. Gasoline is a commercial chemical product exhibiting a characteristic of hazardous waste. When gasoline (or any commercial chemical product) is discarded, it is subject to regulation as hazardous waste. But when a commercial chemical fuel is recycled (e.g., mixed with used oil and burned for energy recovery), it is not discarded (within the meaning of the rule) and so is not a hazardous waste. See § 261.33 (July 15, 1985) and 50 FR 618 (January 4, 1985).

In addition, today's rule for burning low flash point used oil (or any off-

⁴⁹ Although most used oils have a flash point greater than 200 °F, 28% of the used oil samples had a flash point less than 140 °F. Source: Franklin Associates Ltd., *Composition of Used Oil*, p. 3-56.

⁵⁰ Although used oil may contain high levels of lead, arsenic, cadmium, chromium, or barium, oil does not often exhibit the characteristic of EP Toxicity for these metals. In addition, these metals are present in used oil almost invariably as a result of the oil's use, not as a result of adulteration with hazardous waste. Nevertheless, since these metals can pose a hazard when used oil is burned for energy recovery, the specification for used oil that may be burned in nonindustrial boilers limits levels of arsenic, cadmium, chromium, and lead. Barium levels are not considered to pose a substantial health hazard and, thus, barium is not included in the specification. (See section IV.C in the text.)

⁵¹ Except that mixtures of small quantity generator hazardous waste and used oil are subject to regulation as used oil, as discussed above.

specification used oil) provides a level of environmental protection analogous to that provided by the rules for burning hazardous waste fuels. Neither hazardous waste fuel nor off-specification used oil fuel may be burned in nonindustrial boilers. The only area where the classification as used oil results in less regulation is with respect to storage and transportation of off-specification used oil. Although not regulated by today's rule, storage and transportation of off-specification used oil is addressed in the Used Oil Listing/Management Standards soon to be proposed. The purpose of today's rule is to begin regulation of blending and burning activities by prohibiting burning of hazardous waste and contaminated used oil in nonindustrial boilers. Other rulemakings will propose comprehensive regulations under section 3014 for storage and transportation of used oil, and for the actual burning of off-specification used oil and hazardous waste fuels in industrial boilers and industrial furnaces. Thus, the primary purpose of today's final rule is met by regulating low flash point oils as off-specification used oil rather than as hazardous waste, while decisions on appropriate controls (and impacts) for storage and transportation of off-specification used oil are left to the rulemaking specific to used oil that will be proposed under section 3014.

Commenters asked whether used oil known to be mixed with a characteristic hazardous waste is regulated as used oil fuel or hazardous waste fuel if the mixture exhibits a characteristic. As discussed above, used oil mixed with hazardous waste is regulated as hazardous waste fuel.⁵² It is only when we are uncertain that mixing has occurred that we give the benefit of doubt (e.g., low flash point used oil and used oil containing less than 1000 ppm total halogens) and do not presume that mixing has occurred. Thus, when used oil has been mixed with a characteristic hazardous waste, the mixture is regulated as hazardous waste fuel if it continues to exhibit a characteristic. If the resultant mixture no longer exhibits a characteristic of hazardous waste, it is regulated as used oil.⁵³ This is merely a

⁵² Except that mixtures of small quantity generator hazardous waste and used oil are subject on an interim basis to regulation as used oil (although classified as hazardous waste fuel).

⁵³ It should be noted that mixing a characteristic hazardous waste with another material to render the waste nonhazardous constitutes treatment of hazardous waste subject to applicable standards under 40 CFR Parts 264-265 and 270, and the notification requirements of section 3010 of RCRA.

statement of the "mixture rule" in § 261.3.

Some used oils may exhibit a characteristic of hazardous waste but meet the specification for used oil fuel exempt from regulation.⁵⁴ Examples are used oil fuel with a flash point less than 140 °F, the hazardous waste characteristic, but greater than 100 °F, the specification level, and (much less frequently) used oil fuel with metals levels (particularly lead) greater than the EP toxic characteristic levels, but less than the specification levels. Although such used oils are exempt from regulation and may be burned in nonindustrial boilers, the specification ensures that such burning would not pose significantly greater risk than burning virgin fuel oil.

C. The Specification for Used Oil That May Be Burned in Nonindustrial Boilers

The Agency has developed a specification for used oil fuel that may be burned without regulation (i.e., burned without regulation in nonindustrial boilers as well as other boilers or industrial furnaces). Given that oil meeting specification parameters may be burned in nonindustrial facilities like apartment and office buildings, the specification is intended to be protective under virtually all circumstances.

In this section of the preamble, we discuss comments on EPA's risk assessment, the basis for selecting specification parameters and levels, and explain the changes made in the specification in response to comments. We also explain why we rejected certain commenters' arguments that off-specification used oil should not be blended to meet the specification and that all burning of used oil in nonindustrial boilers should be prohibited. Finally, we provide guidance on analytical procedures and testing frequency to determine conformance with the specification and the rebuttable presumption of mixing hazardous halogenated solvents.

1. *Comments on EPA's Risk Assessment.* EPA considered regulating any contaminant typically found in used oil in higher concentrations than in virgin oil, and which also was determined to pose a significant risk to human health and the environment when burned. Some commenters argued that EPA's risk assessment approach is overly conservative resulting in

⁵⁴ We have noted above that the rule provides the same level of protection for burning hazardous waste fuel and for burning used oil exhibiting a characteristic of hazardous waste that also is off-specification used oil fuel. This is because neither hazardous waste fuel nor off-specification used oil fuel may be burned in nonindustrial boilers.

unnecessarily stringent regulations, while others argued that the assessment did not adequately consider all risks.

The Agency believes the PEDCo risk assessment⁵⁵ adequately indicates the potential for substantial risk from burning used oil in urban areas. The risk assessment, with one exception, is used to indicate potential risk, not to actually set specification levels based on some qualification of risk.⁵⁶ We used the risk assessment to identify those constituents that may pose increased risks at levels that are cause for concern given the large number of exposed individuals in urban areas. When those constituents are typically found in used oil at levels greater than in virgin fuel oils (i.e., the 95th percentile level in No's. 2-6 fuel oils), they were included in the specification at their 95th percentile levels in virgin fuel oils. We reasoned that higher levels could pose substantial risk, and levels lower than found in virgin fuel oil would not provide protection of human health and the environment if used oil is replaced (as it would be) by virgin oil.

The PEDCo risk assessment is fully documented in a published report, a copy of which is in the public docket. The assessment is also summarized in some detail in the proposal. See 50 FR 1693-1700. The primary inputs to the emissions models were actual data (e.g., composition of used oil based on hundreds of analyses; emissions were modeled for the New York City urban area considering actual meteorological conditions and projections of used oil burning based on actual density and location of multi-family dwelling units). Boiler emissions were projected assuming 97% destruction of organics and a 75% emission rate for metals. The Agency considers the 97% destruction efficiency for organics reasonable but conservative given that test burn data indicate that very small boilers can achieve 99% to 99.99% destruction efficiency for hard-to-burn chlorinated compounds.⁵⁷ Although data on metals emissions rates are very limited, the available data indicate that metals emissions rates average 31 to 75%, with chromium having the lowest rate and lead the highest.⁵⁸ We thus consider a

⁵⁵ PEDCo Environmental Inc., *A Risk Assessment of Waste Oil Burning in Boilers and Space Heaters*, August 1984.

⁵⁶ For lead, the risk assessment is used to estimate the high end of the proposal specification range. See 50 FR 1697-1699 (January 11, 1985).

⁵⁷ GCA Corp., *Environmental Characterization of Waste Oil Combustion*, May 1984, pp. 18 and 20.

⁵⁸ PEDCo Environmental Inc., *Risk Assessment of Waste Oil Burning*, January 1984, pp. 3-17 and 3-20.

75% emissions rate for metals to be a realistic, but reasonably conservative assumption.

The two air dispersion models used to estimate ground level concentrations of contaminants are routinely used by EPA for that purpose. Estimated ambient levels were used to project the increased risk from carcinogenic compounds and to determine whether levels of other compounds that have a safe or threshold level of exposure (i.e., threshold compounds) would be likely to cause substantial adverse health effects. The compounds considered to be carcinogenic and their potency factors were obtained from EPA's Carcinogen Assessment Group. To determine whether chronic exposure to the estimated ambient levels of threshold compounds would pose a health hazard, Environmental Exposure Limits (EEL's) were calculated. EEL's are based primarily on workplace threshold limit values (TLV's) published by the American Conference of Governmental Industrial Hygienists. The TLV's are adjusted mathematically for use in assessing environmental exposure by considering a number of factors including: exposure duration, population susceptibility, and the nature and conditions of the experimental health effects data. TLV's are typically used by the Agency to project safe levels of exposure when more appropriate animal health effects data are not available. The limitations of using TLV's to determine EEL's are well documented by PEDCO⁵⁹.

Although some assumptions were necessary as with any risk assessment, and it can be argued that those assumptions were too conservative or too lenient, the Agency does not believe (and commenters did not show) that the use of alternate, but reasonable, assumptions would affect the outcome of the assessment.

Specific comments on particular aspects of the risk assessment are discussed below.

2. Specification Parameters. As discussed above, EPA identified typical contaminants of used oil and proposed specification levels for those compounds found in higher concentrations in used oil than in virgin refined fuel oil and which could also pose a significant health risk when burned. (See Table 2 below.) We did not propose specification levels for compounds found in used oil at the same or lower levels than are found in virgin refined fuel oil because users could simply switch to

virgin oil to replace the recycled product without any environmental benefit.

We have added total halogens and deleted PCBs from the specification, as discussed below. We also respond below to comments that a number of other constituents should be added to the specification.

TABLE 2.—USED OIL FUEL SPECIFICATION¹

Constituent/property	Proposal allowable level	Final rule allowable level
Arsenic.....	5 ppm maximum.....	5 ppm maximum.
Cadmium.....	2 ppm maximum.....	2 ppm maximum.
Chromium.....	10 ppm maximum.....	10 ppm maximum.
Lead.....	10-100 ppm maximum ² .	100 ppm maximum.
PCBs.....	50 ppm maximum.....	
Total halogens.....		4000 ppm maximum.
Flash point.....	100 °F minimum.....	100 °F minimum.

¹ The specification applies only to used oil that is not mixed with hazardous waste other than small quantity generator hazardous waste.

² EPA proposed to a select level from the range of 10 to 100 ppm for promulgation. Lead is limited to 100 ppm by today's final rule.

a. Total Halogens. We have added total halogens to the specification because burning fuels with high chlorine levels can have direct and indirect effects on human health and the environment. As noted in background documents to the proposed rule, and as observed by a number of commenters, hydrogen chloride emissions from burning such fuels can increase ambient levels of hydrochloric acid and contribute to acid rain. Equally significant, the chlorine can also accelerate corrosion of boiler components which could decrease combustion efficiency resulting in increased emissions of incompletely burned combustion products. Corrosion of any air emissions control equipment could also be accelerated, reducing control efficiency and directly increasing emissions of pollutants. (See also H.R. Rep. 98-198 at 42 noting this concern.)

We selected a specification level of 4,000 ppm for total halogens⁶⁰ based on halogen levels in high chlorine coal. We believe that limiting halogen levels to the highest levels found in fossil fuels will ensure that burning used oils with equivalent or lower halogen levels will not accelerate corrosion rates.⁶¹

⁶⁰ It is only by coincidence that this is the same level originally proposed for the rebuttable presumption. The specification parameters apply only to used oil fuel after it has been determined that the used oil is not mixed with hazardous waste (e.g., by applying the presumption of mixing). Thus, the total halogen specification level is based on different principles and is used for different purposes than the total halogen level for the presumption of mixing.

⁶¹ Boiler manufacturers become concerned about excessive corrosion rates when coal chlorine levels exceed 2,500 ppm. A boiler burning used oil containing about 4,000 ppm chlorine would be

Although used oil normally replaces virgin fuel oil that has very low halogen levels (less than 100 ppm), we do not believe burning used oil with halogen levels found in coal will substantially increase corrosion rates. In fact, many boilers burning fuel oil were originally designed to burn coal and were converted to oil burning to meet air emissions standards.

Used oil fuel (not mixed with hazardous waste) can contain high levels of halogens from two sources. As discussed above metalworking oils are sometimes processed to produce fuel. These metalworking oils can contain extreme pressure additives that are highly chlorinated, but nonhazardous, organic compounds. Total chlorine levels in these used oils can be several percent.

In addition, "light ends" from the distillation (e.g., rerefining) of used oil can contain high levels of halogenated compounds. Although the used oil feedstock entering the distillation process contains less than 1000 ppm of total halogens and is not presumed to be a hazardous waste, the oil can contain insignificant levels of volatile, halogenated compounds (e.g., less than 100 ppm of halogenated compounds listed as hazardous spent solvents). The light ends produced from such oil will contain much higher levels of halogenated compounds due to the concentrating effect of the distillation process. These light ends are a by-product of used oil rerefining to produce recycled lube oil and are often burned on-site as fuel. These light ends are regulated as used oil rather than as hazardous waste even though their total halogen content exceeds 1000 ppm and they contain substantial levels of halogenated compounds listed as hazardous spent solvents. This is because the halogenated compounds are present in significant levels as a result of processing (i.e., they are concentrated), not as a result of mixing with halogenated hazardous waste.⁶²

When light ends containing less than 4000 ppm total halogens (but perhaps up to 4000 ppm of halogenated compounds that are listed as hazardous spent solvents) are burned, emissions of

exposed to the same quantity of chlorine per hour as it would be if it were burning coal containing 2,500 ppm chlorine. This is because the heating value of used oil is higher than that of coal (16,500 vs. 11,000 Btu/lb) and, thus, less used oil is required to provide a given boiler heat input.

⁶² Although low levels of halogenated compounds (e.g., less than 100 ppm of tetrachloroethylene) in the used oil feedstock to the distillation process may sometimes result from mixing with hazardous spent solvents, the levels are too low to presume such mixing has occurred.

⁵⁹ PEDCO Environmental Inc., *A Risk Assessment of Waste Oil Burning*, pp. E-2 through E-15.

hydrogen chloride or incompletely burned halogenated compounds will not pose a substantial risk to human health and the environment.⁶³ Light ends with more than 4000 ppm total halogens are regulated under today's rule as off-specification used-oil, and as such, cannot be burned in nonindustrial boilers. We are developing permit standards for burning such oil (scheduled to be proposed in 1986) that would consider the hazard posed by the presence of hazardous halogenated constituents. (Permit standards for burning such used oil may in fact be similar to the standards for burning hazardous waste fuels.)

b. *PCBs*. EPA included polychlorinated biphenyls (PCBs) in the proposed specification only as a reference to the Agency's rules regulating PCBs. PCBs are regulated under the Toxic Substances Control Act (TSCA) and the rules are codified at 40 CFR Part 761. Those rules include controls for the use and disposal of materials containing PCBs.

PCBs are not included in the final specification promulgated today, however, because commenters indicated that the crossreference caused confusion. Specifically, commenters were concerned that setting a specification level could encourage dilution of PCBs in an attempt to avoid regulation under TSCA. Dilution to avoid regulation is expressly prohibited under the TSCA rules. See § 761.1(b).

If used oil fuel contains PCBs and also does not meet the used oil fuel specification provided by today's rules, then it is subject to the more stringent of the applicable TSCA PCB rules and today's used oil fuel rules.

c. *Other Constituents*. Commenters suggested that other used oil constituents should be included in the specification notwithstanding our arguments that these constituents either are not likely to pose substantial health risk or that they are not present in used oil at significantly greater levels than virgin oil (and lower specification levels could result in a virgin product displacing the recycled product with no environmental benefit).

(1) *Barium and Zinc*. Although we found that barium and zinc are present in used oil in concentrations 10-100 times greater than in virgin fuel oil, the Agency's risk assessment indicated that the resulting increased levels of barium and zinc would produce insignificant risks to human health and the environment.

Several commenters expressed concern over what they considered the serious health impacts of high levels of barium and zinc, and argued that EPA should err on the overprotective side by prescribing specifications for these metals. EPA continues to believe that the presence of these metals in used oil does not pose significant risk for the reasons discussed below.

EPA's risk assessment indicates that maximum ambient levels of zinc from burning used oil could represent about 2% of the Environmental Exposure Limit (EEL).⁶⁴ Thus, zinc does not have a serious impact on air quality near single or multiple sources, or in high-density urban areas.

Although the case is less clear with barium, the Agency concludes that barium likewise does not pose a serious health risk. The PEDCo risk assessment indicates that maximum ambient levels of barium could represent 80% of the EEL (*d*). Given that the inhalation of barium can cause toxic effects (primarily an increase in muscle excitability, particularly in the cardiac muscle), the Agency specifically asked for comment on whether barium should be added to the specification.

For a number of reasons, however, the PEDCo risk assessment overstates the risk posed by barium. The PEDCo analysis used an early survey of used oil analyses to determine barium levels in used oils. The most recent and expanded data base includes 752 barium analyses compared to the 400 analyses in the data base used by PEDCo. The 90th percentile barium levels used in the risk assessment (based on the 400 analyses) was 485 ppm, while the 90th percentile barium level in the expanded data base is only 251 ppm, about 50% lower. Given that composition data based on the expanded data base are considered more representative, the PEDCo analyses overstates ambient barium levels by a factor of two.

In addition, the PEDCo assessment estimates a safe level for lifetime exposure to airborne barium based primarily on the workplace threshold limit value (TLV). This safe level is called an Environmental Exposure Limit (EEL). See discussion above on EELs. The barium ELL calculated for the risk assessment is more than 50% lower than the safe level calculated from the interim Acceptable Daily Intake set by EPA.⁶⁵ The ADI-based safe exposure

level is considered more appropriate than the TLV-based EEL because the ADI is based on a comprehensive review of pertinent toxicologic and environmental data. EELs are commonly used for risk assessments only when ADI's have not been determined (or cannot be determined because of inadequate data). Thus, the risk posed by barium has been overstated by more than a factor of two for this reason as well.

In summary, the PEDCo assessment overstates the risk posed by barium by more than a factor of four. When these factors are considered, the maximum ambient levels (assuming clustered boilers with overlapping emission plumes, another conservative assumption) would be 0.18 $\mu\text{g}/\text{m}^3$ while the ADI-based safe level for chronic exposure is 1 $\mu\text{g}/\text{m}^3$.⁶⁶ When background ambient barium levels are added to the maximum levels from used oil burning, total ambient barium levels could range from 0.18 to 0.43 $\mu\text{g}/\text{m}^3$.⁶⁷ As with lead emissions discussed elsewhere, ambient barium levels thus would not be expected to pose significant risk except in extreme and unique "hot spot" situations (e.g., where boilers are clustered together, and receptors are located directly downwind, very close to the boilers, and at the centerline of the emissions plume), which would occur only very rarely.

(2) *PNA's*. A few commenters indicated the need to set specification levels for polynuclear aromatic compounds (PNAs).⁶⁸ A major environmental commenter was critical of EPA's risk assessment in general, and was particularly concerned with EPA's conclusion that specification levels were not needed for PNAs. The commenter argued that data cited by the Agency did

⁶³ This comparison still overstates the risk because the PEDCo assessment calculates maximum ambient levels for the month of January when used oil burning is greatest. The ADI-based safe level of exposure, however, assumes constant exposure over a lifetime. Thus, average annual ambient levels (including summer months when little used oil is burned) should actually be used for comparison to the ADI-based safe exposure level.

⁶⁴ Op Cit., Peer Consultants, Inc., p. 4. It should be noted however, that it is not clear to what extent the background barium levels already include barium from used oil burning. Thus, adding the so-called background levels to levels from used oil burning also may overstate the risk.

⁶⁵ PNAs are a subset of organic compounds known as polyaromatic hydrocarbons (PAHs). PNAs are of particular concern because some are known carcinogens. PAHs are compounds with two or more benzene rings, the basic structure that separates aromatic or "ringed" compounds from aliphatic or "chain" compounds. PNAs are compounds with two benzene rings fused together so that they share two carbon atoms.

⁶⁴ PEDCo Environmental Inc., *A Risk Assessment of Waste Oil Burning*, p. 5-2.

⁶⁵ EPA Environmental Criteria and Assessment Office, *Health Effects Assessment for Barium*, June, 1984, p. 13 (Draft), and Peer Consultants, Inc., *Health Effects and Ambient Data for Barium*, October 1984, p. 9 (Unpublished Report).

⁶³ As discussed above, even very small boilers can achieve 99% to 99.99% destruction efficiency for halogenated compounds.

not show, as the Agency indicated at proposal,⁶⁹ that PNA levels in used oil and virgin fuel oil are comparable, and that PNA emissions from burning used oil and virgin fuel oil are comparable.

We have reviewed the data used to support our decision at proposal and continue to believe that the risk posed by PNAs from burning used oil and virgin fuel oil is comparable. The following data (Table 3) show that levels of benzo(a)anthracene and benzo(a)pyrene, the PNAs typically of concern due to their carcinogenicity, in used oil and virgin fuel oil are comparable:

TABLE 3.—PNA LEVELS IN USED OIL AND VIRGIN FUEL OIL

Compound	Concentration in used oil (ppm) (90th percentile)	Concentration in virgin fuel oil (ppm) (range)
Benzo(a)anthracene	40	18-97
Benzo(a)pyrene	16	29-44

Source: Franklin Associates, Ltd., *Composition of Used Oil*, pp. 1-12 and 5-9.

Although PNA levels in distillate virgin fuels (e.g., No. 2 oil) are much lower than in residual No. 6 oil, it is reasonable to compare used oil levels in No. 6 oil because used oil frequently (indeed, most often) displaces No. 6 oil.

In addition both Recon and GCA⁷⁰ reported that they could not find detectable levels of benzo(a)pyrene (BaP) in used oil emissions during a total of 13 test burns. The BaP detectable levels ranged from 6-9 $\mu\text{g}/\text{m}^3$ for the GCA tests. Further, emissions of total PNAs from burning used oil and virgin oil appear comparable. Emissions of PNAs, mostly naphthalene compounds, measured by GCA during a number of test burns at each of six sites averaged 92 $\mu\text{g}/\text{hr}$.⁷¹ If virgin fuel oil had been burned rather than used oil and if total PNA emissions were 46 $\mu\text{g}/\text{btu}$, as reported by PEDCO (See PEDCO, *Risk Assessment of Waste Oil Burning*, p. D-7) as typical for residual fuel oil boilers with capacities less than 250×10^6 btu/hr, PNA emissions from virgin oil

burning for those 6 test sites would have averaged about 96 $\mu\text{g}/\text{hr}$.

