ENVIRONMENTAL PROTECTION AGENCY

40 CFR Parts 261, 271, and 302

[FRL-4134-2]

RIN 2050-AC85

Identification and Listing of Hazardous Waste; CERCLA Hazardous Substance Designation; Reportable Quantity Adjustment; Coke By-Products Wastes

AGENCY: Environmental Protection Agency.

ACTION: Final rule.

SUMMARY: The Environmental Protection Agency is today amending its regulations under the Resource Conservation and Recovery Act (RCRA) by listing as hazardous seven wastes generated during the production, recovery, and refining of coke by-products produced from coal. EPA is adding seven wastes to the list of hazardous wastes from specific sources. EPA is also amending appendix VII of 40 CFR part 261 to add the constituents for which these wastes are being listed. In addition, the Agency is finalizing the proposed determination not to list as hazardous wastes wastewaters from coking and tar refining operations.

The effect of listing K141 through K145, K147 and K148 will be to subject these materials to the hazardous waste regulations of 40 CFR parts 124, 262 through 266, 268, 270 and 271, the notification requirements of RCRA 3010, and the notification requirements under section 103 of CERCLA.

In addition to the listings, the Agency is today amending and clarifying an exclusion from the definition of solid waste for wastes from the coke by-products process that exhibit the TC and are recycled by being returned to coke ovens or mixed with coal tar (57 FR 27880).

EFFECTIVE DATE: Today's final rule will become effective on February 18, 1993.

ADDRESSES: The official record for this rulemaking is identified as Docket Number F-92-CBPF-FFFFF and is located in the EPA RCRA Docket, room M2427, 401 M Street, SW., Washington, DC 20460. The public must make an appointment in order to review docket materials by calling (202) 260-9327 for the RCRA portion of the docket, or (202) 260-3046 for the CERCLA portion of the docket. Both dockets are available for inspection from 9 a.m. to 4 p.m., Monday through Friday, excluding holidays. The public may copy up to 100 pages from the docket at no charge. Additional copies cost $0.15 per page.

FOR FURTHER INFORMATION CONTACT: The RCRA/Superfund Hotline toll-free at (800) 424-9346 (voice) or (800) 553-7672 (TDD), or, in the Washington, DC metropolitan area, (703) 920-9810 (voice) or (703) 486-3323 (TDD). For technical information on the RCRA portion of the rule, contact Mr. Ron Josephson of the Office of Solid Waste (OS-333) at (202) 260-4770. For technical information on the CERCLA portion of the rule, contact Ms. Gerain Perry, Office of Emergency and Remedial Response (OS-210) at (202) 260-2190.

SUPPLEMENTARY INFORMATION: The contents of today's preamble are listed in the following outline:

I. Background
II. Summary of the Regulation
  A. Overview of the Proposed Rule
  B. Overview of the Final Rule
  1. Hazardous waste listings
  2. Recycling exclusion
  C. Industry Overview
  D. Process and Waste Descriptions
  1. The coking process
  2. The tar refining process
  E. Wastes Included in Today's Listing
  F. Basis for Listing
III. Summary of Public Comments and Responses
  A. Hazardous Waste Listings
  B. Recycling Exclusion
IV. Interaction with Other Regulations
  A. Land Disposal Restrictions
V. State Authority
  A. Applicability of Final Rule in Authorized States
  B. Effect on State Authorization
VI. CERCLA Designation and Reportable Quantities
VII. Cost and Economic Analysis
  A. Cost Analysis
  B. Economic Impact Analysis
  1. Coking industry
  2. Tar refining industry
VIII. Regulatory Flexibility Act
  A. Executive Order Requirements
IX. Paperwork Reduction Act
X. Compliance and Implementation
  A. Section 3010 Notification
  B. Compliance Dates for Facilities

I. Background

Section 3001 of Subtitle C of RCRA mandates that EPA make a determination whether to list as hazardous certain wastes generated during the production, recovery, and refining of coke by-products produced from coal. EPA proposed to list a number of these wastes from the coke by-products process as hazardous in a notice published in the **Federal Register** on July 26, 1991 (56 FR 35758). Certain other wastes from the coke by-products industry are already listed as hazardous under RCRA. An overview of past regulatory actions taken by the Agency that affect this industry was provided in the preamble to the proposed rule (see 56 FR 35759).

On July 26, 1991, EPA proposed to add seven wastes from the coke by-products process to the list of wastes from specific sources. Today's notice promulgates these seven "K-listings."