Given that it appears that the concentration of PNAs of primary concern are comparable in used oil and virgin fuel oil, and that total PNA emissions from burning used oil and virgin fuel oil are comparable, we have not set specification levels for PNAs.

(3) *Benzene, Toluene and, Naphthalene*. One commenter argued that EPA did not adequately consider the risk posed by emissions of benzene, toluene, and naphthalene. The PEDCO risk assessment concluded that ambient levels of toluene and naphthalene would be less than 1% of the Environmental Exposure Limit (EEL) considering emissions from point sources of various sizes, from point sources clustered very closely together, and multiple point sources located in high density urban areas.⁷² PEDCO also concluded that ambient levels of the carcinogen, benzene, would pose an increased risk to the most exposed individual of 2.7×10^{-8} (1:37,000,000).⁷³ It should be noted that PEDCO's risk assessment is considered conservative in some respects, including the assumption that boilers burning used oil will achieve a destruction efficiency of only 97% although test burn data indicate that even very small boilers when operated properly appear to achieve 99 to 99.99% destruction efficiency. Nonetheless, the commenter suggested that the Agency consider conducting the so-called "hot spot" exposure analysis for those compounds similar to the analysis conducted for lead.⁷⁴

The hot spot analysis considers what may be considered truly "worst case" situations where two sources are located close together, and the receptor (exposed person) is located directly downwind from the sources, very close to the sources (i.e., 25-50 meters from the source), and elevated to the height of the emission plume (i.e., as though the emission plume were blowing into the air intake of a building's ventilation system). We have used this scenario to project ambient levels of benzene, toluene, and naphthalene in those situations. Even under those extreme and very rare situations, and conservatively assuming 97% destruction efficiency, ambient levels of toluene and naphthalene still do not exceed 1% of the EEL for those compounds. Ambient levels of benzene do not exceed levels that would pose an increased risk of 1×10^{-5} (1: 100,000). If

the destruction efficiency of benzene were assumed more realistically to be 99% rather than 97%, the increased risk would be less than 4×10^{-6} (1:250,000). Given the remote likelihood that the modeled situations would occur, and that risks are still not very high even under these worst case conditions, we conclude that presence of these compounds does not pose a significant health risk when used oil is burned for energy recovery.⁷⁵

As a final note, although we do not have data on benzene, toluene, and naphthalene levels in virgin fuel oils, we would expect to find high levels of volatile benzene and toluene in distillate oils (e.g., No. 2) and high levels of naphthalene in residual oils (e.g., No. 6). Given that used oil and used oil blends are substituted for all grades of oil (i.e., No's 2-6), the levels of these compounds in used oil are likely to be comparable to levels in virgin oil.

(4) *ASTM Specifications*. A few commenters suggested that EPA include specification parameters such as viscosity and bottom sediment and water set by the American Society for Testing and Materials (ASTM) to ensure proper boiler operation. ASTM specifications vary according to fuel oil grade (e.g., No. 2 distillate oil though No. 6 residual oil). Commenters argued that the ASTM specifications were needed to ensure optimum boiler operation and, thus, optimum combustion of used oil which would minimize emissions of incompletely burned toxic compounds (e.g., PNAs as discussed above).

We understand the issue commenters are raising but do not believe it is, in fact, a frequent problem. We presume that burners purchase fuel, including used oil and blends of virgin oil and used oil, specified by the standard fuel oil grade that their boilers are designed to burn. Further, we presume that fuel oil, whether virgin or containing used oil, must meet the ASTM specifications for the designated grade or be in breach of contract. Thus, the marketplace already should ensure application of the ASTM specification. We will, however, reconsider this point if during implementation of today's rule enforcement officials determine that misrepresented used oil is frequently being sold and existing laws are inadequate to prevent abuses and we

⁷⁵ Although believe that the levels of toluene, benzene, and naphthalene do not present a hazard when used oil is burned (and thus specification levels are not needed), these toxicants may still present a significant hazard when used oil is stored and transported. We, therefore, consider these hazards when we will soon propose to list used oil as a hazardous waste.

⁷² PEDCO Environmental Inc., *Risk Assessment of Waste Oil Burning*, p. 5-2.

⁷³ *Id.*, p. 5-6.

⁷⁴ *Id.*, pp. 4-39 through 4-43.

⁶⁹ See 50 FR 1695 (January 11, 1985).

⁷⁰ Recon Systems, Inc., and ETA Systems, Inc., *Used Oil Burned as Fuel*, 1980, p. 4-6; and GCA Corp., *Environmental Characterization of Waste Oil Combustion*, pp. 19, 120, 126, 132, 138, 144, and 150. Both of these reports were part of the Agency's record at proposal.

⁷¹ Tests are cited in previous note. One test at one site had 5 times the average PNA emissions at that site during unstable combustion conditions. (The contractor deliberately induced these conditions as part of the test program.) Results from that test are not included in calculating the 92 $\mu\text{g}/\text{hr}$ average. When the results from that test are included, the average PNA emissions increase to 106 $\mu\text{g}/\text{hr}$. See GCA Corp., p. 120.

determine that the practice can result in substantial increases in emissions of toxic compounds at levels that pose a significant risk to human health and the environment.

Another reason we are not addressing this potential problem in today's rule is that there does not appear to be a simple remedy. We cannot require that all used oil meet the ASTM specifications for a particular fuel oil grade because different boilers are designed to burn different grades. To address the problem, the responsible burner must simply now that the used oil (or virgin/used oil blend) he is purchasing meets the grade his boiler is designed to burn. This could be accomplished, perhaps, by requiring that the invoice or bill of sale indicate the grade of fuel, and if necessary, a statement that the oil meets the ASTM specifications for that grade. On the other hand, the burner who is trying to save on his fuel costs may try to burn lower grade (or ungraded) used oil provided that his increased maintenance costs do not off-set his fuel savings. He is not concerned about emissions of incompletely burned compounds. If this were the problem, a solution would be to require that the marketer determine the grade of his oil by ASTM specification and sell the used oil only to a burner with a boiler designed to burn that grade of oil. Similar requirements could be placed on burners (i.e., they could burn only that fuel oil grade the boiler is designed to burn). We believe that it is clear that the implementation and enforcement of provisions such as these would be a massive undertaking and would intrude substantially on the marketing and use of what is essentially a commercial product—used oil meeting the specification established in today's rule. Before seriously considering any such remedies, we would need to much better define the "problem".

(4) *Other Compounds.* A few commenters suggested that the following compounds also be included in the specification: nickel, beryllium, mercury, sulfur, nitrogen, and phosphorous. None of these compounds are included for the reasons discussed below.

Nickel is not included in the specification because the 90th percentile nickel level in used oil is lower than the level found in virgin residual fuel oil (40 ppm).⁷⁶ Although limited, data on

beryllium in virgin fuel oils indicate that beryllium levels average much less than 1 ppm, while analyses of 263 used oil samples indicate that the 90th percentile beryllium level in used oil is less than 0.3 ppm. (Ibid.) Similarly, limited data on mercury indicate that levels can range from 0.005 to 0.4 ppm in virgin fuel oils and are less than 0.1 ppm in used oils. (Ibid.) Clearly, beryllium and mercury are not found in used oils at levels of concern, and nickel emissions (and any health risk posed) or lower from burning used oil than virgin fuel oil.

Levels of sulfur and nitrogen are somewhat higher in virgin fuel oil than in used oil.⁷⁷ Thus, sulfur and nitrogen oxide emissions from burning used oils would not be higher. Although we do not have data on phosphorous levels in used oils and virgin fuel oils, phosphorous is neither a designated hazardous waste constituent on Appendix VIII of Part 261 nor does it interfere with boiler efficiency at the levels found in used oil.

3. *Specification Levels.* A number of commenters provided suggestions on specification levels for the metals for which EPA proposed a specification level and for flash point. The basis for the specification levels for these parameters is discussed below.

a. *Lead.* EPA proposed to select a specification level for lead from the range of 10–100 ppm, and specifically requested comments on an appropriate level. As discussed in the preamble to the proposal (see 50 FR 1697–1699 (January 11, 1985)), levels higher than 100 ppm could result in ambient lead levels exceeding the National Ambient Air Quality Standard (NAAQS) for lead in densely populated areas where boilers are clustered together and receptors may be close to the sources. Although 100 ppm appears to be protective with respect to the NAAQS, that level may not be protective because health effects data available since the lead NAAQS was established indicate that lead causes serious, but apparently noncancerous, health effects at any level of exposure (i.e., lead appears to be a "nonthreshold" pollutant). EPA is considering these new health effects data in its current efforts to determine whether the existing lead NAAQS is adequately protective. In addition,

EPA, *Listing Waste Oil As Hazardous Waste—Report to Congress*, January 1981 (SW-809); Yen, T.F., *The Role of Trace Metals in Petroleum*, Ann Arbor Science Publishers, Ann Arbor, Michigan, 1975, p. 107; Valkovic, Vlado, *Trace Elements in Petroleum*, Petroleum Publishing Company, 1980, p. 91; and American Petroleum Institute, *Task Force on Utilization of Waste Lubricating Oils*, October 1975, pp. 21–33.

⁷⁷ PEDCO Environmental Inc., *A Risk Assessment of Waste Oil Burning*, p. 3–18.

because of the new health effects data, EPA believes that it is reasonable to reduce preventable sources of lead exposure. This policy led to the Agency's phasedown of lead in gasoline—by January 1, 1986, lead levels in "leaded" gasoline must be reduced to less than 10% of the levels previously allowed. For these reasons, we believe that a lead specification level should be considered that is lower than that which ensures the current NAAQS would not be exceeded. Thus, we proposed a level of 10 ppm at the low end of the range, which is the 95th percentile lead level in virgin fuel oil. A lower level was not proposed because used oil could be displaced with virgin oil with higher lead levels with no environmental benefit.

We also discussed in the proposal our concern that a specification level lower than 100 ppm could result in used oil currently burned as fuel being diverted to incineration, or perhaps being dumped, because the cost of blending used oil to meet a stringent specification could be prohibitive and because of the difficulty of finding new industrial (and utility) markets for oil that exceeds the specification. If lowering the lead specification level below 100 ppm diverted used oil currently burned as a fuel to incineration, the environmental benefits of that policy are questionable. It is not clear that metals emissions from incineration would be adequately controlled given that many hazardous waste incinerators use wet scrubbers that may not control lead emission efficiently.⁷⁸

We therefore indicated that in considering a specification level lower than 100 ppm, the benefits from reduced lead emissions from used oil burned as fuel must be balanced against the probability of (and adverse effects from) dumping and the diversion of used oil from use as a fuel to incineration.

We also specifically solicited comments on three other points (in addition to an appropriate specification level): (1) Whether factors other than those we considered need to be considered in determining the lead level that would ensure that the lead NAAQS is not exceeded; (2) whether a two-tiered specification, with a lower limit for more populous areas and a higher level for less urban locations, would be

⁷⁸ The Agency intends to control metals emissions from boilers and industrial furnaces burning off-specification used oil and hazardous waste under the permit standards to be proposed in 1988. Once that rulemaking is initiated, the Agency intends to consider whether metals emissions from hazardous waste incinerators are adequately controlled.

⁷⁶ Sources: Franklin Associates Ltd., *Composition of Used Oil*, Appendix A; TRW Environmental Engineering Division, *Emissions Assessment of Conventional Stationary Combustion Systems: Volume III. External Combustion Sources for Electricity Generation*, November 1980, p. 134; US

appropriate; and (3) whether specification levels for arsenic, cadmium, and chromium would be necessary if a low level is promulgated because used oil that fails the specification levels for these other metals would also be expected to exceed a low lead specification level.

A large number of comments were received concerning the lead specification. They are discussed below.

(1) *Selecting a Level from the Proposed Range.* Most commenters argued that EPA's proposed range of 10 to 100 ppm is too stringent. Commenters stated that it would be difficult for used oil to pass a lead specification of less than 100 ppm, which, they asserted, would not only severely restrict used oil burning, but lead to illegal dumping. It was also suggested (by a State commenter with substantial experience in regulating used oil burning) that a lead specification of 100 ppm would be unlikely to cause an exceedance of the lead NAAQS.

Some commenters concurred with EPA's selected range, favoring the high end of the range. A specification of 100 ppm should be acceptable in all but the most densely populated areas, according to these commenters.

Selection of a relatively low level from the range, such as 10 or 20 ppm, was recommended by a few commenters. Some opposed allowing any lead at all in used oil, except in *de minimis* quantities.

(2) *Phase-in a Lower Specification Level as Gasoline Lead Levels are Lowered.* The majority of commenters recommended that EPA set an initial specification for lead at a relatively high level, and then phase in lower levels in incremental steps, tied to the EPA mandated lowering of lead concentration in gasoline which was promulgated on March 7, 1985 (see 50 FR 9386 and 9400). Commenters argued that it would be illogical and unfair for EPA to require lead to pass low specifications in used oil, since most of the lead in used oil originates from the lead in gasoline. Suggested initial levels ranged from the lead in gasoline. Suggested initial levels ranged from 500-1,000 ppm. Commenters also suggested that EPA build a time-lag into such a phasedown program, in which a certain minimum time after the effective date of the March 7, 1985 standards would be allowed to elapse before EPA would effect a lower level for used oil. Such a time-lag would accommodate the delay between the actual use of the lowered lead in gasoline being sold and burned in automobiles, and changing of the oil.

(3) *Risk-Based Specification Level.* Several commenters urged EPA to base

its specification for lead primarily, if not solely, on health effects data and risk from lead exposure, rather than on the current lead NAAQS or the 95th percentile concentration in virgin fuel oil. These commenters argued that regardless of typical contamination levels of lead in virgin fuel oil, EPA is not justified in allowing the burning of used oil with lead levels that may cause serious health effects. Raised blood lead levels in young children and the danger of lead poisoning to pregnant women were cited. Commenters emphasized that lead is bioaccumulative, meaning that repeated intake over time results in additive levels in the body.

(4) *Two-Tiered Approach.* Only a few commenters addressed the suggested two-tiered approach to regulating lead. Commenters stated that it would only cause cleaner, nonurban areas to become more polluted.

(5) *The Need to Regulate Arsenic, Cadmium, and Chromium if a Low Lead Specification Level is Selected.* Most commenters recommended that arsenic, cadmium, and chromium be regulated, even if a low lead level is promulgated. In general, commenters argued that it has not been shown that the level of these metals varies proportionately with lead. Used oil could conceivably have a low concentration of lead, but higher levels of one or more of these three metals. Restrictions for arsenic, cadmium, and chromium were suggested as a safeguard.

(6) *Response to Comments.* After evaluation of these comments, we have decided to promulgate a lead specification of 100 ppm, but to delay the effective date by six months. (The other specification parameters are effective 10 days after the date of publication.) As discussed at proposal, we believe that this level will ensure that nonindustrial boilers do not cause ambient levels to exceed the current NAAQS except in unique and truly extreme scenarios. See 50 FR at 1698 (January 11, 1985). Moreover, we are concerned that promulgation of a level lower than 100 ppm at this time could cause major disruptions to the used oil recycling industry resulting in diversion of oil or dumping with uncertain and potentially adverse environmental trade-offs. (Similar concerns were raised by the House Energy and Commerce Committee in their report on the RCRA amendments. See H.R. Rep. No. 98-198 at 66.)

The 100 ppm lead specification level promulgated today is intended as an interim measure. The Agency believes that this lead level may not be as protective as reasonably possible given the new health effects data mentioned

above. On the other hand, until we know more about the impacts of the other two rules affecting management of used oils (the soon-to-be proposed recycled oil management standards and the permit standards for boilers and industrial furnaces that will be proposed in 1986) on the used oil industry and, ultimately, on used oil flows, we are concerned that a lower level may cause impacts that could result in dumping or incineration of used oil with uncertain environmental trade-offs. Therefore, the Agency will evaluate the risks and costs of a lower lead level in conjunction with the third rule of the series—permit standards for boilers and industrial furnaces—scheduled to be proposed in 1986. Thus, the Agency's final position on the lead specification will be included in the permit standards rulemaking.^{7a}

In response to commenters' concerns that a lead specification level as low as 100 ppm could cause major disruptions of the industry and could result in dumping, the effective date of the lead specification is delayed six months. By that time, the Agency's gasoline lead phase-down standards will result in lowered lead levels in used crankcase oil so that a major disruption of the industry will be avoided, as discussed below.

On March 7, 1985, EPA promulgated standards restricting lead levels in gasoline (see 50 FR 9386 and 9400). The standards require that lead be reduced from the previous limit of 1.1 grams/gallon to 0.5 g/gal by July 1985, and to 0.1 g/gal by January 1986. This reduction of lead in gasoline should result in a

^{7a} We note that the Regulatory Impact Analysis (RIA) developed to support the recycled oil management standards soon to be proposed includes a preliminary analysis of the cost and benefits of lower lead levels. The analysis was initiated before the Agency decided to select 100 ppm as an interim lead specification and to make its final decision on the lead specification in the permit standards rulemaking. In addition, that RIA attempts to predict used oil flows, and thus regulatory impacts of the proposed rule, assuming all three rulemakings are in place. Thus, the RIA makes the best assumptions possible at the time on the cost of compliance with anticipated controls for boilers and industrial furnaces burning off-specification used oil fuel. Nonetheless, that preliminary analysis appears to indicate that lead specification levels lower than 100 ppm would be cost-effective. The Agency intends to review that analysis, up-date assumptions on permit standards and "flow" changes as necessary, and to include a comprehensive analysis of the cost and benefits of lower lead specification levels in the RIA for the permit standards rulemaking. In the interim, the RIA for the recycled oil management standards will be in the public docket for that rulemaking once it is proposed. Comments received on that portion of the RIA dealing with cost and benefits of lower lead specification levels will be considered in developing the Agency's position on this issue in the permit standards rulemaking.

concomitant reduction in lead levels in used oil. We have analyzed the potential impacts of imposing the 100 ppm specification either immediately along with the other specification parameters or in the Spring of 1986, roughly six months after promulgation.⁷⁹ Using a data base of 143 used oils sampled in 1983, we extrapolated resulting lead concentrations to the 1985-86 and 1986-87 heating seasons. Based on the July 1985 reduction of lead in leaded gasoline to 0.5 g/gal, we assumed an average lead concentration (for leaded and unleaded gasoline) of 0.2 g/gal for gasoline affecting used oil to be burned in the 1985-86 heating season. Similarly, based on the January 1986 reduction of lead in leaded gasoline to 0.1 g/gal, we assumed an average lead concentration (for leaded and unleaded gasoline) of 0.05 g/gal for gasoline affecting used oil that would be burned in the 1986-87 heating season. The average lead levels in gasoline were estimated assuming a ratio of 40% leaded to 60% unleaded gasoline consumption for the 1985-86 heating season, and a ratio of 37.5% leaded to 62.5% unleaded gasoline consumption for the 1986-87 heating season. (We also assumed that lead levels in all used oils would decrease because of the gasoline lead phasedown.)

This analysis demonstrates that delay of the implementation of the specification will provide time for the lead phasedown in gasoline and, consequently, in used oil. Significantly more used oil can pass the lead specification in May 1986 than today. The table below illustrates the drop in lead levels in used oil as the lead is reduced in gasoline.

TABLE 4.—PROJECTED CHANGES IN LEAD CONCENTRATION IN USED OIL AS LEAD IS REDUCED IN GASOLINE (PPM)

Percentile	1983	Late 1985	May 1986
35.....	114	69	39
40.....	177	115	44
50.....	490	217	67
75.....	856	337	95
80.....	940	367	104
95.....	1,417	546	248

Source: Franklin Associates Ltd., *Effects of Delay in the Implementation of a Lead Specification on the Ability of Used Oil to Pass the Specification*, June 4, 1985.

As shown, only about 40% of the used oil can pass the lead specification of 100 ppm now. Delay for six months increases the total quantity passing the lead specification to about 80%.

⁷⁹Franklin Associates, Ltd., *Effects of a Delay in the Implementation of a Lead Specification on the Ability of Used Oil to Pass the Specification*, June 4, 1985.

Delaying the effective date of the lead specification has a corresponding effect on the amount of used oil that can pass the specification levels for all of the metals (i.e., lead, arsenic, cadmium, and chromium). As shown in the table below, we estimate that the amount of unblended used oil that can meet the metals specification levels more than doubles if the effective date of the lead specification is delayed six months to May 1986 (i.e., 20% vs. 46%).

TABLE 5.—EFFECTS OF DELAYING THE EFFECTIVE DATE OF THE LEAD SPECIFICATION ON THE PERCENT OF SAMPLES THAT PASS THE SPECIFICATIONS FOR ALL METALS

Percent of samples passing metals specifications assuming—	Nov. 1985 (percent)	May 1986 (percent)
Unblended used oil.....	20	46
75 pct Virgin/25 pct used oil.....	59	69
90 pct Virgin/10 pct used oil.....	91	91

Source: Franklin Associates, Ltd., *Effects of a Delay in the Implementation of a Lead Specification on the Ability of Used Oil to Pass the Specification*, June 4, 1985.

Although the effect of delaying the lead specification is much less significant when used oil is blended with virgin oil (e.g., 59% of used oil blended 75%/25% with virgin oil (75% virgin oil) could meet the metals specification in November 1985 while 69% could pass in May 1986), the Agency is uncertain whether substantial quantities of used oil will be blended with high percentages of virgin oil in the future. We believe that "virgin oil" distributors historically have done much of the blending at the higher ratios (e.g., 90% virgin and 10% used oil) in order to sell the mixture to the nonindustrial market as virgin oil. It is not clear, however, whether these distributors will continue to handle used oil given that they would have to comply with the notification (and other) requirement(s) of today's rules, which would make their used oil management activities public knowledge. Although blending used oil with high percentages of virgin oil to meet today's specification may be economical in the future in some cases, especially by persons currently considered primarily used oil processors, we are concerned that it may take some time for these heretofore (primarily) processors to increase their blending capacity and to find markets for used oil blended with high percentages of virgin oil. (Such "processors" would essentially become fuel oil distributors as well.) Thus, substantial quantities of used oil may not be blended with high percentages of virgin oil in the near term (if ever). Consequently, delaying the effective date of the lead specification is expected to substantially increase the

quantity of used oil that can meet the metals specification levels.

In summary, we believe that a six-month delay in implementing the lead specification is more responsible than making it effective immediately, and may, in fact, result in greater environmental benefit than immediate implementation.

With regard to other lead specification issues, we have decided against development of a two-tiered lead specification level for urban versus rural areas in this rulemaking. Commenters did not support the approach, it would be difficult to develop, support, and implement, and it would encourage burning of dirty fuels in areas with clean air.

Specification levels for arsenic, cadmium, and chromium are also retained. As stated in the proposal, we are concerned that once lead levels in used oil begin to drop, oil will increasingly fail the specification because of one of these other metals. Without the lead specification, burning of these oils would not be controlled.

b. *Arsenic, Cadmium, and Chromium.* In the preamble to the proposal, EPA stated that widespread, unrestricted burning of used oil in boilers can result in a substantial increase in ambient levels of the metals arsenic, cadmium, and chromium since 30-75% of the metals in the fuel can be emitted. Because these metals are carcinogenic, and thus, have no known threshold or safe level of exposure, these increased ambient concentrations would cause an increased risk of cancer to exposed individuals. Specification levels were based on levels of these metals found in dirty virgin fuel oil (i.e., 95th percentile metals levels) because we argued that: (1) Higher levels could result in substantial risk (i.e., 10⁻⁴) given that large numbers of persons in urban areas are exposed to emissions from nonindustrial boilers; and (2) lower levels could result in dirty virgin fuel oil displacing used oil without environmental benefit. (See 50 FR at 1697 (January 11, 1986).)

Several comments specifically questioned EPA's rationale for setting specification levels based on the 95th percentile level of those contaminants in virgin fuel oil. A few commenters stated that because these metals can cause serious health problems, specification levels should be based directly on risk to health rather than on concentration in virgin oil. Other commenters (including a major environmental group), however, supported our decision to use the 95th percentile of virgin fuel oil as a reference point. A few respondents

argued that the specification levels selected on the basis of the 95th percentile in virgin oil were too stringent, and that EPA was being overly conservative in assuming that there are no safe levels of exposure for these metals. Workplace threshold limit values (TLVs) and safe drinking water standards were cited as more reasonable for use as specification levels.

These arguments are unpersuasive. For the reasons discussed in the preamble to the proposed rule and summarized above, we continue to believe that limiting levels of these metals to 95th percentile levels in virgin fuel oil is appropriate.

Several commenters also disagreed with the assumptions used to assess risk from chromium (i.e., that all chromium is emitted in its carcinogenic, hexavalent state and, thus, can cause increased cancer risk to exposed individuals). These commenters protested EPA's assumption that chromium is emitted in the hexavalent form following combustion. Comments ranged from assertions that EPA had no data or information to make such an assumption to theoretical arguments that when combusted, trivalent chromium would not be converted to hexavalent chromium. In general, these commenters suggested that EPA defer specifying a level for chromium until the Agency conducts studies to definitively determine what happens to chromium when burned in boilers.

We agree that only the hexavalent form of chromium has been proven to be carcinogenic, although it is a very potent carcinogen. The data are inadequate to classify the trivalent chromium compounds as to their carcinogenicity.⁶⁰ However, we believe that assuming all chromium compounds emitted from burning used oil in boilers are hexavalent chromium is a conservative, but reasonable assumption. *Ibid.* Although it is likely that a mixture of the two forms is emitted, information is not adequate to specify the form or the relative quantities of each. *Ibid.* EPA has initiated an extensive study to better understand the amount of hexavalent chromium and total chromium being emitted from major sources including coal and oil fired boilers and municipal incinerators. In addition, EPA has formally called for information on issues pertinent to the risk posed by airborne chromium emissions including: (1) Are there adverse health effects associated

with exposure to trivalent chromium?; (2) does trivalent chromium transform in the atmosphere or in the environment to hexavalent chromium and vice versa?; and (3) what is the relative quantity of hexavalent and trivalent chromium emitted from chromium sources? *Ibid.*

The Agency, however, cannot postpone regulatory action, given especially that used oil contains significantly higher chromium levels than virgin fuel oil. Until more information is available on these issues, the Agency will therefore continue to assume that chromium emissions are in the hexavalent form.⁶¹

c. *Flash Point.* Used crankcase oils can be contaminated with highly ignitable constituents of gasoline such as benzene, toluene, and xylene from engine blow-by. Used oils can also be mixed after use with gasoline or other highly ignitable nonhalogenated solvents such as xylene. Even low levels of contamination with these low flash point compounds can reduce the flash point of used oils, normally greater than 200°F, to levels lower than 100°F. Nearly 7% of 650 used oil samples had a flash point below 100°F.⁶²

EPA proposed a specification of 100°F because it is the American Society for Testing and Materials' (ASTM) minimum flash point specification level for virgin fuel oils. EPA reasoned that burners are not accustomed to handling such fuels and so used oils with a lower flash point may present significant hazards during handling and storage. Thus, such low flash point oils need to be controlled. EPA specifically requested comment on whether such low flash point used oils should be regulated as off-specification used oil fuel as proposed, or as hazardous waste fuel.

One commenter argued that low flash point used oil should be subject to regulation as hazardous waste fuel to provide adequate controls during storage and transportation. While share the commenter's concerns, we have decided that low flash point oil should be regulated as off-specification used oil, not hazardous waste fuel. This final rule is therefore the first step in the Agency's efforts to regulate the blending and burning of hazardous waste and used oils fuels. Storage and transportation controls for used oil, including off-specification used oil burned for energy recovery, are soon to be proposed and controls (i.e., permit

standards) on the actual burning of hazardous waste and off-specification used oil fuels are scheduled to be proposed in 1986. Thus, we believe it may be confusing to the regulated community and may preempt regulatory options in these future rulemakings to subject in piecemeal fashion used oil off-specification only for flash point to regulation as hazardous waste fuel. As a matter of fact, the recycled oil management standards propose that used oil, including off-specification used oil fuel, be subject to the same substantive storage and transportation controls for hazardous waste in many situations.

As a final note on this point, low flash point used oil cannot be presumed to be hazardous waste under the mixture rule (i.e., because the oil is mixed with ignitable hazardous waste). As explained in section IV.B.3 above, the low flash point may be attributable to low flash point constituents of gasoline (e.g., benzene, toluene, or xylene) added to crankcase oil during use.

Several commenters argued that a specification level of 100 °F is inconsistent with the definition of ignitable hazardous waste that uses a flash point of 140 °F or below to define ignitability. See 40 CFR 261.21. We explained at proposal the basis for the difference. See 50 FR 1699, n. 58. The 140 °F flash point limit defining an ignitable waste was based primarily on the hazard posed during land disposal. Given that virgin fuel oils can have a flash point as low as 100 °F, we believe that used oils with flash points of 100 °F to 140 °F pose no greater hazard than virgin fuels (provided they meet the other specification limits).

D. Comments on Allowing Blending to Meet the Specification

The Agency received a large number of comments for and against allowing blending of used oil to meet the used oil fuel specification. Operators of used oil rerefinerries and some State environmental officials argued against allowing blending primarily because: (1) Blending does not reduce the total quantity of metals emitted from used oil burning in an urban area—blending limits the emissions from individual sources but allows (in theory) a larger number of sources to burn blended oil so that the same quantity of used oil is burned annually in a given area (and the same quantity of metals are emitted); and (2) allowing blending creates an economic disincentive to remove metals from used oil by rerefining to produce lube oil (and a low-metal content fuel

⁶⁰ See EPA's public notice of "Intent to List Chromium or Hexavalent Chromium as a Hazardous Air Pollutant (50 FR 24317-19 (June 10, 1985)).

⁶¹ See also: U.S. EPA, *The Air Toxics Problem in the United States: An Analysis of Cancer Risks For Selected Pollutants*, May 1985.

⁶² Franklin Associates Ltd., *Composition of Used Oil*, Appendix A.

by-product)⁸² because blending for marketing as fuel is often more profitable than substantial processing.

On the other hand, processors and blenders argued that blending should be allowed because it results in a used oil fuel product that, in general, poses no greater health risk than virgin fuel oils. They argued further that grossly contaminated used oil cannot be economically blended to meet the specification and will go to rerefiners for production of lube oil or to industrial boilers and industrial furnaces for use as a fuel.⁸³

Processors and blenders also argued that without blending, alternate markets may not be available to handle the used oil diverted from burning potentially leading to adverse environmental effects (see section IV.C.3 above). Industrial boilers and industrial furnaces may not be able or willing to burn off-specification used oil given the Agency's plans to regulate such burning (beginning with the notification and other administrative controls provided by today's rule). Further, rerefiners cannot be presumed to be an unlimited outlet for used oil. Although many rerefineries are operating below capacity today, and could perhaps double their capacity within a few years to handle the increased supply if blending were prohibited, profitability of rerefining depends on more than an available supply of used oil. Marketing factors such as demand for recycled lube products and price fluctuations in virgin lube products (resulting from fluctuations in crude oil prices or other factors) are also critical. These marketing factors may have played as large a role historically in limiting the viability of used oil rerefining as has the problem of inadequate supply of used oil feedstock due to competition from the largely unregulated used oil fuel market. Thus, processors and blenders believe that without blending, neither the industrial fuel market nor the rerefining market would be able to handle the used oil that would exceed the specification.

The Agency agrees with points made by both sides. The rule does potentially encourage blending, blending creates a disincentive to remove metals by rerefining, and blending *per se* does not

reduce (in theory) mass emissions of metals in an urban area. However, we believe that some highly contaminated used oils cannot be economically blended and will go to rerefining or to industrial boilers or industrial furnaces that control metal emissions (either currently, or eventually under rules the Agency will propose in 1986). In addition, as discussed above, it is not clear that rerefineries and the industrial fuel market would have the capacity to handle the used oil exceeding the specification if blending were not allowed. In that case, used oil diverted would be incinerated or dumped, with uncertain environmental trade-offs (i.e., compared to allowing blending). Although blending does not reduce (in theory) mass-emissions in an urban area, blending of used oil to meet the specification reduces the risk to the most exposed individuals. Finally, and most significantly, we believe that blending results in a product that can pose no greater hazard than dirty virgin fuel oil.

For these reasons, today's final rule allows blending. It should be noted, however, that this rule is only the first of three rules that will significantly affect the used oil recycling industry. As we develop these rules, we will examine "flow changes" caused by the regulations (e.g., increase in rerefining, decrease in road oiling, etc.). At that point, we will be better able to determine whether our rules only serve to promote dilution versus removal of metals (e.g., by rerefining or by burning in devices with adequate emissions control equipment). We cannot, at this time, conduct such an assessment, and for the reasons cited above, can find no basis to prohibit blending.

E. Consideration of a Total Ban on Burning Used Oil in Nonindustrial Boilers

At proposal, EPA requested comments on whether all used oil burning in nonindustrial boilers should be banned. See 50 FR 1693-94. EPA was primarily concerned that used oil could be mixed with hazardous waste and illegally marketed as used oil fuel meeting the specification.

Several commenters argued for banning all used oil burning in nonindustrial boilers. These commenters were concerned that used oil would be illegally adulterated with hazardous waste once the used oil is outside the regulatory system (i.e., once a collector, processor, or blender documents the used oil meets the specification). These commenters reasoned that illegal adulteration is inevitable given the

current practice, particularly in the Northeast, of mixing hazardous spent solvents with used oil for marketing as virgin fuel oil (usually after blending with virgin oil),⁸⁴ given the nature of the used oil and waste management industry (again, particularly in the Northeast),⁸⁵ and given the profitability of illegal adulteration. It should be noted that the issue these commenters raise here is whether the proposed regulatory scheme (i.e., allowing burning of unregulated used oil meeting the specification in nonindustrial boilers) can be adequately enforced, not whether the specification itself, in conjunction with the rebuttable presumption of mixing halogenated wastes, is protective *per se*.

Other commenters opposed an outright ban on burning used oil in nonindustrial boilers. These commenters were concerned that a ban could lead to illegal dumping or incineration of used oil with adverse or uncertain environmental trade-offs. For reasons discussed above, rerefinery capacity and the industrial fuel market may be inadequate to handle used oil diverted from nonindustrial boilers under a ban.

Today's rule therefore allows burning of used oil meeting the specification in nonindustrial boilers (or any other boiler or industrial furnace) for a number of reasons. We continue to believe that the specification, in conjunction with the rebuttable presumption of mixing, will detect and control used oil illegally adulterated with hazardous waste. See 50 FR 1693, n. 28. In addition, these rules have been developed with an understanding of the current practices of the industry and should result in cost-effective enforcement. Specifically, the controls are focused primarily on the several hundred marketers of these fuels rather than the potentially thousands of burners. These marketers must determine whether they are handling hazardous waste fuel, off-specification used oil, or unregulated used oil that meets the specification, and must manage the fuel accordingly. The rebuttable presumption of mixing hazardous chlorinated waste with used oil, and the use of oil fuel specification will enable both marketers and

⁸² Once used oil is processed to remove metals, it is considered more profitable to further process the oil to produce lube oil rather than to market it as fuel oil.

⁸³ Potential hazards posed by burning of off-specification used oil in these devices should be temporary. The Agency intends to propose permit standards for burning off-specification used oil fuel (and hazardous waste fuel) that will require that the owners and operators of all boilers and industrial furnaces burning these fuels limit metal emissions.

⁸⁴ National Enforcement Investigations Center, U.S. EPA, *Summary of Waste Oil Recycling Facility Investigations*, October 1983.

⁸⁵ *Proceedings of the New York State Assembly Standing Committee on Environmental Conservation Public Hearing on the Unlawful Disposal of Solid and Hazardous Wastes*: September 24-26, 1984 at the New York Chamber of Commerce and Industry, New York (Volumes I, II, III B, and III C), and September 19-21, 1984 at the Orange County Government Center, Goshen, New York (Volume I, II, and III).

enforcement officials to make a clear, objective determination of the type of fuel in question, and thus, the applicable controls. Further, the tracking system for fuel shipments, used oil analysis requirements, and recordkeeping requirements are intended to foster efficient and effective enforcement.

It should be noted that, in response to commenters' concerns about enforceability and tracking of used oil that meets the specification, today's rule expands the recordkeeping requirements for used oil meeting the specification. In addition to records of analysis required by the proposed rule, the person who first claims used oil fuel meets the specification must also keep a record of pertinent information regarding the shipment of the used oil including: name and address of the receiving facility, date of shipment, and quantity shipped. See § 266.43(b)(6)(i). This will enable enforcement officials to track movements one step beyond the initial marketer. We considered applying recordkeeping requirements to all subsequent marketers (e.g., distributors) until the used oil fuel is ultimately burned. We decided not to, however, given that the used oil fuel poses no greater risk than virgin fuel oil and, once it enters the commercial fuel oil market, should not be regulated differently than virgin fuel oil. (We note, however, that subsequent adulteration with hazardous waste or off-specification used oil makes specification used oil subject to regulation as either hazardous waste fuel or off-specification used oil fuel.)

Moreover, in response to commenters' concerns discussed above, we reasoned that hazardous waste could be illegally mixed with virgin fuel oil, as well as with used oil fuel, and sold to nonindustrial boilers. (Comments of the State of New Jersey illustrate that this type of illegal mixing is presently occurring.) Thus, the risk of adulterating legitimate fuels with hazardous waste is not unique to used oil. In light of these considerations, there is no compelling reason to further regulate specification used oil fuel by additional recordkeeping or by a ban on burning in nonindustrial boilers.

F. Analytical Testing to Demonstrate Compliance with Specification Levels and the Rebuttable Presumption

At proposal, EPA indicated that general guidance on sampling and analysis is provided in EPA, *Test Methods for Evaluating Solid Waste*, July 1982, SW-846 (U.S. GPO). See 50 FR 1705. EPA indicated further that the Agency is revising digestion procedures recommended by SW-846 for organic liquids prior to determination of metals

concentrations. We were aware that the digestion procedures specified by Methods 3030 and 3050 do not result in good recovery of metals in some oily matrices. Finally, EPA indicated at proposal that it was verifying the accuracy and precision of two field tests for total chlorine that are quick and inexpensive—an adaptation of the Beilstein flame colorimetric test, and a field test kit using chemical colorimetric procedures.

A number of commenters requested that EPA specify acceptable analytical procedures for halogens, metals, and flash point, and to prescribe acceptable testing frequency. Several commenters also indicated that the Beilstein chlorine test is neither quantitative nor reliable (because of interferences with contaminants) and, thus, not a useful test.

The following sections specify recommended analytical procedures and discuss the Agency's position on sampling procedures.

1. *Chlorine.* EPA's test methods manual, SW-846, does not include an analytical technique for determining total halogens (reported as total chlorine) in oil. Until a total halogen technique for oils is formally added to SW-846 as an approved test, EPA recommends the broadly accepted ASTM D808-81 method (i.e., oxygen bomb followed by titrimetric halogen determination).

The Agency is also evaluating automated halogen determinators and believes that they may prove to be acceptable in many situations. In addition, the Agency is continuing to evaluate the flame and chemical colorimetric field tests and believes that the chemical colorimetric test in particular may prove to be acceptable in many situations.

The Agency anticipates it will formally propose in early 1986 to add the ASTM D808-81 chlorine determination method to SW-846 as an approved test. The Agency will also decide at that time whether information is adequate to propose to add either field test or the automated determinators to SW-846 as approved tests.

2. *Metals.* EPA is aware that digestion procedures specified by SW-846 for sedimentaceous oils prior to metals determinations (i.e., methods 3030 and 3050) do not result in complete digestion and release of metals in some oily matrices. EPA is evaluating revised digestion procedures and anticipates proposing revisions to the procedures in early 1986. In the interim, EPA recommends using digestion method

3050 followed by the determination method appropriate for specific metals (see Table 6). For non-sedimentaceous oils, however, the solvent dissolution procedures of method 3040 may be used in lieu of digestion method 3050.

TABLE 6.—RECOMMENDED ANALYTICAL PROCEDURES

Parameter	Method		Source
Total halogens.....	D808-81		ASTM.
Flash point.....	1010		SW-846 and Proposed Test Methods for Evaluating Solid Waste ¹ .
	Preparation	Deter- mination	
Arsenic.....	3040*/3050	7060	SW-846 and Proposed Test Methods for Evaluating Solid Waste ¹ .
Cadmium.....	3040*/3050	6010 7131 7131	Do.
Chromium.....	3040*/3050	6010 7191 7191	Do.
Lead.....	3040*/3050	6010 7420 7421	Do.

Notes:
¹Recommended only for non-sedimentaceous oils.
²SW-46 (*Test Methods for Evaluating Solid Waste*) is available from the U.S. Government Printing Office. *Proposed Test Methods for Evaluating Solid Waste* is available from NTIS under order No. PB8-103-026.

3. *Flash Point.* Procedures for flash point determinations are provided by Method 1010 in SW-846. Method 1010 uses the Pensky-Martens closed cup tester.

4. *Frequency of Testing.* Many commenters asked EPA to prescribe a minimum testing frequency that would eliminate the liability associated with the question of how much testing is enough to demonstrate that the halogen level for the rebuttable presumption of mixing or the specification is not exceeded. Commenters were also concerned that EPA consider the cost and practicability of testing when establishing a minimum testing frequency. A few commenters requested that generators, collectors, and processors be allowed to certify that the used oil meets the specification and has not been mixed with hazardous waste in lieu of testing.

We address the certification question first and then the issue of specifying frequency of testing.

a. *Certification in Lieu of Testing.* Testing is not specifically required to demonstrate conformance with the rebuttable presumption of mixing hazardous halogenated wastes. Thus a, certification passed from party to party stating that hazardous waste has not been added to the used oil appears to be a prudent business approach. Nonetheless, the certifications would

not lessen the burden to rebut the presumption of mixing if in fact the used oil were found, for example by EPA enforcement officials, to contain more than 1000 ppm of total halogens. Given the profitability of mixing hazardous waste with used oil (i.e., charging generators for waste disposal and selling the waste, after blending with oil, as a fuel), the nature of the industry (see note 85), and past practices of illegal mixing of hazardous waste with used oil (see note 84), the Agency will not necessarily accept any claim or certification from any party. Nor would such an approach be consistent with other long-established hazardous waste rules. See, e.g., 40 CFR 262.11 (generators must determine if their wastes are hazardous and are in violation of regulations if their determination is erroneous). We think that the rebuttable presumption promulgated today provides an objective means of distinguishing between used oil and hazardous waste whenever a question exists and we plan to use the presumption routinely during inspections of used oil facilities.

When a person first claims used oil fuel meets the specification, today's rule requires that he obtain an analysis or other information to support the claim. Thus, testing is not specifically required to demonstrate compliance with the specification. (Ordinarily, however, we expect that testing will be used to demonstrate compliance.) The "other information" could include personal, special knowledge of the source and composition of the used oil⁸⁶ or a certification from a generator to the processor claiming the oil meets the specification. As explained above, however, if a person who claims used oil fuel meets the specification based on "other information" and the determination is found to be erroneous (i.e., if testing reveals that the oil fails the specification), he is in violation of the regulations.

It should be noted further that if a marketer claims used oil fuel meets the specification when in fact it does not when analyzed by EPA or State enforcement officials at any point until ultimately burned, it is not a defense that the recipient (or subsequent recipients) reasonably believed the oil

⁸⁶ Repeated testing may not be warranted in every situation. For example, a generator who burns on-site his used oil that testing shows meets the specification may elect to eliminate or reduce the frequency of testing if, for example, the processes that generate the oil do not change. In this case, the generator is using "other information" in lieu of testing. Nonetheless, if his determination is erroneous, he is in violation of the regulations, as explained in the text

met the specification. (Again, this approach is identical to that used for hazardous waste.)

EPA and State enforcement officials also have the authority under RCRA section 3007 to enter the premises of a person believed to be handling used oil fuel (including trucks in the process of transport) and to collect samples of fuel oil, irrespective of whether the person reasonably believes his used oil fuel meets the specification, for the purposes of determining compliance with the marketing requirements of today's rule. Thus, a person may not deny access because he believes the used oil fuel he manages meets the specification and is no longer subject to regulation.

b. *Frequency of Testing.* The frequency of testing necessary to ensure conformance with today's rules will vary from situation to situation depending on factors including: (1) Type of, and changes in, sources of used oil; (2) historical results of tests; (3) tank filling and drawdown practices; and (4) tank capacities. Although today's rule does not necessarily require that each incoming shipment of used oil be analyzed for conformance with the presumption of mixing, or that each outgoing shipment of specification used oil fuel be analyzed for conformance with the specification (or that testing be conducted at all), the marketer must be satisfied that each such shipment so conforms. In short, testing must be conducted as often as necessary, and the burden is necessarily on the marketer to determine how often is often enough. (This is comparable to a generator's responsibility to determine whether the wastes he generates are hazardous. See 40 CFR 262.22.) Therefore, we believe it is not practicable to prescribe a testing frequency that is appropriate for all situations.

IV. Regulation of Combustion Residuals

Some commenters asked whether residuals (e.g., fly ash, bottom ash) from burning hazardous waste or used oil for energy recovery are subject to regulation as hazardous waste. Unless specifically excluded from regulation as hazardous waste as discussed below, such residuals are hazardous waste if: (1) The residuals (from burning either hazardous waste or used oil) exhibit a characteristic of hazardous waste; or (2) the residuals result from burning listed hazardous waste and the residual has not been "delisted" under petitioning procedures of § 260.20 (see § 261.3(c)(2)).

These are not new requirements (and are not being revised in any manner by today's rules). These residuals have

been subject to regulation as hazardous waste since the RCRA standards were promulgated in 1980. Although the actual burning for energy recovery is a type of recycling currently exempt from RCRA regulation, the exemption does not extend to solid waste generated by recycling.

RCRA Section 3001 temporarily excludes specific combustion residuals from regulation as hazardous waste. The exclusion is codified at § 261.4(b)(4) and applies to residuals from combustion of primarily fossil fuels. The Agency has temporarily interpreted this exclusion to mean that the following solid wastes are not hazardous wastes: "fly ash, bottom ash, boiler slag and flue gas emission control wastes resulting from (1) the combustion solely of coal, oil, or natural gas, (2) the combustion of any mixture of these fossil fuels, or (3) the combustion of any mixture of coal and other fuels, including hazardous waste or used oil fuels, up to a 50 percent mixture of such other fuels." Thus, until the boiler and industrial furnace rules address this issue in 1986, residuals from burning the fossil fuels oil or gas with any quantity of hazardous waste fuel or used oil fuel are not excluded from regulation under § 261.4(b)(4). Residuals from burning coal and up to 50% hazardous waste fuel, however, are excluded.^{87, 88, 89}

⁸⁷ Taken from correspondence from Gary N. Dietrich, Associate Deputy Assistant Administrator for Solid Waste, EPA to Paul Emler, Jr. Chairman, Utility Solid Waste Activities Group, dated January 13, 1981. Mixtures of coal and up to 50% of other fuels are excluded from regulation (at this time), because any contaminants from the other fuels (e.g., hazardous waste) would be largely diluted by the coal combustion residuals. This may not be the case with oil or gas combustion given the low volumes of bottom and fly ash generally produced from combustion of these fuels.

⁸⁸ These residuals may in fact contain only minimal levels of toxic organic compounds in situations where boilers (and industrial furnaces) are operated to achieve maximum combustion efficiency. The Agency is considering during development of the permit standards for boilers and industrial furnaces modifying the derived-from rule to exempt noncharacteristic residuals in cases where we are certain that residuals do not contain significant levels of toxic organics.

⁸⁹ We note that the exclusions (from regulation as hazardous waste) for certain large volume wastes produced by facilities under the "mining waste" exclusion of § 261.4(b)(7) may apply to certain industrial furnaces burning hazardous waste or used oil. Any such exclusions apply (pending development of the boiler and industrial furnace permit standards) irrespective of whether the devices burn hazardous waste or used oil for energy recovery given the likely effect of dilution of any contaminants attributable to the hazardous waste or used oil. Similarly, the exclusion for cement kiln dust provided by § 261.4(b)(8) applies irrespective of whether the kiln burns hazardous waste or used oil for energy recovery.

EPA also is providing that residues from burning hazardous waste fuels that are exempt from regulation under § 261.6(a)(3)(v)-(ix) (i.e. hazardous waste fuels derived from petroleum industry wastes, petroleum coke derived from certain petroleum industry hazardous waste, and coke and coal tar derived from steel industry decanter tank tar sludge) are not covered by the derived from rule. With respect to burning petroleum industry fuels derived from petroleum industry wastes, these fuels may be no different in composition than virgin fuels (at least when low volumes of wastes are introduced into the refining process). See sections III.C.1 and 2 above. Under these circumstances, wastes from burning these fuels also would be no different than from burning virgin fuels, so the derived-from rule should not apply.

EPA is exempting from the derived-from rule wastes from burning petroleum coke to further Congressional intent that the coke is subject to regulation only if it exhibits a characteristic of hazardous waste. RCRA section 3004(q)(2)(A). Thus, consistent with § 261.3 (c)(2) and (d)(1), wastes from burning the coke should only be considered hazardous when they exhibit a hazardous waste characteristic. With respect to the iron and steel coke and coal tar, EPA has found that these waste-derived fuels are not significantly different than the virgin fuels for which they substitute (and that the organic toxicants in these fuels are likely destroyed by burning as well). Thus, the derived-from rule should not apply to the wastes from burning, which also would be comparable to the wastes from burning virgin coke and coal tar.

V. Consideration of Special Requirements for De Minimis Quantities Burned On Site

Several commenters suggested that EPA establish a *de minimis* quantity of off-specification used oil fuel and hazardous waste fuel that could be burned without regulation. Although commenters suggested various quantity levels to qualify for an exemption, the majority recommended a limit of 0.5-1% of the total fuel consumption of the boiler or industrial furnace. Some commenters also urged EPA to institute a permit-by-rule program for facilities burning small quantities of hazardous waste fuel or off-specification used oil fuel that are generated on-site.

Section 3004(q)(2)(B) of RCRA explicitly allows EPA to exempt facilities that burn *de minimis* quantities of waste as fuel, provided that the wastes are generated on-site, are burned for energy recovery, and are burned in a

device with sufficient destruction and removal efficiency not to present a significant risk to human health and the environment. EPA is presently examining the issue of *de minimis* burning in developing the Phase II permit standards for owners and operators of boilers and industrial furnaces. Although we may propose to exempt *de minimis* quantities from the Phase II permit standards, the basic administrative controls promulgated today (e.g., notification) would probably still apply to on-site burning.⁹⁰ Therefore, today's rule does not provide a *de minimis* quantity exemption since, for industrial burners, the rule only addresses these administrative controls.

A few commenters argued that hazardous waste fuel and off-specification used oil fuel burned on-site should not be subject to regulation *irrespective of quantity*. These commenters argued that storage of hazardous waste fuels is adequately controlled by State and local governments and that burning of either hazardous waste fuels or off-specification used oil fuel is adequately controlled by State or local air pollution permits. We find these arguments without merit. The hazards posed by handling and burning hazardous waste fuels and off-specification used oil fuels are substantial and essentially the same irrespective of whether the fuels were generated at that site. EPA has made this finding for years with respect to other hazardous wastes, and no arguments have been presented distinguishing hazardous waste fuels from all other hazardous wastes managed on site. The commenters' argument also was rejected in the legislative history to the HSWA. See S. Rep. 98-284, 98th Cong. 2nd Sess. at 38. Moreover, the storage of hazardous waste fuels and the burning of either hazardous waste fuel or off-specification used oil fuels can pose much greater risk to human health and the environment than storage and burning of virgin fossil fuels. State and local controls on storage and burning of virgin fuels are not intended to provide the level of control of releases of toxic constituents from storage facilities or from boilers or industrial furnaces that EPA's regulations will provide, starting with today's final rule.

⁹⁰ It should be noted that today's rule does not regulate storage of used oil fuel. Although storage of hazardous waste fuel is regulated by today's rule, special (i.e., reduced) standards are already provided for on-site storage in tanks and containers of hazardous waste by generators (see § 262.34). Further, small quantity generators are already exempt from storage standards under § 261.5.

PART THREE: COMBUSTION DEVICES THAT ARE REGULATED

I. Overview

In this section, we identify boilers and industrial furnaces subject to regulation and distinguish between nonindustrial boilers and industrial or utility boilers. We also explain the basis for regulating nonindustrial boilers immediately in advance of controls for industrial boilers and industrial furnaces. In addition, we discuss how these nonindustrial boilers can continue burning hazardous waste when they operate under permit standards for hazardous waste incinerators. Finally, we discuss controls for used oil space heaters and EPA's intent to provide additional controls for these devices in the rulemaking proposing permit standards for burning in boilers and industrial furnaces scheduled for 1986.

II. Regulation of Boilers

A. Basis for Regulating Boilers by Boiler Use

Today's rule prohibits the burning of hazardous waste and off-specification used oil fuel in nonindustrial boilers (e.g., located in apartment and office buildings, schools, hospitals) and, for the time being, continues to allow burning of such fuels without substantive controls in industrial and utility boilers (and industrial furnaces). As EPA stated at proposal, the rule singles out nonindustrial boilers because burning hazardous waste fuels and off-specification used oil fuels in these boilers can pose the most significant and immediate health risks. See 50 FR 1687-1688 and 1701, n. 63. Nonindustrial boilers are typically very small and may not achieve complete combustion of toxic organics (e.g., 99.99% destruction) because of inadequate controls to maintain optimum combustion conditions when firing fuels the boiler is not designed to burn. Further, virtually no nonindustrial boilers are equipped with emissions control equipment that would control (at least to some extent) metals emissions, while many industrial furnaces and some industrial boilers are so equipped. The risks from emissions of incompletely burned toxic organic compounds and toxic metals from nonindustrial boilers is compounded because these boilers are typically located in urban areas where sources are frequently clustered closely together. Thus, emission plumes from numerous sources can overlap and increase ambient concentrations of toxic compounds. Further, individuals can be exposed to high ambient levels of emitted toxicants because they can be

located close to the sources and exposed to the even higher toxicant levels above-ground (e.g., if the individual is exposed to above-ground air through a window in a multi-story apartment or office building).

EPA also stated at proposal that there may be many situations where industrial (and utility) boilers and industrial furnaces can burn hazardous waste fuel or off-specification used oil fuel without posing significant risks. See 50 FR 1688. For example, large boilers or industrial furnaces may be operated by trained operators and equipped with combustion controls sophisticated enough to maintain peak combustion efficiency when burning fuels the unit is not designed to burn.

Further, many industrial furnaces and some boilers are equipped with particulate control equipment that may adequately control emissions from metal-bearing waste fuels. The Agency has recently completed a testing program to determine under what operating conditions boilers and industrial furnaces can burn waste fuels without posing significant health risks. As a result of that effort, EPA plans to propose technical, permit standards for burning hazardous waste fuels and off-specification used oil fuels in boilers and industrial furnaces in 1986 taking into account when and how these wastes can be burned safely in these devices.

One commenter questioned whether burning hazardous waste fuels in a nonindustrial boiler is prohibited if the boiler can comply with the permit standards for hazardous waste incinerators. Other commenters suggested that criteria other than boiler use (e.g., boiler size) should be used to identify those boilers subject to the prohibition. These issues are discussed below.

1. Conditional Exemption for Nonindustrial Boilers Burning Hazardous Waste Fuel. EPA explained at proposal that there may be particular nonindustrial boilers that may burn hazardous waste fuels (we know of one location) effectively due to the unit's operating conditions, type of hazardous waste fuel, etc. To allow such burning to continue, EPA said that the owner or operator must comply with the hazardous waste incinerator standards of Subpart O of 40 CFR Parts 264 or 265. See 50 FR 1688. The owner or operator must also comply with the requirements for burners in today's rule (e.g., storage standards). See § 266.35. We are making a conforming amendment to Subpart O to make clear that this possibility exists.

Owners and operators of nonindustrial boilers currently burning

hazardous waste fuel are eligible for the interim status incinerator standards of Part 265 because they first become subject to those regulations today. Those interim status standards will reduce the hazards posed by these operations by prohibiting burning during start-up and shut-down and by applying the general facility standards (e.g., closure, financial requirements) for hazardous waste management facilities.

The Regional Administrator has the discretion to permit these facilities under Part 264, Subpart O (and applicable storage provisions) by calling in their Part B permit applications. We do not expect, however, that nonindustrial boilers that continue to burn hazardous waste fuel under the interim status standards of Subpart O of Part 265 will be formally permitted under Part 264, except in exceptional circumstances. Rather, we expect that any such nonindustrial boilers would be ultimately permitted under the permit standards for boilers and industrial furnaces to be proposed in early 1986. Those permit standards will likely control emissions of toxic organics, toxic metals, and hydrogen chloride. We believe the standards would be protective when applied to any device—e.g., industrial or nonindustrial boilers. Moreover, those boilers and industrial furnace standards will be equally or more protective than the incinerator standards under Subpart O of Part 264 (e.g., the Agency may propose direct control of metals emissions from boilers and industrial furnaces while particulate controls are used for incinerators to indirectly control metals).

2. Consideration of Other Criteria for Identifying Boilers Subject to the Prohibitions. At proposal, EPA explained why the prohibitions on burning hazardous waste fuel and off-specification used oil fuel would apply to boilers based on boiler use—the prohibitions would apply to nonindustrial boilers. Burning these fuels in nonindustrial boilers can pose substantial and immediate risks for the reasons discussed above. EPA explained further that it plans to propose permit standards in 1986 for industrial and utility boilers and industrial furnaces. Nonetheless, EPA specifically requested comments on whether small industrial boilers should also be prohibited from burning hazardous waste and off-specification used oil fuels, given that very small boilers, whether industrial or nonindustrial, may typically be equipped with less sophisticated combustion controls and may be less rigorously operated and maintained to achieve peak combustion efficiency.

Many commenters said that large nonindustrial boilers can burn hazardous waste fuel as efficiently as large industrial boilers and should not be prohibited from doing so. These commenters apparently did not understand that EPA said as much in the preamble to the proposal and said that these boilers may continue burning hazardous waste fuel if they comply with the standards for hazardous waste incinerators, until we promulgate permit standards for boilers as discussed above. We believe that it is reasonable to require such nonindustrial boilers to comply with the incinerator standards now and postpone regulation of industrial boilers until we promulgate permit standards for boilers because nonindustrial boilers as a class are likely to pose greater risks because they are more likely to be located within densely populated areas. (Although industrial boilers are frequently located in urban areas, nonindustrial boilers are almost always so located.)

Many commenters argued for and against prohibiting burning small industrial boilers using the issues EPA discussed in the preamble to the proposal. See 50 FR at 1700-1701. Today's rule does not prohibit burning in small industrial boilers. Although it can be argued that nonindustrial and industrial boilers of the same size are likely to burn hazardous waste fuel with similar destruction efficiency, we believe that nonindustrial boilers as a class pose a greater hazard for the reasons given above. Thus, as discussed above and at 50 FR 1687-1688, it is reasonable to require nonindustrial boilers to comply with the incinerator standards now and postpone regulation of industrial boilers until we promulgate permit standards for boilers.

Several commenters recommended that EPA prescribe design and operating conditions, or performance standards, or consider boiler location rather than prohibiting burning in particular devices. The permit standards for boilers that we plan to propose in 1986, in fact, would use performance standards, or alternative operating conditions, to permit burning of hazardous waste fuel in any boiler. However, until those standards are promulgated, nonindustrial boilers will be subject to the conditional prohibition for the reasons given above.

Boiler location has been considered in supporting immediate regulation of nonindustrial boilers—they are typically located within highly populated areas. Persons in less densely populated areas would have a lower exposure; thus, we could use site-specific risk assessments

to support alternative, reduced controls. Given the complexity of quantitative risk assessments (i.e., assessments that are used to support particular controls for particular facilities) and the number of boilers that burn off-specification used oil fuel and hazardous waste fuel, a regulatory program based on site-specific risk assessment would be difficult to implement with current and foreseeable resources. Thus, we have not included a variance procedure based on risk assessment in today's rule.

B. Definition of Industrial Boiler

Today's rule, like the proposal, uses the terms industrial boilers, utility boiler, and industrial furnace to identify combustion devices that are not nonindustrial boilers subject to the prohibition. We believe it is less confusing to define the devices that are not subject to the prohibition than to attempt to define and identify the various types of nonindustrial boilers (e.g., residential, commercial, institutional).

EPA defined the term "industrial boiler" at proposal as any boiler that produces electric power, steam or heated or cooled air, or other gases or fluids for use in a manufacturing process. Further, EPA has defined "boiler" as an enclosed device using controlled flame combustion and having specific characteristics including: (1) The combustion chamber and primary energy recovery section must be of integral design (e.g., waste heat recovery boilers attached to incinerators are not boilers); (2) thermal energy recovery efficiency must be at least 60% and (3) at least 75% of recovered energy must be "exported" (i.e., not used for internal uses like preheating of combustion air or fuel, or driving combustion air fans or feedwater pumps). See 50 FR at 661 (Jan. 4, 1985).

Some commenters requested that EPA include in the definition of industrial boiler those boilers which are physically located on the premises of a manufacturing facility but which recover energy solely for space heating rather than manufacturing. Commenters argued that these boilers are often the same size and are operated no differently than other boilers at the facility producing energy used for actual manufacturing. Further, such boilers are often located in industrially zoned areas, thus reducing the probability of large numbers of persons being close to the source and being exposed to above-ground level concentration as would be typical of many nonindustrial boilers. Thus, commenters argued that since the burning characteristics and risks are similar for all boilers located at

manufacturing facilities, the boilers should be regulated in the same manner. EPA agrees and has amended the regulations accordingly. Section 266.31(b)(2)(i) has been modified from proposal to define an industrial boiler as any boiler located on the site of a manufacturing facility.

Although we believe this definition of industrial boiler will enable the vast majority of boiler owners and operators to clearly categorize their boilers, there may be situations where it is not so clear. If an owner or operator is not sure whether his boiler meets today's definition of industrial boiler, he should contact the Regional Administrator for a determination.

C. Definition of Utility Boiler

EPA defined utility boilers at proposal as boilers used to produce electric power, steam, heat or cooled air, or other gases or fluids for sale. Owners and operators of utility boilers are burners regulated in the same way as owners and operators of industrial boilers.

We identified utility boilers separately from industrial boilers only as an indirect means of identifying nonindustrial boilers subject to the prohibitions (i.e., it is less confusing to identify boilers *not* subject to the prohibitions than to define nonindustrial boilers subject to the prohibitions). Clearly, utility boilers are not nonindustrial boilers and have never been identified as such.

A few commenters requested that EPA distinguish between industrial and utility boilers on the basis that utility boilers achieve good combustion efficiency and have emission control equipment thereby leading to safe and efficient burning of off-specification used oil fuel. The commenters, however, did not specify what practical regulatory distinctions should be made.

Any special design, operation, or emissions control features that utility boilers may have that will reduce risk posed by burning used oil will be considered during development of the permit standards for burning hazardous waste fuel and off-specification used oil fuel in boilers and industrial furnaces scheduled to be proposed in 1986. EPA can see no reason why utility boilers should not be subject to the rules promulgated today.

D. Nonindustrial Boilers

In the proposal, EPA explained that nonindustrial boilers include those located at: (1) Single or multifamily residences; (2) commercial establishments such as hotels, office building, laundries, or service stations;

and (3) institutional establishments such as colleges, hospitals, and prisons. To avoid the problem of providing a clear, encompassing, and unambiguous definition of nonindustrial boiler, we have identified and defined those devices not subject to today's prohibition: industrial boilers, utility boilers, and industrial furnaces.

E. Marine and Diesel Engines

Used oil may be burned in other devices such as diesel or marine engines. These devices may not meet the definition of a boiler and are not listed as industrial furnaces under § 260.10. See 50 FR at 661 (January 4, 1985). Used crankcase oil from diesel engines is frequently blended with virgin diesel fuel and burned in diesel engines (e.g., tractor-trailer engines). In addition, used oil is sometimes used as fuel for ship engines. Although such burning is for the purpose of energy recovery (i.e., the used oil provides substantial, useful heat energy, and in fact replaces virgin fuels), the burning of used oil in these devices was not considered during development of the proposed rule. Given that it is not clear that diesel and marine engines meet the definition of a boiler, that EPA has not taken comment on whether such devices meet the definition, and that today's rules apply to used oil that is burned in a boiler (or industrial furnace) for energy recovery, today's rules do not apply to marketers and burners of such used oil. Thus, the used oil fuel specification and the invoice and certification recordkeeping system do not apply to such used oil.⁹¹

With respect to notification requirements, we have determined that owners and operators of these devices need not notify the Agency (this type of exemption if expressly allowed under Section 3010(a)). We do not think it serves any practical purpose for owners and operators of marine engines (many of which are under foreign ownership) or other diesel engines such as the thousands of diesel trucks⁹² to notify of

⁹¹ It should be noted that if a person markets off-specification used oil fuel exempt from today's rules because it is burned in marine diesel engines, that person has the burden of proof to demonstrate that in fact, such exempt used oil will be burned in those devices. See 50 FR 1692 (January 11, 1985) and 50 FR 642 (January 4, 1985). Ordinarily, invoices that track a shipment of off-specification used oil to the end user (i.e., marine or diesel engine owner or operator) will be required to carry this burden.

⁹² Further, even if such used oil burned in diesel trucks were subject to today's used oil fuel specification, the oil would not likely exceed the specification as burned. As will be discussed in some detail in the used oil listing/management standards rulemaking that will soon be proposed, used diesel crankcase oil is typically mixed with

Continued

their used oil burning activities at this time, and EPA does not need such information to assess what rules may ultimately be appropriate.

Marketers of used oil that is burned in marine or diesel engines, on the other hand, must comply with the notification requirement. EPA needs to know who these marketers are to be able to investigate whether these marketers are mixing hazardous waste with used oil. Hazardous waste, including used oil mixed with hazardous waste, cannot be burned in marine or diesel engines unless the devices are permitted as hazardous waste incinerators. (Devices that burn hazardous waste by means of controlled flame combustion and that are neither boilers nor industrial furnaces are considered to be incinerators for regulatory purposes. See §260.10 in 50 FR 661 (January 4, 1985).) Thus, used oil marketed for use as fuel in marine and diesel engines is (like other used oils) subject to the presumption of mixing hazardous waste established by today's rule.)

It should also be noted that although the used oil fuel specification and the invoice and certification recordkeeping system established by today's rule do not apply to used oil marketed for use as fuel in marine or diesel engines, such used oil would be subject to the transportation and storage controls for recycled oil that will soon be proposed. When promulgated, those controls will supersede today's rules for used oil fuels and will apply to all recycled oils.

III. Regulation of Industrial Furnaces

EPA has defined "industrial furnace" as those devices specifically listed by the Administrator as enclosed devices that are integral components of a manufacturing process and that use a controlled flame to accomplish recovery of materials or energy. See 50 FR 661 (January 4, 1985). The Agency has also identified criteria for listing other devices as industrial furnaces. To date, the list of industrial furnaces includes cement kilns, lime kilns, aggregate kilns (including asphalt kilns), blast furnaces, and smelting, melting and refining furnaces.

Owners and operators of these industrial furnaces are subject to today's rules for burners (see §266.35) when they burn hazardous waste or off-specification used oil for energy recovery or for both energy recovery

and another recycling purpose (see section II of this preamble).

IV. Regulation of Used Oil Space Heaters

As proposed, today's rule provides a conditioned exemption from the prohibition on burning off-specification used oil fuel in used oil space heaters. EPA stated at proposal (see 50 FR at 1700) that it is deferring regulation of these devices until it better understands the risk they pose and evaluates regulatory options to address any such hazards. EPA stated further that it would address regulation of these devices in future rulemakings. In the interim, these space heaters may continue to burn off specification used oil fuel provided that they vent the heater to the outdoors and burn only used oil they generate or receive from do-it-yourself oil changes.⁹³

As EPA explained at proposal, used oil space heaters are very small heaters frequently used in service stations and auto repair shops. The units typically burn 1 to 2 gallons of used crankcase oil per hour. Ninety percent (90%) of the heaters are the vaporization type where the oil is vaporized from a pan at the base of the heater while metals and heavy, low volatility compounds remain in the pan (and are cleaned out periodically). The other heaters are the atomization type where the oil is sprayed into the combustion chamber. Vaporization units appear to have low metals emissions rates—5 to 15% of the metals are emitted. This is comparable to (or lower than) the metals emission rate from larger boilers (industrial or nonindustrial). Atomization units, however, appear to have relatively high metals emissions rates—75% to 95%. EPA concluded that vaporization units probably do not pose a health risk while it is not clear whether atomization units pose significant risks given the small size of the units.

Most commenters supported the exemption and believed that no further regulation is necessary. Supporters argued that vaporization units comprise 90% of the units in operation and emit only low levels of metals. Supporters of the exemption were silent with respect to atomization units.

Opponents to the exemption used various arguments and proposed various regulatory alternatives. Many commenters were concerned that the risk from metals and toxic organic

emissions could be significant given that these space heaters are frequently operated in residential areas. They argued that it would be premature to grant an exemption until further risk assessment is conducted.⁹⁴ Some opponents suggested that atomization heaters be banned entirely and others suggested application of emissions standards to both atomization and vaporization units. In addition, some commenters suggested that an exemption would actually cause a proliferation of space heaters since they could be viewed as a cheap, easy method of providing heat as well as getting rid of used oil. Thus, EPA should consider "grandfathering" existing space heaters rather than granting a blanket exemption. Commenters were also concerned that space heaters could provide a loophole for disposal of hazardous waste generated at service stations and auto repair shops by mixing with the used oil to be burned.

EPA continues to believe that atomization space heaters may pose significant risk in unique situations (e.g., where multiple atomization units burning used oil with high levels of metals are clustered together, and persons are located close to the sources) while the much more prevalent vaporization units probably do not pose significant risks. Thus, we do not believe there is a compelling reason to take the extreme measure at this time of virtually banning the use of these devices which would result if they were not exempted from the prohibition on burning off-specification used oil fuel. We intend to include regulations for these devices, as deemed necessary, when we propose permit standards for all boilers and industrial furnaces in 1986. Thus, we can ensure that controls on burning in these devices are consistent with controls, particularly for metals emissions, on other boilers and industrial furnaces. In addition, by that time, we will have proposed the comprehensive management standards for recycled oil which would regulate generators and collectors, as well as the marketers and burners (except for permit standards for burning) regulated by today's rule. At that time, we can consider the regulatory impact on generators, as

⁹³ virgin diesel fuel before use as a diesel fuel. The blended fuel is likely to meet the used oil fuel specification. Thus, owners and operators of such engines would be burning a used oil that meets the specification and that would be exempt from regulation.

⁹³ The exemption is also conditioned on the unit having a capacity of less than 0.5 million Btu/hr. This encompasses all used oil space heaters in use today and prevents operators of larger boilers from claiming they operate used oil space heaters.

⁹⁴ Harvard University submitted information about research they have been conducting regarding the effect of emissions from used oil on mammalian lung tissue. Various dosages were applied in a short-term inhalation study utilizing hamsters. Harvard reported results showing lung damage from metals and other toxic constituents from both vaporization and atomization heaters, and recommended further study to develop rational risk estimates.

required by RCRA section 3014(c), of regulating used oil space heaters in conjunction with the entire regulatory scheme for recycled oil.

As a final note, a few commenters suggested that proposed § 266.41(b)(4)(i) be revised to conform with explicit preamble language that allows the owners or operators of exempted space heaters to burn used oil received from "do-it-yourself" oil changers as well as used oil they generate. We agree and have modified that provision in the final rule at § 266.41(b)(2)(iii).

PART FOUR: ADMINISTRATIVE AND STORAGE STANDARDS

I. Administrative Standards

A. Overview

Hazardous waste fuels and off-specification used oil fuels are subject to certain administrative requirements, including a one-time notification to identify waste-as-fuel activities and to obtain a U.S. EPA Identification Number. Even if an individual has previously notified the Agency, and already has a U.S. EPA Identification Number he must renotify to identify his waste-as-fuel activities (although his Identification Number remains the same). Other administrative requirements include compliance with a manifest system (for hazardous waste fuels), or an invoice system (for off-specification used oil fuel) and recordkeeping. In addition, persons receiving shipments of hazardous waste fuel or off-specification used oil fuel must certify to the shipper that they have notified EPA of their waste-as-fuel activities, and that they may legally burn the fuel. These controls make it possible to administer and enforce the prohibitions against burning in nonindustrial boilers, and provide for proper tracking of the materials.

The administrative requirements apply to both marketers and burners of hazardous waste fuel and off-specification used oil fuel. Generators of hazardous waste or used oil who send their waste directly to an individual who burns those wastes are considered to be marketers and are subject to these controls. Conversely, generators who send their hazardous waste or used oil to an individual who does not burn the waste for energy recovery are not considered to be marketers, even if the waste is burned later for energy recovery by another person. (Such generators of hazardous waste, however, are subject to 40 CFR Part 262 as ordinary hazardous waste generators.)

Hazardous waste fuel transportation is subject to the full set of Part 263

requirements. This rule regulates for the first time transporters of hazardous waste fuel that is neither a listed waste nor a sludge. These hazardous wastes are currently exempt from regulation under § 266.36 (see 50 FR 667 (January 4, 1985)), a provision that is superseded by today's new Part 266 standards. Used oil transportation is exempt from the administrative requirements in order to avoid piecemeal regulation of used oil transporters.⁹⁵ If used oil fuel transporters are regulated while other used oil transporters are not, transporters could avoid complying by claiming that the used oil is intended for other purposes. EPA will address regulation of transporters in its recycled oil management standards scheduled to be proposed later this year.

The following table summarizes the controls required under today's rule:

TABLE 7.—CONTROLS FOR WASTE FUELS

	Hazardous waste fuel	Off-specification used oil fuel
Generator ¹	Part 262 ²	Exempt.
Marketers ¹	N,RN,P,M,C,R,S.....	N,RN,P,I,C,R.
Transporters.....	Part 263 ³	Exempt.
Burners.....	N,RN,P,M,C,R,S.....	N,RN,P,I,C,R.

Note:

¹ Hazardous waste and used oil generators are not regulated as marketers unless they market directly to a burner.

² Hazardous waste generators who send their waste to a hazardous waste fuel marketer are subject to Part 262 standards as ordinary generators. See §266.32(a). Generators who market their hazardous waste fuel to burners are subject to the Part 262 generator standards as well as today's hazardous waste fuel marketer requirements. See § 266.32(b).

³ Hazardous waste fuel transporters are subject to regulation as ordinary hazardous waste transporters. Thus, they are not required to notify or re-notify for their waste-as-fuel activities. However, they must notify for their hazardous waste transportation activities if they have not notified already.

Key

- N—Notification and identification number.
- RN—Renotify for waste-as-fuel activities.
- P—Prohibitions on marketing to, or burning in, nonindustrial boilers.
- M,I—Compliance with manifest (M) or invoice (I).
- C—Provide or receive certification of compliance with standards for burning.
- R—Recordkeeping.
- S—Storage Standards.

B. Notification Requirements

1. Purpose of Notification. Notification is necessary because EPA must be able to identify those persons who engage in waste-as-fuel activities in order to ensure that waste fuels are managed properly and not routed to nonindustrial markets. The special waste-as-fuel notification is mandated under RCRA

⁹⁵ Many used oil transporters (collectors) pick up used oil from several small generators and aggregate the oil at satellite storage facilities prior to shipment in larger tankers to used oil processors or rerefiners. These transporters are not considered marketers unless: (1) They ship used oil directly to a person who burns the oil for energy recovery; or (2) they process used oil to produce a fuel at the storage facility. Any blending of used oils resulting from accumulation in the transporter's storage tanks is incidental to the primary function of accumulation and is not considered to be blending or processing in this rule.

section 3010(a), as amended. A U.S. EPA Identification Number will be assigned to those facilities subject to RCRA regulation for the first time.

2. Who Must Notify. The following persons must notify either EPA or an authorized state⁹⁶ to identify their waste-as-fuel activities: (1) Marketers of hazardous waste fuel or off-specification used oil fuel (e.g., third-party processors, blenders, and distributors, and generators marketing directly to burners); (2) burners of hazardous waste fuel or off-specification used oil fuel, except generators who burn their oil in space heaters under § 266.41(b)(2)(iii); and (3) marketers (or burners) who first claim used oil fuel meets the specification and so is exempt from subsequent regulation. If any of these individuals has previously notified the Agency of any hazardous waste management activities and obtained a U.S. EPA Identification Number, they must renotify, and may use the revised notification form to do so (see discussion below).

EPA explained at proposal that the following persons need not comply with the waste-as-fuel notification requirement: (1) Hazardous waste generators who neither burn their wastes for energy recovery nor market their wastes for energy recovery directly to a burner, because they may not know the end use of their waste; (2) hazardous waste fuel transporters, for the same reason given for generators;⁹⁷ and (3)

⁹⁶ EPA is allowing notifiers to notify either EPA or States authorized to operate the hazardous waste program even though amended section 3010(a) requires that both EPA and authorized States be notified. EPA is deviating from the statutory provision for practical reasons. EPA and authorized States have developed a system for handling section 3010 notifications that heretofore could be submitted to either EPA or the State. Under that system, the State automatically forwards notifications it receives to EPA for processing and assignment of an identification number. If waste-as-fuel notifications were submitted to both EPA and the authorized State, a facility could inadvertently be assigned two identification numbers. Thus, simultaneous notifications to both EPA and States not only will not further environmental protection, but could be counter-productive. In addition, the requirement that persons notify both EPA and States was to provide that regulations implementing the HSWA take effect immediately even in authorized States, a concern later addressed directly by amended section 3006(g). By amending section 3006(g), Congress eliminated the need for dual notification.

⁹⁷ Hazardous waste generators and transporters are nonetheless subject to the notification (and other requirements) of Parts 262 and 263 as ordinary generators and transporters. Thus, the significance of the discussion in the text is that generators and transporters need not renotify.

used oil generators and transporters (unless they also market directly to a burner).⁹⁸

Notification also does not apply to owners and operators of boilers or furnaces, including but not limited to nonindustrial boilers, who burn used oil fuel that meets the specification.

3. *Use of the Hazardous Waste Notification Form.* Persons required to file notifications (or renotify) with EPA or authorized States because of their waste-as-fuel activities may use EPA Form 8700-12 (revised 11/85): "Notification of Hazardous Waste Activity." See the appendix to today's regulation. This form is a revision of the existing notification form which was modified to include waste-as-fuel notification requirements. The Agency made minor changes to the proposed form to make it clear that persons who first claim that the used oil fuel they market meets the specification are subject to the requirements (including notification, used oil analysis, and recordkeeping) provided under § 266.43. See preamble discussion in section IV.E of Part Two.

The revised notification form provides EPA with the number and location of facilities involved in processing, blending, marketing, and distributing of waste fuels, and the number, type, and location of burners. These data will be used to develop a general profile of the waste fuel industry and assist in future regulatory development.

Several commenters suggested revisions to the proposed notification form. One commenter argued that language requiring the signer of the form to be personally familiar with and responsible for the veracity of the responses places an undue burden on managers of facilities who may not be aware of all operations of their facility on a day-to-day basis. This requirement has been in place since the notification form was first used for the RCRA hazardous waste program in 1980. It is not a special requirement pertaining to notification of waste-as-fuel activities. EPA sees no compelling reasons to modify its longstanding position that one person must ultimately take responsibility for a facility's operation and compliance with federal regulations.

⁹⁸ As noted at proposal, however (see 50 FR 1702, n. 68), used oil generators and transporters who send used oil to marketers that burn some used oil are not considered to be marketing used oil fuel directly to a burner for purposes of today's rule. Thus, these generators and transporters are not regulated (and not required to notify) as marketers. This is because the burning at the marketers' facility is considered incidental to the primary function of the marketers' facility: processing and marketing of used oil fuel.

Another commenter suggested that the reference to "listed infectious waste" on the proposed form be dropped, since no such category exists. This was an oversight on EPA's part, and has been deleted from the final form.

4. *Notification Procedures and Implementation.* As EPA indicated at proposal, it estimates that there are, at most, 20,000-30,000 persons that may be required to file notifications. While EPA does not intend to carry out a mass mailing to potentially affected parties, the Agency will widely announce the notification requirements of these rules through the press and trade journals.

Persons required to notify under today's rule should consider this **Federal Register** notice their final notice to submit a notification. To obtain a notification form, you should contact your authorized State hazardous waste agency or your U.S. EPA Regional Office. Each requester will receive a complete notification package, including a form and accompanying instructions, to assist him in filing his notification.

EPA will return to each notifier an acknowledgment of receipt of the notification, and will issue a U.S. EPA Identification Number if one was not previously assigned. This acknowledgement in no way constitutes an endorsement by EPA of the adequacy of the notification or of the notifier's business practices; rather, it serves as a confirmation that EPA received the notification.

5. *Legal Significance of Notification.* EPA is promulgating the notification requirement for hazardous waste fuels and off-specification used oil fuels under the authority of Section 3010(a) of RCRA, as amended. The notification is a prerequisite for RCRA interim status (see RCRA section 3005(e)(2)) for owners and operators of hazardous waste fuel storage facilities. See H.R. Rep. No. 98-198 at 41, likewise specifying that notification of management of hazardous waste fuels serves as a prerequisite for interim status.)

C. *Transportation Controls*

As proposed, EPA is adopting today a system to track movement of hazardous waste fuel and off-specification used oil fuel from the initial marketers (e.g., processors, blenders, distributors, or generators who market to burners through intermediaries (e.g., transporters, distributors) to the industrial users who burn the fuel for energy recovery.⁹⁹ This tracking system

⁹⁹ The system is already in place for certain hazardous waste fuels—namely listed wastes and sludges when sent directly from the generator to a

allows regulatory officials to track a hazardous waste fuel or off-specification used oil fuel from point of processing, blending, or other treatment to point of burning, thus making the prohibition on burning in nonindustrial boilers enforceable. Equally important, the tracking document (either a manifest or an invoice) alerts persons who handle these materials that they are receiving a hazardous waste or off-specification used oil.

Consequently, EPA today is finalizing its proposal that all shipments of hazardous waste fuel be accompanied by a manifest. Hazardous waste fuel marketers are subject to the transportation (and pre-transport) requirements of 40 CFR Part 262 and transporters are subject to the requirements of 40 CFR Part 263.

We are requiring a slightly different system for off-specification used oil fuel, whereby marketers (e.g., processors, blenders, distributors, and generators who market to burners) offering off-specification used oil fuel for sale must prepare and send an invoice to the fuel buyer, but do not have to have the invoice physically accompany each shipment. (Transporters thus will not have to comply with any invoice requirement.) This distinction (i.e., invoice in lieu of a manifest) is needed to avoid piecemeal regulation of used oil transporters, as explained at proposal. See 50 FR 1704 n. 76.

The invoice must include the shipment initiator's name, address and identification number, the receiving facility's name, address, and identification number and the quantity of off-specification used oil fuel shipped. All of this information is currently required in the standard EPA hazardous waste manifest.

As EPA stated at proposal, in a situation where an off-specification used oil fuel goes from a processor or blender to an intermediate distributor, the distributor must reinstitute a new invoice to accompany any fuel it sells that is produced from or otherwise contains the used oil (unless the used oil fuel now meets the specification). This requirement is consistent with those found in other parts of the RCRA regulations whereby intermediate storage facilities must reinstate a manifest. See, e.g., 40 CFR 264.71(c) and 262.10(f).

burner. See Subpart D of Part 266 in 50 FR 667 (January 4, 1985). Today's rule expands the system to all hazardous waste fuels managed by all marketers and burners, except those specifically exempted under § 261.6(a)(3) as revised in today's rule.

As described in the proposal, the Hazardous and Solid Waste Amendments of 1984 amended RCRA to require producers, distributors, and marketers of hazardous waste fuels to include a warning label on the invoice or bill of sale for the fuel. The requirement became effective in February 1985, but is superseded by today's rule. The Agency believes that the requirement for an invoice or a manifest achieves the same purposes as a warning label—to alert the user or distributor that he is receiving hazardous waste fuel. The manifest also notifies the transporter that he is handling hazardous waste because the manifest must accompany the shipment. No comments disagreed with the Agency's conclusion that an invoice or manifest is an adequate replacement for the statutory warning label.

Several comments were received on the proposed invoice/manifest requirement. Commenters suggested that transfer of waste fuels from site to site within the same company should be exempt from the invoice and manifesting requirements. Commenters pointed out that such transfers are routine; thus, they reasoned that invoices or manifests are unnecessary. At the very least, commenters requested that EPA consider a simplified manifest or invoice for such transactions.

EPA believes that the manifest requirement for hazardous waste fuels serves essentially the same purpose as the current manifest requirement for other hazardous waste—to alert transporters (and emergency response officials) as well as facility operators (e.g., burners) of the fire and explosion hazards posed by the shipment and to establish a paper trail that will enable enforcement officials to implement and enforce the regulations. Given similar purposes and that off-site, but intracompany, shipments of other hazardous waste are subject to full manifest requirements, EPA sees no compelling reason to modify manifest requirements specifically for hazardous waste fuel. See also 50 FR 28724-28725 (July 15, 1985) where the Agency adopted the same position with regard to the warning label required by RCRA section 3004(r)(1).

D. Notice and Certification Requirements

To enforce the prohibition on burning hazardous waste fuel and off-specification used oil fuel in nonindustrial boilers, the prohibition applies not only to the boiler owner and operator, but also to the waste fuel marketer. Thus, a marketer (a processor, blender, distributor, or a generator

marketing directly to a burner) may not sell hazardous waste fuels or off-specification used oil fuel to a person who burns it in a nonindustrial boiler but must ensure that they market these fuels only to persons in (and, thus, aware of) the regulatory system: persons who have notified EPA of their waste-as-fuel activities. In addition, marketers are responsible for determining whether their waste fuel is subject to regulation (i.e., whether their product fuel contains hazardous waste or is off-specification used oil).

As EPA explained at proposal, to comply with these requirements, marketers need to know whether the person receiving a shipment of hazardous waste fuel or off-specification used oil fuel has notified EPA of his waste-as-fuel activities and whether he intends to burn the fuel only in a utility boiler or industrial boiler or industrial furnace. Thus, the rules include a provision requiring that a marketer of hazardous waste fuel or off-specification used oil fuel receive a certification from the fuel purchaser stating that the purchaser has notified EPA of his waste-as-fuel activities and will burn the fuel only in unrestricted boilers or furnaces. This certification is a one-time notice and is required before sending the initial shipment. Similarly, the purchaser is required to send the certification before receiving the first shipment from a marketer. This will ensure that the recipient is aware of the regulations applicable to waste fuels and of his responsibilities as a burner (or intermediary). Hazardous waste and used oil generators (and transporters receiving waste from generators) who market their waste to a person who is not a burner are not subject to this (or any other) requirement for marketers and a recipient of the generator's hazardous waste or used oil is not required to provide the generator with a certification notice. (Hazardous waste generators and their transporters are, however, subject to regulation as ordinary hazardous waste generators and transporters under 40 CFR Parts 262 and 263 respectively.)

E. Used Oil Analysis Requirements for Marketers

Marketers who first claim used oil meets the specification and is essentially exempt from further regulation¹⁰⁰ must document by

¹⁰⁰ As discussed in the text in Part Two, section IV.E, such marketers must keep records of the initial shipment of specification used oil. Also, as discussed in section IV.F, EPA and State enforcement officials have the authority to enter the premises of a person believed to be handling used oil fuel and to collect samples of fuel oil,

analyses or other information that the oil in fact meets the specification. Although the proposal required testing for documentation, the final rule allows the use of other information to show that the oil meets the specification. See previous discussion in Part Two, section IV.F. This is consistent with a generator's requirements under 40 CFR 262.11(c) to use testing or other information to determine whether his solid waste is hazardous waste. Ordinarily, however, we expect that testing will be used to demonstrate compliance. If a person's determination that used oil meets the specification is found to be erroneous, he is in violation of the regulations regardless of intent.

Persons required to obtain analyses (or other information) to demonstrate that their used oil fuel meets the specification include processors and blenders (and burners) who treat used oil known to be off-specification to produce specification used oil fuel and persons who market or burn as specification used oil fuel used oil received directly from generators or collectors. (Used oil received directly from generators or from collectors who receive oil from generators is presumed to be off-specification unless demonstrated otherwise.) EPA explained at proposal that such analyses and recordkeeping are required to enable the Agency to enforce the prohibitions on those persons who first claim that used oil fuel meets the specification.

Persons who obtain analyses of used oil to demonstrate compliance with the specification must ensure that representative samples are obtained and that appropriate analytical procedures are used. Sampling and analysis of used oil is discussed above in section IV.F.

F. Recordkeeping Requirements

The recordkeeping requirements are limited requirements designed primarily to keep track of the movement of hazardous waste fuels and off-specification used fuels. The substantive prohibitions as well as the various administrative requirements would not be enforceable without these recordkeeping requirements. As proposed, marketers and burners must keep a copy of the manifest or invoice (for used oil) that accompanies or that applies to each fuel shipment. In addition, marketers and burners are

irrespective of whether the person reasonably believes his used oil fuel meets the specification, for the purposes of determining compliance with today's rule.

required to retain copies of certification notices that they initiate or receive.

EPA also proposed that marketers of used oil fuel who first claim the oil meets the specification are required to obtain analyses of their used oil fuel product to document that it meets the specification. Copies of the analyses must be retained for three years. As discussed above, today's final rule allows the use of other information to document that used oil meets the specification. Such other information must also be retained for three years.

In response to commenters' concerns about the enforceability of the proposed rule, the final rule includes additional recordkeeping requirements for persons who first claim used oil fuel meets the specification. See section IV.E of this preamble. Today's rule requires these persons to also keep records on initial shipments of specification used oil fuel. Subsequent shipments (e.g., by distributors) are not subject to regulation.

As proposed, all records must be retained at the facility for three years, except that certification notices must be kept for three years from the date a person last engages in a waste fuel marketing transaction with the person who sent or received the certification notice. These records must be available for inspection by an officer, employee, or representative of EPA (see RCRA section 3007).

II. Storage Requirements for Hazardous Waste Fuel

As explained at proposal, today's rule expands existing requirements for storage so that *all* storage of *all* hazardous waste fuels is subject to regulation. Under previously existing provisions of 40 CFR 261.6, and continued under the solid waste definition rulemaking at Subpart D of Part 266 (see 50 FR 667 (January 4, 1985)), hazardous wastes that are listed wastes or sludges are subject to the storage standards of Parts 262, 264, and 265, when stored prior to use as a fuel and prior to use to produce a fuel. Nonsludge wastes that are hazardous only because they exhibit a characteristic of hazardous waste, and hazardous waste fuel produced by an off-site marketer by processing, blending, or other treatment of hazardous waste, were exempt from regulation prior to today's rule. All hazardous waste used to produce fuel and all hazardous waste fuel so produced are subject to today's storage requirements for the reasons given below.

A. Which Hazardous Wastes Are Subject to Storage Requirements

The Agency is today regulating the storage (and transportation) of any hazardous waste used to produce a fuel and of any hazardous waste fuel so produced. We are thus eliminating the current distinction between listed wastes and sludges on the one hand and unlisted spent materials and unlisted byproducts on the other. As explained at proposal, these distinctions are not environmentally justifiable, and exist only because of the Agency's initial uncertainty (in 1980) about an appropriate regulatory regime for recycled wastes. See 48 FR 14475 (April 4, 1983). It is now our view that a hazardous waste classification as sludge, by-product, or spent material, or listed vs. unlisted (characteristic) hazardous waste has no relation to the type of hazard the waste poses when stored, and therefore, that storage of all of these should be regulated uniformly. *Id.*

B. Eliminating the Exemption for Storage of Hazardous Waste Fuel Produced by Persons Who Did Not Generate the Waste

As proposed, today's rules subject all hazardous waste fuels to storage (and other) controls. This includes storage by the initial marketer (e.g., processors, blenders), storage by subsequent marketers (e.g., distributors), and storage by burners. (Hazardous waste storage by ordinary generators whose waste is destined to be burned for energy recovery, but who do not market directly to burners, is also subject to regulation.)

The present regulatory regime provided by Subpart D of Part 266 (see 50 FR 667 (January 4, 1985)) whereby hazardous waste fuel produced by a person who neither generated the waste nor burns the fuel is exempt from regulation was intended only as an interim measure and cannot be defended on environmental grounds. The argument that hazardous waste fuels function as valuable inventory in a burner's hands and so will be stored safely does not appear tenable, and already has been rejected by the Agency. See 50 FR 617-618, 632, 643 (January 4, 1985). Hazardous waste fuels in many cases do not command substantial economic value; in some situations, burners are even paid to accept these materials. In addition, the fact that a hazardous waste fuel is being stored as a commodity is insufficient to prevent substantial risk. There have been many damage incidents from product and raw material storage,

examples being spills from underground and above-ground product storage tanks, including fuel storage tanks. See 49 FR 29418 (July 20, 1984). Indeed, the Agency has found that leaks and spills from hazardous waste tank storage is very likely, and that this risk is substantial and requires regulatory control. See also Section 601 of the Hazardous and Solid Waste Amendments of 1984 requiring EPA to regulate underground storage tanks storing products. The Agency also has been told by State regulatory officials and used oil fuel dealers that hazardous waste fuels are suspected of causing a number of fires in the New York City and New Jersey areas. Another commenter described a "major accident at a cement kiln using waste-derived fuels." The Agency thus does not see any reason to regulate this type of hazardous waste storage differently from other hazardous waste storage.

Today's rule subjects all storage of all hazardous waste fuels to the storage standards provided by 40 CFR Parts 262 (for short-term accumulation of fuels by a generator who burns his waste on site or who markets directly to a burner), 264, and 265, with one exception. As proposed, we are not subjecting hazardous waste fuel storage by an existing burner to the final permitting standards of 40 CFR Part 264 at this time for several reasons. Because we intend to regulate most burning of hazardous waste fuels in a manner that would require some form of permitting, we do not want to issue a permit to a burner for storage and then have to issue a second permit in the near future for burning. We thus plan to delay adopting final permitting storage standards for existing burners until a single permit proceeding can address both burning and storage. Thus, existing burners will be subject only to the storage standards for tanks and containers contained in Part 265.

In addition, as proposed, a permit is not presently required to store off-specification used oil fuel. EPA is not imposing storage requirements on used oil fuel at this time because the Agency wishes to avoid the piecemeal regulation of used oil storage which would result were we to regulate used oil fuel storage in advance of other types of used oil storage. Storage requirements will be proposed when the Agency proposes comprehensive regulations for recycled oil on the next future.

Hazardous waste fuels stored by a marketer are subject to regulation. Thus, as explained at proposal, storage of both incoming hazardous waste and outgoing hazardous waste fuels are regulated.

Many marketers are already subject to regulation as storage facilities because they store incoming listed wastes and sludges, and may be operating under interim status standards. These marketers need to amend their Part A storage applications to seek an authorization to expand their interim status operations to include the waste fuel storage area. See § 270.72.

Numerous comments were received on the proposed storage requirements. Many commenters opposed compliance with the storage standards for industrial boiler owners and operators because they believed they were unnecessary since industrial boiler owners and operators are well aware of the hazards of storage and handling of hazardous waste. Compliance with the storage standards would cause them to incur large costs for little reason, they argued. We disagree. We have noted above that burner storage facilities have been exempt from regulation only as an interim measure and the exemption cannot be defended on environmental grounds. See also 50 FR 643 (January 4, 1985) where the Agency discussed why it was unable to eliminate any requirements from Part 265 (or 264) storage standards for recycled hazardous wastes.

Other commenters suggested class permitting of storage facilities. EPA will consider issues concerning permitting of burner storage facilities when the permit standards for existing burners (and storage) are proposed in 1986. Today's rule applies only the interim status Part 265 standards to existing burner storage facilities (the predominant class of storage units affected by this rule).

III. Examples of How These Regulations Operate

The following hypothetical examples illustrate how the rules operate:

1. Generator G generates a hazardous waste and sends it to burner B who stores it in a tank prior to burning in an industrial boiler for energy recovery.

G is a hazardous waste fuel marketer because he markets directly to a burner. Assuming that G is a large quantity generator (and EPA is unaware of situations where small quantity generators send hazardous wastes directly to burners), he must comply with the requirements for marketers, including the manifest and storage requirements, and notification as a hazardous waste fuel marketer. Prior to sending the first shipment, he must also obtain a certification from B that B has notified EPA of his waste-as-fuel activities and that he will burn the fuel only in unrestricted units (i.e., industrial boilers, industrial furnaces and utility

boilers). B is a hazardous waste fuel burner and a RCRA storage facility. Assuming he already is engaging in hazardous waste management activities as a facility, he must comply with the interim status standards for storage (including submitting a Part A permit application). If B is a new storage facility (i.e., is not in existence as a facility at the time these rules become effective), he must obtain a storage permit prior to storing the hazardous waste fuel. He must also notify EPA of his waste-as-fuel activities and provide G with the certification discussed above prior to receiving the first shipment. B will have one identification number for storage and burning.

2.A. Generator G, a large quantity generator, generates a hazardous waste but sends it to an intermediate processor P, who mixes it with other wastes and sells the mixture to a burner B who stores it in a tank prior to burning in an industrial boiler for energy recovery.

G is subject to regulation under Part 262 as a generator and must comply with the manifest system and applicable storage requirements. He is not subject to the requirements for marketers. P is a marketer. He must obtain a storage permit to store the hazardous wastes received from the generator. The blended mixture is hazardous waste fuel and is subject to the storage controls under Parts 264 and 265. P and B must notify EPA of their waste-as-fuel activities, and must comply with the certification requirements. B is a hazardous waste fuel burner who has a RCRA storage facility subject to the interim status controls of Part 265 (assuming the facility is in existence at the time the rule is effective).

2.B. G, a large quantity generator, generates a hazardous waste and mixes it with used oil. The mixture is sent to P, who does further blending with used oil, and then sends the mixture to B where it is burned as in the previous example.

The controls operate in this situation just as in the previous example. A mixture of large quantity generator hazardous waste and used oil is subject to regulation as hazardous waste.

2.C. G is a small quantity generator who generates a hazardous waste and mixes it with used oil, as in example 2.B. G sends the mixture to processor P, who processes the material further and sells processed oil as fuel. The fuel meets the specification for used oil. It then is sold to retail fuel dealers and to industrial and nonindustrial users.

In this situation (i.e., where a small quantity generator mixes its hazardous waste with used oil), the mixture is exempt (for the time being) from

regulation as hazardous waste under the provisions of 40 CFR 261.5 but (for the time being) is subject to regulation as used oil when obtained by a used oil fuel marketer, P. Thus, G (who incidentally is not a marketer) may send his used oil to P without an invoice. P is a marketer of used oil fuel. He must notify EPA of his waste-as-fuel activities and obtain a U.S. EPA Identification Number. He also must document with analyses (or other information) that the used oil fuel he markets meets the specification since he receives used oil from a generator (or from a transporter who receives oil from a generator) and markets used oil fuel as specification used oil fuel. In addition, he must keep records of the shipment and the person to whom the oil is first sent. The used oil fuel is exempt from further regulation and may be sent to burners or retail fuel dealers (i.e., distributors) who do not have EPA identification numbers, and who may sell the fuel on an unrestricted basis.

If, as is more likely, P determines that the used oil fuel does not meet the specification, P can only send it to persons who have certified to him that they have notified EPA of their waste-as-fuel activities and will burn the fuel only in industrial boilers, utility boilers, or industrial furnaces. P would have to prepare and send invoices for the off-specification used oil fuel. The retail fuel dealers (i.e., distributors) who receive the off-specification used oil fuel are marketers and cannot send the fuel to nonindustrial users unless it is processed further to meet the fuel specification (and they document with analyses or other information that the fuel meets the specification and keep records of the shipment and the person to whom the oil is first sent). Marketers and burners must keep records of invoices and certifications sent and received and fuel analyses (or other information) documenting compliance with the fuel specification (where required).

3.A. P is a used oil processor who receives used oil from a variety of sources and blends them to make fuels. The used oil is not mixed with hazardous waste. The blended fuel that P produces is off-specification for lead. P sends this fuel to R, a retail fuel dealer. R blends the fuel further so that it meets the lead specification. R then sells the fuel to industrial and nonindustrial users.

P is a marketer of used oil fuel. Because the used oil fuel is off-specification, it can be sent only to a person (e.g., R) who has certified to P that he has notified EPA of his waste-as-

fuel activities (and obtained a U.S. EPA Identification Number), and P must send an invoice to R. R is also a marketer because he receives off-specification used oil fuel. Since R markets the used oil fuel as specification fuel (by marketing to industrial boilers without complying with the invoice, notification, and other requirements), he must document with analyses or other information that the fuel meets the specification. R must also keep records of the shipment and the person to whom the specification used oil fuel is first sent. Marketers and burners must keep records as discussed previously.

3.B. Processor P receives used oil from different generators, and also receives spent halogenated solvents that are listed as hazardous waste. P blends the hazardous solvents with the used oil. Some of the spent halogenated solvents were generated by large quantity generators. The mixture contains less than 1000 ppm total halogens and meets the specification for all other constituents and parameters. P sells this blended fuel to R, as in example 3.A.

P is a marketer of hazardous waste fuel because he has mixed hazardous waste with used oil. There is no need to invoke the presumption of mixing with hazardous waste (based on total halogen levels) because it is known on these facts that hazardous waste and used oil have been mixed. (As explained in section IV-B of Part II of this preamble, it is not always certain when used oil is mixed with hazardous waste. In those cases, EPA is employing a rebuttable presumption of mixing with halogenated hazardous waste when halogen levels exceed 1000 ppm.) Finally, the used oil fuel specification does not apply to hazardous waste and, thus, does not apply to the mixture.

4.A. Petroleum refinery G generates API separator sludge (Hazardous Waste K052) and reintroduces it to the refining process upstream from distillation.

All resulting fuels (including petroleum coke) from the refining process are exempt from regulation at this time because the API separator sludge is a hazardous waste from petroleum refining which is introduced to refining process. The API separator sludge is not automatically exempt from regulation until it is reintroduced.

4.B. Petroleum refinery G generated API separator sludge, and sends it to a different refinery where it is reintroduced to the refining process upstream from distillation.

All resulting rules are exempt for the same reason as in 4.A. The API separator sludge is not automatically

exempt until it is reintroduced.

4.C. Petroleum refinery G generates API separator sludge and sends it to fuel processor P who processes the sludge along with used oil in a process that accepts crude oil but does not include distillation as a process step. The resulting fuels meet the used oil fuel specification.

The fuels produced by processor P are not subject to regulation (aside from P maintaining a record of the first person to whom the fuels are sent). They would be subject to regulation as hazardous waste fuels if they failed to meet the fuel specification. In addition, processor P needs a storage permit or interim status to store the API separator sludge.

5.A. Same facts as in 4.A. above, except that refinery G reclaims oil from the API separator sludge and reintroduces the recovered oil to the refining process.

Both the reclaimed oil (which is to be refined) and the resulting fuels are exempt from regulation.

5.B. Same facts as in 4.B. above, except that reclaimed oil (i.e., oil reclaimed from the API separator sludge) is sent to the other refinery.

Both the reclaimed oil and the resulting fuels are exempt from regulation.

5.C. Same facts as in 4.C. above, except that reclaimed oil is sent to fuel processor P.

Here, the reclaimed oil is *not* automatically exempt, because it is not being refined (since the fuel processor is not using distillation as a process step). The resulting fuel is exempt (aside from a recordkeeping step for P) if it meets the used oil fuel specification.

6. Processor P obtains contaminated used oil which it processes via distillation to produce a fuel. Oil-bearing hazardous wastes from petroleum refining are also used in the process. The resulting fuel meets the used oil fuel specification.

The fuel is exempt because it meets the used oil fuel specification. See § 261.6(a)(3)(viii)(A). If the used oil fuel did not meet the fuel specification, it would be considered hazardous waste fuel and be subject to full regulation. This situation should be distinguished from one where oil-bearing hazardous wastes from refining are reintroduced to a *refining* process. The process here is *not* considered to be refining, in spite of the use of distillation, because it does not produce products from crude oil.

PART FIVE: ADMINISTRATIVE, ECONOMIC, AND ENVIRONMENTAL IMPACTS, AND LIST OF SUBJECTS

I. State Authority

A. Applicability of Rules in Authorized States

Under section 3006 of RCRA, EPA may authorize qualified States to administer and enforce the RCRA program within the State. (See 40 CFR Part 271 for the standards and requirements for authorization.) Following authorization EPA retains enforcement authority under sections 3008, 7003 and 3013 of RCRA, although authorized States have primary enforcement responsibility.

Prior to the Hazardous and Solid Waste Amendments of 1984 (HSWA) amending RCRA, a State with final authorization administered its hazardous waste program entirely in lieu of EPA administering the Federal program in that State. The Federal requirements no longer applied in the authorized State, and EPA could not issue permits for any facilities in the State which the State was authorized to permit. When new, more stringent Federal requirements were promulgated or enacted, the State was obligated to enact equivalent authority within specified time frames. New Federal requirements did not take effect in an authorized State until the State adopted the requirements as State law.

In contrast, under newly enacted section 3006(g) of RCRA, 42 U.S.C. 6926(g), new requirements and prohibitions imposed by the HSWA take effect in authorized States at the same time that they take effect in nonauthorized States. EPA is directed to carry out those requirements and prohibitions in authorized States, including issuing permits, until the State is granted authorization to do so. While States must still adopt HSWA-related provisions as State law to retain final authorization, the HSWA applies in authorized States in the interim.

Today's rule, with respect to hazardous waste fuels, (40 CFR 266.30-266.35) is promulgated pursuant to section 3004(q), a provision added by HSWA. Thus it is being added to Table 1 in § 271.1(j) which identifies the Federal program requirements that are promulgated pursuant to HSWA and thus are immediately effective in authorized States. States may apply for either interim or final authorization for the HSWA provisions identified in Table 1 as discussed in the following section of this preamble.

The used oil fuel standards adopted today at 40 CFR 266.40-266.44 also are applicable in all States, although for a different reason. Used oil fuel is not presently regulated as a hazardous waste under section 3001. Instead, today's regulations are promulgated pursuant to the Used Oil Recycling Act (codified as section 3014(a) of RCRA) which directs EPA to regulate recycled used oil even if used oil is not a hazardous waste. Section 3014(a) requirements apply in all States as Federal law and operate independently of sections 3001 through 3006. EPA, however, is about to propose to list used oil as a hazardous waste pursuant to authority contained in section 3014(b) of RCRA, a provision added by HSWA. Should EPA adopt this listing as a final rule, all rules regarding management of recycled used oil thus would be applicable in all States by virtue of section 3006(g) as well as section 3014. At that point, authorized States would be required to revise their programs to adopt these rules as discussed below.

B. Effect on State Authorizations

As noted above, the hazardous waste fuel rules promulgated today are effective in all States. Thus, EPA will implement the standards in nonauthorized States and in authorized States until they revise their programs to adopt these rules and the revision is approved by EPA.

A State may apply to receive either interim or final authorization to administer and enforce the hazardous waste fuel rules under section 3006(g)(2) or 3006(b), respectively, on the basis of requirements that are substantially equivalent or equivalent to EPA's. The procedures and schedule for State program revisions under section 3006(b) are described in 40 CFR 271.21. See 49 FR at 21678 (May 22, 1984). The same procedures should be followed for section 3006(g)(2).

Applying § 271.21(e)(2), States that have final authorization must revise their programs within a year from today if only regulatory changes are necessary, or within two years of promulgation if statutory changes are necessary. These deadlines can be extended in exceptional cases (40 CFR 271.21(e)(3)).

States with authorized RCRA programs already may have requirements similar to those in today's rule. These State regulations have not been assessed against the Federal regulations being promulgated today to determine whether they meet the tests for authorization. Thus, a State is not authorized to carry out these requirements in lieu of EPA until a State

program revision is submitted and approved. Of course, States with existing standards may continue to administer and enforce their standards as a matter of State law. In implementing the Federal program EPA will work with States under cooperative agreements to minimize duplication of efforts. In many cases EPA will be able to defer to the States in their efforts to implement their programs, rather than take separate actions under Federal authority.

States that submit official applications for final authorization less than 12 months after promulgation of EPA's regulations may be approved without including standards equivalent to those promulgated. However, once authorized, a State must revise its program to include standards substantially equivalent or equivalent to EPA's within the time periods discussed above.

II. Regulatory Impacts

A. Results of Regulatory Impact Studies

1. *Executive Order 12291.* As defined by Executive Order 12291, today's regulation is not a "major rule". Therefore, no Regulatory Impacts Analysis (RIA) is required. This rule will not have an annual impact on the national economy greater than \$100 million. The estimated maximum costs of today's rule are an initial (one-time) expenditure of \$6 million and annual costs of \$20.9 million. The majority of affected facilities will incur less than \$1000 in additional costs with the maximum expenditure for any one facility expected to be approximately \$7000 per year. In addition, these regulations will not significantly affect competition, employment, productivity or innovation.

This rule was submitted to the Office of Management and Budget (OMB) for review under Executive Order 12291.

2. *Regulatory Flexibility Act.* We have determined that today's rule will not have a significant impact on a substantial number of small businesses and that, therefore, no Regulatory Flexibility Analysis (RFA) is required under the Regulatory Flexibility Act. Although a large number of small businesses managing used oil will be affected by some parts of the rules, we estimate that the maximum costs that could be imposed will be less than 5% of product price and will not cause a 5% closure rate. Cost of compliance data presented at proposal (see 50 FR 1708-1712) indicate that the rules may increase the cost of a marketer's used oil fuel by 1 to 3 cents per gallon. EPA does not consider this a significant increase given that generators are paid 15 to 25

cents per gallon for their used oil, and marketers charge burners 50 to 75 cents per gallon for used oil fuel.

3. *Paperwork Reduction Act.* The requirements of the Paperwork Reduction Act of 1980 (PRA), 44 U.S.C. 3501 et seq., were considered in developing these regulations. We believe that the reporting and recordkeeping required by today's rules are the minimum necessary to implement and enforce the regulations.

The information collection requirements contained in this rule have been approved by the Office of Management and Budget (OMB) under the provisions of the Paperwork Reduction Act of 1980, 44 U.S.C. 3501 et seq. and have been assigned OMB control numbers 2050-0028 (notification), 2050-0009 (storage permits), 2050-0039 (manifest shipping papers), and 2050-0047 (invoice shipping papers, certification, and used oil analysis).

B. Impacts on the Recycling Industry

1. *Used Oil Fuel.* In the proposal, we stated that we did not believe that these regulations would discourage the recycling or recovery of used oil. The rules only restrict used oil entering the nonindustrial fuel market. EPA stated in the proposal that any used oil not sold to this market could be sold to industrial users or used as rerefining feedstock.

Many comments were received on the subject of the impact of the rules, as proposed, on the used oil industry. Most of the parties who commented were concerned that the Agency underestimated costs and impacts. Commenters related impacts to decreased value of used oil and the absence of viable markets for displaced used oil. The Agency maintains that the costs and impacts presented in the proposed rulemaking (50 FR 1707-1714) are generally complete and reasonable projections. We predict that today's rule will have minimal impacts on net recycling because significant alternative markets exist.¹⁰¹

The Agency also received a number of comments stressing the need to maintain viable recycling markets, particularly for used oil. Commenters frequently discussed impacts on their particular industry or practices. EPA maintains that this proposal will not reduce net

¹⁰¹ It should be noted that the effective date of the lead specification is delayed six months expressly to avoid major disruption of the used oil recycling industry that could result in dumping. As shown in Table 5 in the text, delaying the effective date of the lead specification is expected to more than double the amount of (unblended) used oil that can meet the specification for metals.

recycling. This proposal does not restrict combustion of hazardous wastes or recycled oil in industrial devices. Nor does it restrict other recycling, such as used oil rerefining and solvent reclamation. We recognize that the regulation will cause some market shifts, but maintain that net recycling will not decrease. Commenters confused impacts of this proposal with those of more extensive regulations of the Phase II standards that include industrial burners—which this rule does not address. Many commenters apparently presumed that recycled oil was banned from industrial boilers. The Agency may apply a similar specification to recycled oil burned in boilers under the Phase II regulations. The costs and impacts of that rule, however, will be presented when that rule is proposed. Those costs and impacts are not part of today's rule. We maintain that today's regulation does not impose major impacts that require an RIA.

2. Hazardous Waste Fuel.

Commenters suggested that permits for small hazardous waste storage facilities may cost \$25,000, not the \$10,000 we suggested in the proposal.¹⁰² EPA estimated a \$10,000 expenditure because we utilized the cost of amending an existing Part B permit in our cost estimate, not the cost of obtaining a new permit. The rule requires Part B storage permits only for facilities marketing hazardous waste fuels (and for new hazardous waste fuel burner facilities). We have assumed virtually all hazardous waste fuel contains listed hazardous waste. Thus, the marketer's feedstock tanks (i.e., tanks for incoming wastes) are already subject to regulation, the marketer's facilities affected by today's rule would already have RCRA permits.

In the proposal, the Agency applied unit costs to represent the total incremental costs of these requirements above current requirements and practices. The costs related to this regulation are not the total investments, revenues, or value of products of associated businesses, as some commenters suggested. We estimate that this regulation will impose direct costs of up to \$21 million per year (annualized). This is one of the reasons why this regulation is not a major rule and does not require an RIA.

¹⁰²It should be noted that these storage facility cost estimates do not include the cost of providing secondary containment (or alternate equivalent controls), a requirement EPA recently proposed for hazardous waste storage facilities. See 50 FR 26444-26504 (June 26, 1985).

III. Explanation of Compliance Dates

At proposal (see 50 FR 1714), EPA expressly requested comment on staggering the compliance dates for the regulatory requirements to make them effective as soon as practicable during the 1985-86 heating season. Although commenters did not indicate that the compliance dates were unreasonable, we have decided that the proposed 30 day compliance date for notifications may not give notifiers enough time to request and receive notification applications from their State hazardous waste agency, and to complete and submit the form. Thus, the final rule allows notifiers two months after today to notify regarding their waste-as-fuel activities.

We are making a corresponding change to the compliance date for the manifest (or invoice) system. Given that marketers and burners must include their U.S. EPA Identification Number (assigned after receipt of notification) on manifests and invoices, and that it may take as long as two months after receipt of an application to apprise a notifier of his Identification Number, (if he is not renotifying to identify waste-as-fuel activities) the compliance date for the manifest (or invoice) system is four months after today. (The proposed compliance date was 90 days after publication.)

Compliance dates for the prohibitions (i.e., 10 days after today) and for the storage controls (i.e., six months after today) are adopted as proposed.

The compliance date for each regulatory requirement is shown in the "DATES" section at the beginning of this preamble.

IV. List of Subjects

40 CFR Part 261

Hazardous waste, Recycling.

40 CFR Part 264

Hazardous waste, Insurance, Packaging and containers, Reporting and recordkeeping requirements, Security measures, Surety bonds.

40 CFR Part 265

Hazardous waste, Insurance, Packaging and containers, Reporting and recordkeeping requirements, Security measures, Surety bonds, Water supply.

40 CFR Part 266

Hazardous waste, Recycling.

40 CFR Part 271

Administrative practice and procedure, Confidential business information, Hazardous materials

transportation, Hazardous waste, Indian lands, Intergovernmental relations, Penalties, Reporting and recordkeeping requirements, Water pollution control, Water supply.

Dated: November 8, 1985.

Lee M. Thomas,
Administrator.

For the reasons set out in the Preamble, Title 40 of the Code of Federal Regulations is amended as follows:

PART 261—IDENTIFICATION AND LISTING OF HAZARDOUS WASTE

1. The authority citation for Part 261 continues to read as follows:

Authority: Secs. 1006, 2002(a), 3001, and 3002, of the Solid Waste Disposal Act, as amended by the Resource Conservation and Recovery Act of 1976, as amended (42 U.S.C. 6905, 6912(a), 6921, and 6922).

2. Section 261.3 is amended by adding to paragraph (c)(2)(ii) the following (B):

§ 261.3 Definition of hazardous waste.

* * * * *
(c) * * *
(2) * * *
(ii) * * *

(B) Wastes from burning any of the materials exempted from regulation by § 261.6(a)(3) (iv), (vi), (vii), or (viii).

* * * * *

3. Section 261.5 is amended by revising paragraph (b) to read as follows:

§ 261.5 Special requirements for hazardous waste generated by small quantity generators.

* * * * *

(b) Except for those wastes identified in paragraphs (e), (f), (g), (h), and (k) of this section, a small quantity generator's hazardous wastes are not subject to regulation under Parts 262 through 266 and Parts 270 and 124 of this chapter, and the notification requirements of Section 3010 of RCRA, provided the generator complies with the regulations of paragraphs (f), (g), (h), and (k) of this section.

* * * * *

4. Section 261.5 is amended by adding a new paragraph (k) to read as follows:

§ 261.5 Special requirements for hazardous waste generated by small quantity generators.

* * * * *

(k) If a small quantity generator's hazardous wastes are mixed with used oil, the mixture is subject to Subpart E of Part 266 of this chapter if it is destined to be burned for energy recovery. Any material produced from such a mixture by processing, blending, or other

treatment is also so regulated if it is destined to be burned for energy recovery.

5. Section 261.6 is amended by revising paragraphs (a)(2)(iii), and (a)(3)(iii), and adding new paragraphs (a)(3) (viii) and (ix). Although only the above changes are made under this rulemaking, the entire § 261.6, including provisions not affected by today's rules, is printed here for the reader's convenience.

§ 261.6 Requirements for recyclable materials.

(a)(1) Hazardous wastes that are recycled are subject to the requirements for generators, transporters, and storage facilities of paragraphs (b) and (c) of this section, except for the materials listed in paragraphs (a)(2) and (a)(3) of this section. Hazardous wastes that are recycled will be known as "recyclable materials."

(2) The following recyclable materials are not subject to the requirements of this section but are regulated under Subparts C through G of Part 266 of this chapter and all applicable provisions in Parts 270 and 124 of this chapter:

(i) Recyclable materials used in a manner constituting disposal (Subpart C);

(ii) Hazardous wastes burned for energy recovery in boilers and industrial furnaces that are not regulated under Subpart O of Part 264 or 265 of this chapter (Subpart D);

(iii) Used oil that exhibits one or more of the characteristics of hazardous waste and is burned for energy recovery in boilers and industrial furnaces that are not regulated under Subpart O of Part 264 or 265 of this chapter (Subpart E);

(iv) Recyclable materials from which precious metals are reclaimed (Subpart F);

(v) Spent lead-acid batteries that are being reclaimed (Subpart G).

(3) The following recyclable materials are not subject to regulation under Parts 262 through Parts 266 or Parts 270 or 124 of this chapter, and are not subject to the notification requirements of section 3010 of RCRA:

(i) Industrial ethyl alcohol that is reclaimed;

(ii) Used batteries (or used battery cells) returned to a battery manufacturer for regeneration;

(iii) Used oil that exhibits one or more of the characteristics of hazardous waste but is recycled in some other manner than being burned for energy recovery;

(iv) Scrap metal;

(v) Fuels produced from the refining of oil-bearing hazardous wastes along with

normal process streams at a petroleum refining facility if such wastes result from normal petroleum refining, production, and transportation practices;

(vi) Oil reclaimed from hazardous waste resulting from normal petroleum refining, production, and transportation practices, which oil is to be refined along with normal process streams at a petroleum refining facility;

(vii) Coke and coal tar from the iron and steel industry that contains hazardous waste the iron and steel production process;

(viii) (A) Hazardous waste fuel produced from oil-bearing hazardous wastes from petroleum refining, production, or transportation practices, or produced from oil reclaimed from such hazardous wastes, where such hazardous wastes are reintroduced into a process that does not use distillation or does not produce products from crude oil so long as the resulting fuel meets the used oil specification under § 266.40(e) of this chapter and so long as no other hazardous wastes are used to produce the hazardous waste fuel;

(B) Hazardous waste fuel produced from oil-bearing hazardous waste from petroleum refining production, and transportation practices, where such hazardous wastes are reintroduced into a refining process after a point at which contaminants are removed, so long as the fuel meets the used oil fuel specification under § 266.40(e) of this chapter; and

(C) Oil reclaimed from oil-bearing hazardous wastes from petroleum refining, production, and transportation practices, which reclaimed oil is burned as a fuel without reintroduction to a refining process, so long as the reclaimed oil meets the used oil fuel specification under § 266.40(e) of this chapter; and

(ix) Petroleum coke produced from petroleum refinery hazardous wastes containing oil at the same facility at which such wastes were generated, unless the resulting coke product exceeds one or more of the characteristics of hazardous waste in Part 261, Subpart C.

(b) Generators and transporters of recyclable materials are subject to the applicable requirements of Parts 262 and 263 of this chapter and the notification requirements under section 3010 of RCRA, except as provided in paragraph (a) of this section.

(c)(1) Owners or operators of facilities that store recyclable materials before they are recycled are regulated under all applicable provisions of Subparts A through L of Parts 264 and 265 and Parts 266, 270, and 124 of this chapter and the

notification requirements under section 3010 of RCRA, except as provided in paragraph (a) of this section. (The recycling process itself is exempt from regulation.)

(2) Owners or operators of facilities that recycle recyclable materials without storing them before they are recycled are subject to the following requirements, except as provided in paragraph (a) of this section:

(i) Notification requirements under section 3010 of RCRA;

(ii) Sections 265.71 and 265.72 (dealing with the use of the manifest and manifest discrepancies) of this chapter.

PART 264—STANDARDS FOR OWNERS AND OPERATORS OF HAZARDOUS WASTE TREATMENT, STORAGE, AND DISPOSAL FACILITIES

6. The authority citation for Part 264 continues to read as follows:

Authority: Secs. 1006, 2002(a), 3004, 3005, of the Solid Waste Disposal Act, as amended by the Resource Conservation and Recovery Act of 1976, as amended (42 U.S.C. 6905, 6912(a), 6924, and 6925).

7. Section 264.340 is amended by revising paragraph (a)(2) to read as follows:

§ 264.340 Applicability.

(a) * * *

(2) Owners or operators who burn hazardous waste in boilers or in industrial furnaces in order to destroy them, or who burn hazardous waste in boilers or in industrial furnaces for any recycling purpose and elect to be regulated under this subpart.

PART 265—INTERIM STATUS STANDARDS FOR OWNERS AND OPERATORS OF HAZARDOUS WASTE TREATMENT, STORAGE AND DISPOSAL FACILITIES

8. The authority citation for part 265 continues to read as follows:

Authority: Secs. 1006, 2002(a), 3004, and 3005 of the Solid Waste Disposal Act, as amended by the Resource Conservation and Recovery Act of 1976, as amended (42 U.S.C. 6905, 6924, and 6925).

9. Section 265.340 is amended to revise paragraph (a)(2) to read as follows:

§ 265.340 Applicability.

(a) * * *

(2) Owners or operators who burn hazardous waste in boilers or in industrial furnaces in order to destroy them, or who burn hazardous waste in boilers or in industrial furnaces for any

recycling purpose and elect to be regulated under this subpart.

PART 266—STANDARDS FOR THE MANAGEMENT OF SPECIFIC WASTES AND SPECIFIC TYPES OF WASTE MANAGEMENT FACILITIES

10. The authority citation for Part 266 is revised to read as follows:

Authority: Secs. 1006, 2002(a), 3004, and 3014 of the Solid Waste Disposal Act, as amended by the Resource Conservation and Recovery Act of 1976, as amended (42 U.S.C. 6905, 6912(a), 6924, and 6934).

11. Subpart D is revised to read as follows:

Subpart D—Hazardous Waste Burned for Energy Recovery

- Sec.
- 266.30 Applicability.
- 266.31 Prohibitions.
- 266.32 Standards applicable to generators of hazardous waste fuel.
- 266.33 Standards applicable to transporters of hazardous waste fuel.
- 266.34 Standards applicable to marketers of hazardous waste fuel.
- 266.35 Standards applicable to burners of hazardous waste fuel.

Subpart D—Hazardous Waste Burned for Energy Recovery

§ 266.30 Applicability.

(a) The regulations of this subpart apply to hazardous wastes that are burned for energy recovery in any boiler or industrial furnace that is not regulated under Subpart O of Part 264 or 265 of this chapter, except as provided by paragraph (b) of this section. Such hazardous wastes burned for energy recovery are termed "hazardous waste fuel". Fuel produced from hazardous waste by processing, blending, or other treatment is also hazardous waste fuel. (These regulations do not apply, however, to gas recovered from hazardous waste management activities when such gas is burned for energy recovery.)

(b) The following hazardous wastes are not subject to regulation under this subpart:

(1) Used oil burned for energy recovery that is also a hazardous waste solely because it exhibits a characteristic of hazardous waste identified in Subpart C of Part 261 of this chapter. Such used oil is subject to regulation under Subpart E of Part 266 rather than this subpart; and

(2) Hazardous wastes that are exempt from regulation under §§ 261.4 and 261.6(a) (3) (v)-(ix) of this chapter, and hazardous wastes that are subject to the

special requirements for small quantity generators under § 261.5 of this chapter:

§ 266.31 Prohibitions.

(a) A person may market hazardous waste fuel only:

(1) To persons who have notified EPA of their hazardous waste fuel activities under section 3010 of RCRA and have a U.S. EPA Identification Number; and

(2) If the fuel is burned, to persons who burn the fuel in boilers or industrial furnaces identified in paragraph (b) of this section.

(b) Hazardous waste fuel may be burned for energy recovery in only the following devices:

(1) Industrial furnaces identified in § 260.10 of this chapter;

(2) Boilers, as defined in § 260.10 of this chapter, that are identified as follows:

(i) Industrial boilers located on the site of a facility engaged in a manufacturing process where substances are transformed into new products, including the component parts of products, by mechanical or chemical processes; or

(ii) Utility boilers used to produce electric power, steam, or heated or cooled air or other gases or fluids for sale.

(c) No fuel which contains any hazardous waste may be burned in any cement kiln which is located within the boundaries of any incorporated municipality with a population greater than 500,000 (based on the most recent census statistics) unless such kiln fully complies with regulations under this chapter that are applicable to incinerators.

§ 266.32 Standards applicable to generators of hazardous waste fuel.

(a) Generators of hazardous waste that is used as a fuel or used to produce a fuel are subject to Part 262 of this chapter.

(b) Generators who market hazardous waste fuel to a burner also are subject to § 266.34.

(c) Generators who are burners also are subject to § 266.35.

§ 266.33 Standards applicable to transporters of hazardous waste fuel.

Transporters of hazardous waste fuel (and hazardous waste that is used to produce a fuel) are subject to Part 263 of this chapter.

§ 266.34 Standards applicable to marketers of hazardous waste fuel.

Persons who market hazardous waste fuel are termed "marketers", and are subject to the following requirements. Marketers include generators who market hazardous waste fuel directly to

a burner, persons who receive hazardous waste from generators and produce, process, or blend hazardous waste fuel from these hazardous wastes, and persons who distribute but do not process or blend hazardous waste fuel.

(a) *Prohibitions.* The prohibitions under § 266.31(a);

(b) *Notification.* Notification requirements under section 3010 of RCRA for hazardous waste fuel activities. Even if a marketer has previously notified EPA of his hazardous waste management activities and obtained a U.S. EPA Identification Number, he must renotify to identify his hazardous waste fuel activities.

(c) *Storage.* The applicable provisions of § 262.34, and Subparts A through L of Part 264, Subparts A through L of Part 265, and Part 270 of this chapter;

(d) *Off-site shipment.* The standards for generators in Part 262 of this chapter when a marketer initiates a shipment of hazardous waste fuel;

(e) *Required notices.* (1) Before a marketer initiates the first shipment of hazardous waste fuel to a burner or another marketer, he must obtain a one-time written and signed notice from the burner or marketer certifying that:

(i) The burner or marketer has notified EPA under Section 3010 of RCRA and identified his waste-as-fuel activities; and

(ii) If the recipient is a burner, the burner will burn the hazardous waste fuel only in an industrial furnace or boiler identified in § 261.31(b).

(2) Before a marketer accepts the first shipment of hazardous waste fuel from another marketer, he must provide the other marketer with a one-time written and signed certification that he has notified EPA under section 3010 of RCRA and identified his hazardous waste fuel activities; and

(f) *Recordkeeping.* In addition to the applicable recordkeeping requirements of Parts 262, 264, and 265 of this chapter, a marketer must keep a copy of each certification notice he receives or sends for three years from the date he last engages in a hazardous waste fuel marketing transaction with the person who sends or receives the certification notice.

(The notification requirements contained in paragraph (b) of this section were approved by OMB under control number 2050-0028. The storage requirements contained in paragraph (c) of this section were approved by OMB under control number 2050-0009. The manifest and invoice requirements contained in paragraph (d) of this section were approved by OMB under control numbers 2050-0039 and 2050-0047, respectively. The certification requirements contained in paragraph (e) of this section

were approved by OMB under control number 2050-0047. The recordkeeping requirements contained in paragraph (f) of this section were approved by OMB under control number 2050-0047.)

§ 266.35 Standards applicable to burners of hazardous waste fuel.

Owners and operators of industrial furnaces and boilers identified in § 266.31(b) that burn hazardous fuel are "burners" and are subject to the following requirements:

(a) *Prohibitions.* The prohibitions under § 266.31(b);

(b) *Notification.* Notification requirements under section 3010 of RCRA for hazardous waste fuel activities. Even if a burner has previously notified EPA of his hazardous waste management activities and obtained a U.S. EPA Identification Number, he must renotify to identify his hazardous waste fuel activities.

(c) *Storage.* (1) For short term accumulation by generators who burn their hazardous waste fuel on site, the applicable provisions of § 262.34 of this chapter;

(2) For existing storage facilities, the applicable provisions of Subparts A through L of Part 265, and Parts 270 and 124 of this chapter; and

(3) For new storage facilities, the applicable provisions of Subparts A through L of Part A 264, and Parts 270 and 124 of this chapter;

(d) *Required notices.* Before a burner accepts the first shipment of hazardous waste fuel from a marketer, he must provide the marketer a one-time written and signed notice certifying that:

(1) He has notified EPA under section 3010 of RCRA and identified his waste-as-fuel activities; and

(2) He will burn the fuel only in a boiler or furnace identified in § 266.31(b).

(e) *Recordkeeping.* In addition to the applicable recordkeeping requirements of Parts 264 and 265 of this chapter, a burner must keep a copy of each certification notice that he sends to a marketer for three years from the date he last receives hazardous waste fuel from that marketer.

(The notification requirements contained in paragraph (b) of this section were approved by OMB under control number 2050-0028. The storage requirements contained in paragraph (c) of this section were approved by OMB under control number 2050-0009. The certification requirements contained in paragraph (d) of this section were approved by OMB under control number 2050-0047. The recordkeeping requirements contained in paragraph (e) of this section were approved by OMB under control number 2050-0047.)

12. Subpart E is added as follows:

Subpart E—Used Oil Burned for Energy Recovery

Sec.

266.40 Applicability.

266.41 Prohibitions.

266.42 Standards applicable to generators of used oil burned for energy recovery.

266.43 Standards applicable to marketers of used oil burned for energy recovery.

266.44 Standards applicable to burners of used oil burned for energy recovery.

Subpart E—Used Oil Burned for Energy Recovery

§ 266.40 Applicability.

(a) The regulations of this subpart apply to used oil that is burned for energy recovery in any boiler or industrial furnace that is not regulated under Subpart O of Part 264 or Part 265 of this chapter, except as provided by paragraphs (c) and (e) of this section. Such used oil is termed "used oil fuel". Used oil fuel includes any fuel produced from used oil by processing, blending, or other treatment.

(b) "Used oil" means any oil that has been refined from crude oil, used, and, as a result of such use, is contaminated by physical or chemical impurities.

(c) Except as provided by paragraph (d) of this section, used oil that is mixed with hazardous waste and burned for energy recovery is subject to regulation as hazardous waste fuel under Subpart D of Part 266. Used oil containing more than 1000 ppm of total halogens is presumed to be a hazardous waste because it has been mixed with halogenated hazardous waste listed in Subpart D of Part 261 of this chapter. Persons may rebut this presumption by demonstrating that the used oil does not contain hazardous waste (for example, by showing that the used oil does not contain significant concentrations of halogenated hazardous constituents listed in Appendix VIII of Part 261 of this chapter).

(d) Used oil burned for energy recovery is subject to regulation under this subpart rather than as hazardous waste fuel under Subpart D of this part if it is a hazardous waste solely because it:

(1) Exhibits a characteristic of hazardous waste identified in Subpart C of Part 261 of this chapter, provided that it is not mixed with a hazardous waste; or

(2) Contains hazardous waste generated only by a person subject to the special requirements for small quantity generators under § 261.5 of this chapter.

(e) Except as provided by paragraph (c) of this section, used oil burned for energy recovery, and any fuel produced from used oil by processing, blending, or

other treatment, is subject to regulation under this subpart unless it is shown not to exceed any of the allowable levels of the constituents and properties in the specification shown in the following table. Used oil fuel that meets the specification is subject only to the analysis and recordkeeping requirements under §§ 266.43(b) (1) and (6). Used oil fuel that exceeds any specification level is termed "off-specification used oil fuel".

USED OIL EXCEEDING ANY SPECIFICATION LEVEL IS SUBJECT TO THIS SUBPART WHEN BURNED FOR ENERGY RECOVERY ^a

Constituent/property	Allowable level
Arsenic.....	5 ppm maximum.
Cadmium.....	2 ppm maximum.
Chromium.....	10 ppm maximum.
Lead.....	100 ppm maximum.
Flash Point.....	100 °F minimum.
Total Halogens.....	4,000 ppm maximum. ^b

^a The specification does not apply to used oil fuel mixed with a hazardous waste other than small quantity generator hazardous waste.

^b Used oil containing more than 1,000 ppm total halogens is presumed to be a hazardous waste under the rebuttable presumption provided under § 266.40(c). Such used oil is subject to Subpart D of this part rather than this subpart when burned for energy recovery unless the presumption of mixing can be successfully rebutted.

§ 266.41 Prohibitions.

(a) A person may market off-specification used oil for energy recovery only:

(1) To burners or other marketers who have notified EPA of their used oil management activities stating the location and general description of such activities, and who have an EPA identification number; and

(2) To burners who burn the used oil in an industrial furnace or boiler identified in paragraph (b) of this section.

(b) Off-specification used oil may be burned for energy recovery in only the following devices:

(1) Industrial furnaces identified in § 260.10 of this chapter; or

(2) Boilers, as defined in § 260.10 of this chapter, that are identified as follows:

(i) Industrial boilers located on the site of a facility engaged in a manufacturing process where substances are transformed into new products, including the component parts of products, by mechanical or chemical processes;

(ii) Utility boilers used to produce electric power, steam, or heated or cooled air or other gases or fluids for sale; or

(iii) Used oil-fired space heaters provided that:

(A) The heater burns only used oil that the owner or operator generates or used oil received from do-it-yourself oil

changers who generate used oil as household waste;

(B) The heater is designed to have a maximum capacity of not more than 0.5 million Btu per hour; and

(C) The combustion gases from the heater are vented to the ambient air.

§ 266.42 Standards applicable to generators of used oil burned for energy recovery.

(a) Except as provided in paragraphs (b) and (c) of this section, generators of used oil are not subject to this subpart.

(b) Generators who market used oil directly to a burner are subject to § 266.43.

(c) Generators who burn used oil are subject to § 266.44.

§ 266.43 Standards applicable to marketers of used oil burned for energy recovery.

(a) Persons who market used oil fuel are termed "marketers". However, the following persons are not marketers subject to this Subpart:

(1) Used oil generators, and collectors who transport used oil received only from generators, unless the generator or collector markets the used oil directly to a person who burns it for energy recovery. However, persons who burn some used oil fuel for purposes of processing or other treatment to produce used oil fuel for marketing are considered to be burning incidentally to processing. Thus, generators and collectors who market to such incidental burners are not marketers subject to this subpart;

(2) Persons who market only used oil fuel that meets the specification under § 266.40(e) and who are not the first person to claim the oil meets the specification (i.e., marketers who do not receive used oil from generators or initial transporters and marketers who neither receive nor market off-specification used oil fuel).

(b) Marketers are subject to the following requirements:

(1) *Analysis of used oil fuel.* Used oil fuel is subject to regulation under this subpart unless the marketer obtains analyses or other information documenting that the used oil fuel meets the specification provided under § 266.40(e).

(2) *Prohibitions.* The prohibitions under § 266.41(a);

(3) *Notification.* Notification to EPA stating the location and general description of used oil management activities. Even if a marketer has previously notified EPA of his hazardous waste management activities under section 3010 of RCRA and obtained a U.S. EPA Identification

Number, he must renotify to identify his used oil management activities.

(4) *Invoice system.* When a marketer initiates a shipment of off-specification used oil, he must prepare and send the receiving facility an invoice containing the following information:

- (i) An invoice number;
- (ii) His own EPA identification number and the EPA identification number of the receiving facility;
- (iii) The names and addresses of the shipping and receiving facilities;
- (iv) The quantity of off-specification used oil to be delivered;
- (v) The date(s) of shipment or delivery; and

(vi) The following statement: "This used oil is subject to EPA regulation under 40 CFR Part 266";

Note.—Used oil that meets the definition of combustible liquid (flash point below 200 °F but at or greater than 100 °F) or flammable liquid (flash point below 100 °F) is subject to Department of Transportation Hazardous Materials Regulations at 49 CFR Parts 100–177.

(5) *Required notices.* (i) Before a marketer initiates the first shipment of off-specification used oil to a burner or other marketer, he must obtain a one-time written and signed notice from the burner or marketer certifying that:

(A) The burner or marketer has notified EPA stating the location and general description of his used oil management activities; and

(B) If the recipient is a burner, the burner will burn the off-specification used oil only in an industrial furnace or boiler identified in § 266.41(b); and

(ii) Before a marketer accepts the first shipment of off-specification used oil from another marketer subject to the requirements of this section, he must provide the marketer with a one-time written and signed notice certifying that he has notified EPA of his used oil management activities; and

(6) *Recordkeeping.*—(i) *Used Oil Fuel That Meets the Specification.* A marketer who first claims under paragraph (b)(1) of this section that used oil fuel meets the specification must keep copies of analysis (or other information used to make the determination) of used oil for three years. Such marketers must also record in an operating log and keep for three years the following information on each shipment of used oil fuel that meets the specification. Such used oil fuel is not subject to further regulation, unless it is subsequently mixed with hazardous waste or unless it is mixed with used oil so that it no longer meets the specification.

(A) The name and address of the facility receiving the shipment;

(B) The quantity of used oil fuel delivered;

(C) The date of shipment or delivery; and

(D) A cross-reference to the record of used oil analysis (or other information used to make the determination that the oil meets the specification) required under paragraph (b)(6)(i) of this section.

(ii) *Off-Specification Used Oil Fuel.* A marketer who receives or initiates an invoice under the requirements of this section must keep a copy of each invoice for three years from the date the invoice is received or prepared. In addition, a marketer must keep a copy of each certification notice that he receives or sends for three years from the date he last engages in an off-specification used oil fuel marketing transaction with the person who sends or receives the certification notice.

(The analysis requirements contained in paragraph (b)(1) of this section were approved by OMB under control number 2050–0047. The notification requirements contained in paragraph (b)(3) of this section were approved by OMB under control number 2050–0028. The invoice requirements contained in paragraph (b)(4) of this section were approved by OMB under control number 2050–0047. The certification requirements contained in paragraph (b)(5) of this section were approved by OMB under control number 2050–0047. The recordkeeping requirements contained in paragraph (b)(6) of this section were approved by OMB under control number 2050–0047.)

§ 266.44 Standards applicable to burners of used oil burned for energy recovery.

Owners and operators of facilities that burn used oil fuel are "burners" and are subject to the following requirements:

(a) *Prohibition.* The prohibition under § 266.41(b);

(b) *Notification.* Burners of off-specification used oil fuel must notify EPA stating the location and general description of used oil management activities, except that owners and operators of used oil-fired space heaters that burn used oil fuel under the provisions of § 266.41(b)(2) are exempt from these notification requirements. Even if a burner has previously notified EPA of his hazardous waste management activities under Section 3010 of RCRA and obtained an identification number, he must renotify to identify his used oil management activities.

(c) *Required notices.* Before a burner accepts the first shipment of off-specification used oil fuel from a marketer, he must provide the marketer a one-time written and signed notice certifying that:

(1) He has notified EPA stating the location and general description of his used oil management activities; and

(2) He will burn the used oil only in an industrial furnace or boiler identified in § 266.41(b); and

(d) *Used oil fuel analysis.* (1) Used oil fuel burned by the generator is subject to regulation under this subpart unless the burner obtains analysis (or other information) documenting that the used oil meets the specification provided under § 266.40(e).

(2) Burners who treat off-specification used oil fuel by processing, blending, or other treatment to meet the specification provided under § 266.40(e) must obtain analyses (or other information) documenting that the used oil meets the specification.

(e) *Recordkeeping.* A burner who receives an invoice under the requirements of this section must keep a copy of each invoice for three years from the date the invoice is received. Burners must also keep for three years copies of analyses of used oil fuel as

may be required by paragraph (d) of this section. In addition, he must keep a copy of each certification notice that he sends to a marketer for three years from the date he last receives off-specification used oil from that marketer.

(The notification requirements contained in paragraph (b) of this section were approved by OMB under control number 2050-0028. The certification requirements contained in paragraph (c) of this section were approved by OMB under control number 2050-0047. The analysis requirements contained in paragraph (d) of this section were approved by OMB under control number 2050-0047. The recordkeeping requirements contained in paragraph (e) of this section were approved by OMB under control number 2050-0047.)

PART 271—REQUIREMENTS FOR AUTHORIZATION OF STATE HAZARDOUS WASTE PROGRAMS

12. The authority citation for Part 271 is revised to read as follows:

Authority: Secs. 1006, 2002(a), and 3006 of the Solid Waste Disposal Act, as amended by the Resource Conservation and Recovery Act

of 1976, as amended (42 U.S.C. 6905, 6912(a), and 6928).

13. Section 271.1(j) is amended by changing the table heading and by adding the following entry to Table 1 in chronological order by date of publication:

TABLE 1.—REGULATIONS IMPLEMENTING THE HAZARDOUS AND SOLID WASTE AMENDMENTS OF 1984

Date of publication in the FEDERAL REGISTER	Title of regulation
Nov. 29, 1985.....	Standards for the Management of Specific Wastes and Specific Types of Facilities.

Appendix—Form—Notification of Hazardous Waste Activity

EPA Form 8700-12 (Revised 11/85)

(This form will not appear in the Code of Federal Regulations.)

BILLING CODE 6560-50-M

ID - For Official Use Only												
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IX. Description of Hazardous Wastes (continued from front)

A. Hazardous Wastes from Nonspecific Sources. Enter the four-digit number from 40 CFR Part 261.31 for each listed hazardous waste from nonspecific sources your installation handles. Use additional sheets if necessary.

1	2	3	4	5	6
7	8	9	10	11	12

B. Hazardous Wastes from Specific Sources. Enter the four-digit number from 40 CFR Part 261.32 for each listed hazardous waste from specific sources your installation handles. Use additional sheets if necessary.

13	14	15	16	17	18
19	20	21	22	23	24
25	26	27	28	29	30

C. Commercial Chemical Product Hazardous Wastes. Enter the four-digit number from 40 CFR Part 261.33 for each chemical substance your installation handles which may be a hazardous waste. Use additional sheets if necessary.

31	32	33	34	35	36
37	38	39	40	41	42
43	44	45	46	47	48

D. Listed Infectious Wastes. Enter the four-digit number from 40 CFR Part 261.34 for each hazardous waste from hospitals, veterinary hospitals, or medical and research laboratories your installation handles. Use additional sheets if necessary.

49	50	51	52	53	54

E. Characteristics of Nonlisted Hazardous Wastes. Mark 'X' in the boxes corresponding to the characteristics of nonlisted hazardous wastes your installation handles. (See 40 CFR Parts 261.21 - 261.24)

1. Ignitable (D001)
 2. Corrosive (D002)
 3. Reactive (D003)
 4. Toxic (D000)

X. Certification

I certify under penalty of law that I have personally examined and am familiar with the information submitted in this and all attached documents, and that based on my inquiry of those individuals immediately responsible for obtaining the information, I believe that the submitted information is true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment.

Signature	Name and Official Title (type or print)	Date Signed

EPA Form 8700-12 (Rev. 11-85) Reverse

BILLING CODE 6560-50-C

IV. Line-by-Line Instructions for Completing EPA Form 8700-12

Type or print in black ink all items except Item XI, "Signature," leaving a blank box between words. When typing, hit the space bar once between characters and three times between words. If you must use additional sheets, indicate clearly the number of the item on the form to which the information on the separate sheet applies.

Items I-III—Name, Mailing Address, and Location of Installation:

Complete Items I-III. Please note that the address you give for Item III, "Location of Installation," must be a physical address, *not a post office box or route number*. If the mailing address and physical facility location are the same, you can print "Same" in box for Item III.

Item IV—Installation Contact:

Enter the name, title, and business telephone number of the person who should be contacted regarding information submitted on this form.

Item V—Ownership:

(A) *Name:* Enter the name of the legal owner(s) of the installation, including the property owner. Use additional sheets if necessary to list more than one owner.

(B) *Type:* Using the codes listed below, indicate the legal status of the owner of the facility:

FF= Federally Owned, Federally Operated
 FC= Federally Owned, Operated By A Private Contractor to the Federal Government
 FP= Federally Owned, Privately Operated
 PF= Privately Owned, Constructed For Use By The Federal Government and Operated By The Federal Government
 PL= Privately Owned, Leased And Operated By The Federal Government
 PI= Privately Owned, Indian Land
 FI= Federally Owned, Indian Land
 C= County
 D= District
 M= Municipal
 P= Private
 S= State

Item VI—Type of Regulated Waste Activity:

(A) *Hazardous Waste Activity:* Mark the appropriate box(es) to show which hazardous waste activities are going on at this installation.

(1) *Generator:* (a) If you generate a hazardous waste that is identified by characteristic or listed in 40 CFR Part 261, mark an "X" in this box.

(b) In addition, if you generate less than 1000 kilograms of non-acutely-hazardous waste per calendar month, mark an "X" in this box.

(2) *Transporter:* If you move hazardous waste by air, rail, highway, or water then mark an "X" in this box. All transporters must complete Item VIII. Transporters do not have to complete Item X of this form, but must sign the certification in Item XI. Refer to Part 263 of the CFR for an explanation of the Federal regulations for hazardous waste transporters.

(3) *Treater/Storer/Disposer:* If you treat, store or dispose of regulated hazardous

waste, then mark an "X" in this box. You are reminded to contact the appropriate addressee listed for your State in Section III(C) of this package to request Part A of the RCRA Permit Application. Refer to Parts 264 and 265 of the CFR for an explanation of the Federal regulations for hazardous waste facility owners/operators.

(4) *Underground Injection:* Persons who generate and/or treat or dispose of hazardous waste must place an "X" in this box if an injection well is located at their installation. An injection well is defined as any hole in the ground, including septic tanks, that is deeper than it is wide and that is used for the subsurface placement of fluids.

(5) *Market or Burn Hazardous Waste Fuel:* If you market or burn hazardous waste fuel, place an "X" in this box. Then mark the appropriate boxes underneath to indicate your specific activity. *If you mark "Burner" you must complete Item VII—"Type of Combustion Device."*

Note.—Generators are required to notify for waste-as-fuel activities only if they market directly to the burner.

"Other Marketer" is defined as any person, other than the generator marketing his hazardous waste, who markets hazardous waste fuel.

(B) *Used Oil Fuel Activities:* Mark an "X" in the appropriate box(es) below to indicate which used oil fuel activities are taking place at this installation.

(6) *Off-Specification Used Oil Fuel:* If you market or burn off-specification used oil, place an "X" in this box. Then mark the appropriate boxes underneath to indicate your specific activity. *If you mark "Burner" you must complete Item VII—"Type of Combustion Device."*

Note.—Used oil generators are required to notify only if marketing directly to the burner.

"Other Marketer" is defined as any person, other than a generator marketing his or her used oil, who markets used oil fuel.

(7) *Specification Used Oil Fuel:* If you are the first to claim that the used oil meets the specification established in 40 CFR Part 266.40(e) and is exempt from further regulation, you must mark an "X" in this box.

Item VII—Waste-Fuel Burning: Type of Combustion Device:

Enter an "X" in all appropriate boxes to indicate type(s) of combustion devices in which hazardous waste fuel or off-specification used oil fuel is burned. (Refer to definition section for complete description of each device.)

Item VIII—Mode of Transportation:

Complete this item only if you are the transporter of hazardous waste. Mark an "X" in each appropriate box to indicate the method(s) of transportation you use.

Item IX—First or Subsequent Notification:

Place an "X" in the appropriate box to indicate whether this is your first or a subsequent notification. If you have filed a previous notification, enter your EPA Identification Number in the boxes provided.

Note.—When the owner of a facility changes, the new owner must notify U.S. EPA

of the change, even if the previous owner already received a U.S. EPA Identification Number. Because the U.S. EPA ID Number is "site-specific," the new owner will keep the existing ID number. If the facility moves to another location, the owner/operator must notify EPA of this change. In this instance a new U.S. EPA Identification Number will be assigned, since the facility has changed locations.

Item X—Description of Hazardous Waste:

(Only persons involved in hazardous waste activity (Item VI(A)) need to complete this item. Transporters requesting a U.S. EPA Identification Number do not need to complete this item, but must sign the "Certification" in Item XI.)

You will need to refer to Title 40 CFR Part 261 (enclosed) in order to complete this section. Part 261 identifies those wastes that EPA defines as hazardous. If you need help completing this section please contact the appropriate addressee for your state as listed in Section III(C) of this package.

Section A—If you handle hazardous wastes that are listed in the "nonspecific sources" category in Part 261.31, enter the appropriate 4-digit numbers in the boxes provided.

Section B—If you handle hazardous wastes that are listed in the "specific industrial sources" category in Part 261.32, enter the appropriate four-digit numbers in the boxes provided.

Section C—If you handle any of the "commercial chemical products" listed as wastes in Part 261.33, enter the appropriate four-digit numbers in the boxes provided.

Section D—Disregard, since EPA has not yet published infectious waste regulations.

Section E—If you handle hazardous wastes which are not listed in any of the categories above, but do possess a hazardous characteristic, you should describe these wastes by their hazardous characteristic. (An explanation of each characteristic found at Part 261.21-261.24.) Place an "X" in the box next to the characteristic of the wastes that you handle.

Item XI—Certification:

This certification must be signed by the owner, operator, or an authorized representative of your installation. An "authorized representative" is a person responsible for the overall operation of the facility (i.e., a plant manager or superintendent, or a person of equal responsibility). *All notifications must include this certification to be complete.*

V. Definitions

The following definitions are included to help you to understand and complete the Notification Form:

Act or RCRA—means the Solid Waste Disposal Act, as amended by the Resource Conservation and Recovery Act of 1976, as amended by the Hazardous and Solid Waste Amendments of 1984, 42 U.S.C. Section 6901 *et seq.*

Authorized Representative—means the person responsible for the overall operation of the facility or an operational unit (i.e., part of a facility), e.g., the plant manager,

superintendent or person of equivalent responsibility.

Boiler—means an enclosed device using controlled flame combustion and having the following characteristics:

(1) The unit has physical provisions for recovering and exporting energy in the form of steam, heated fluids, or heated gases;

(2) The unit's combustion chamber and primary energy recovery section(s) are of integral design (i.e., they are physically formed into one manufactured or assembled unit);

(3) The unit continuously maintains an energy recovery efficiency of at least 60 percent, calculated in terms of the recovered energy compared with the thermal value of the fuel; and

(4) The unit exports and utilizes at least 75 percent of the recovered energy, calculated on an annual basis (excluding recovered heat used internally in the same unit to, for example, preheat fuel or combustion air or drive fans or feedwater pumps).

Burner—means the owner or operator of a utility boiler, industrial boiler or industrial furnace that burns waste-fuel for energy recovery and that is not regulated as a RCRA hazardous waste incinerator.

Disposal—means the discharge, deposit, injection, dumping, spilling, leaking, or placing of any solid waste or hazardous waste into or on any land or water so that such solid waste or hazardous waste or any constituent thereof may enter the environment or be emitted into the air or discharged into any waters, including ground waters.

Disposal Facility—means a facility or part of a facility at which hazardous waste is intentionally placed into or on any land or water, and at which waste will remain after closure.

EPA Identification (I.D.) Number—means the number assigned by EPA to each generator, transporter, and treatment, storage, or disposal facility.

Facility—means all contiguous land, and structures, other appurtenances, and improvements on the land, used for treating, storing, or disposing of hazardous waste. A facility may consist of several treatment, storage, or disposal operational units (e.g., one or more landfills, surface impoundments, or combinations of them).

Generator—means any person, by site, whose act or process produces hazardous waste identified or listed in Part 261 of this

chapter or whose act first causes a hazardous waste to become subject to regulation.

Hazardous Waste—means a hazardous waste as defined in 40 CFR Part 261.

Hazardous Waste Fuel—means hazardous waste and any fuel that contains hazardous waste that is burned for energy recovery in a boiler or industrial furnace that is not subject to regulation as a RCRA hazardous waste incinerator. However, the following hazardous waste fuels are subject to regulation as used oil fuels:

(1) Used oil fuel that is also a hazardous waste solely because it exhibits a characteristic of hazardous waste identified in Subpart C of 40 CFR Part 261, provided it is not mixed with hazardous waste; and

(2) Used oil fuel mixed with hazardous wastes generated by a small quantity generator subject to 40 CFR Part 261.5.

Industrial Boiler—means a boiler located on the site of a facility engaged in a manufacturing process where substances are transformed into new products, including the component parts of products, by mechanical or chemical processes.

Industrial Furnace—means any of the following enclosed devices that are integral components of manufacturing processes and that use controlled flame combustion to accomplish recovery of materials or energy: cement kilns, lime kilns, aggregate kilns (including asphalt kilns), phosphate kilns, coke ovens, blast furnaces, smelting furnaces, refining furnaces, titanium dioxide chloride process oxidation reactors, and methane reforming furnaces (and other devices as the Administrator may add to this list).

Marketer—means a person who markets hazardous waste fuel or used oil fuel. However, the following marketers are not subject to waste-as-fuel requirements (including notification) under Subparts D and E of 40 CFR Part 266:

(1) Generators and initial transporters (i.e., transporters who receive hazardous waste or used oil directly from generators including initial transporters who operate transfer stations) who do not market directly to persons who burn the fuels; and

(2) Persons who market used oil fuel that meets the specification provided under 40 CFR 266.40(e) and who are not the first to claim the oil meets the specification.

Off-Specification Used Oil Fuel—means used oil fuel that does not meet the specification provided under 40 CFR 266.40(e).

Operator—means the person responsible for the overall operation of a facility.

Owner—means a person who owns a facility or part of a facility, including land owner.

Specification Used Oil Fuel—means used oil fuel that meets the specification provided under 40 CFR 266.40(e).

Storage—means the holding of hazardous waste for a temporary period, at the end of which the hazardous waste is treated, disposed of, or stored elsewhere.

Transportation—means the movement of hazardous waste by air, rail, highway, or water.

Transporter—means a person engaged in the off-site transportation of hazardous waste by air, rail, highway, or water.

Treatment—means any method, technique, or process, including neutralization, designed to change the physical, chemical, or biological character or composition of any hazardous waste so as to neutralize such waste, or so as to recover energy or material resources from the waste, or so as to render such waste nonhazardous, or less hazardous; safer to transport, store or dispose of; or amenable for recovery, amenable for storage, or reduced in volume.

Used Oil—means any oil that has been refined from crude oil, used, and as a result of such use, is contaminated by physical or chemical impurities. Wastes that contain oils that have not been used (e.g., fuel oil storage tank bottom clean-out wastes) are not used oil unless they are mixed with used oil.

Used Oil Fuel—means any used oil burned (or destined to be burned) for energy recovery including any fuel produced from used oil by processing, blending or other treatment, and that does not contain hazardous waste (other than that generated by a small quantity generator and exempt from regulation as hazardous waste under provisions of 40 CFR 261.5). Used oil fuel may itself exhibit a characteristic of hazardous waste and remain subject to regulation as used oil fuel provided it is not mixed with hazardous waste.

Utility Boiler—means a boiler that is used to produce electricity, steam or heated or cooled air for sale.

Waste Fuel—means hazardous waste fuel or off-specification used oil fuel.

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