In a separate **Federal Register** notice (57 FR 27880), EPA promulgated an exclusion from the definition of solid waste for Hazardous Waste No. K087, and other wastes from the coke by-products process that are hazardous only because they exhibit the Toxicity Characteristic (TC) specified in § 261.24, when they are recycled by being returned to coke ovens as a feedstock to produce coke, added to the tar recovery process to produce coal tar, or mixed with coal tar prior to its sale or refining. This exclusion was conditioned on no land disposal of wastes. Today, the Agency is amending this exclusion to include the wastes being listed in this notice.

II. Summary of the Regulation

A. Overview of the Proposed Rule

The notice published on July 26, 1991 (56 FR 35758) proposed to amend the regulations for hazardous waste listing under RCRA by adding the following seven wastes generated during the production, recovery, and refining of coke by-products produced from coal to the list of hazardous wastes from specific sources under 40 CFR 261.32.

K141—Process residues from the recovery of coal tar, including, but not listed to, tar collecting sump residues from the production of coke from coal or the recovery of coke by-products produced from coal. This listing does not include K087 (decanter tank tar sludge from coking operations).

K142—Tar storage tank residues from the production of coke from coal or from the recovery of coke by-products produced from coal.

K143—Process residues from the recovery of light oil, including, but not limited to, those generated in stills, decanters, and wash oil recovery units from the recovery of coke by-products produced from coal.

K144—Wastewater treatment sludges from light oil refining, including, but not limited to, intercepting or contamination sump sludges from the recovery of coke by-products produced from coal.

K145—Residues from naphthalene collection and recovery operations from the recovery of coke by-products produced from coal.

K147—Tar storage tank residues from coal tar refining.

K148—Residues from coal tar distillation, including, but not limited to, still bottoms.

The Agency also proposed to amend appendix VII of 40 CFR part 261 to add the following constituents for which these wastes were proposed for listing: Benzene and polynuclear aromatic hydrocarbons (PAHs), including benz(a)anthracene, benzo(a)pyrene, benzo(b and k)fluoranthene, dibenz(a,h)anthracene, indeno(1,2,3-cd)pyrene, and naphthalene.

Lastly, the Agency proposed to amend the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA) regulations in 40 CFR part 302 by designating all of the proposed listed wastes as hazardous substances under CERCLA. Pursuant to section 102(b) of CERCLA, the reportable quantities (RQs) applicable to each of these wastes is one pound.

The proposed listings included process residues and storage tank residues other than those residuals already listed as EPA Hazardous Waste Nos. K035, K060, and K087. Several industry commenters requested clarification on the scope of the proposed listings. Details on the scope of the listings finalized in today's rule as well as descriptions of the modifications made to the proposed listings are discussed below under Wastes Included in Today's Listing. The proposed listings did not include wastewaters or wastewater treatment sludges from coke by-products recovery and tar refining.

Because a number of the wastes that were proposed for listing are recycled by members of the coke by-products industry, EPA supported the environmentally beneficial recycling of these wastes by proposing to exclude the listed wastes from the definition of solid waste when they are recycled in certain ways. This exclusion is conditioned on no land disposal of the wastes. These wastes are generally recycled using one of the two following methods: (1) Combining the residue with coal feedstock prior to or just after charging the coal into the coke oven, and (2) mixing the residue with coal tar prior to its being sold as a product. In order to maintain hazardous waste control over the listed wastes in the event of mismanagement, the Agency proposed that the exclusions apply at the point of reinsertion of the wastes into the coke ovens or the point at which they are mixed with coal tar. The exclusions were intended to encourage waste minimization while maintaining RCRA control over the wastes prior to the recycling step (i.e., during interim storage and transportation) and when using management practices other than recycling.

EPA proposed the listings of K141–K145 and K147–K148 in response to the Hazardous and Solid Waste Amendments (HSWA) of 1984. Section 3001(e)(2) of RCRA, added by HSWA, requires EPA to make a listing determination for wastes generated from the coke by-products industry.

B. Overview of the Final Rule

1. Hazardous Waste Listings

Today's rule adds to the list of wastes from specific sources the seven listings proposed on July 26, 1991. These are as follows:

K141—Process residues from the recovery of coal tar, including, but not limited to, tar collecting sump residues from the production of coke from coal or the recovery of coke by-products produced from coal. This listing does not include K087 (decanter tank tar sludge from coking operations).

K142—Tar storage tank residues from the production of coke from coal or from the recovery of coke by-products produced from coal.

K143—Process residues from the recovery of light oil, including, but not limited to, those generated in stills, decanters, and wash oil recovery units from the recovery of coke by-products produced from coal.

K144—Wastewater sump residues from light oil refining, including, but not limited to, intercepting or contamination sump sludges from the recovery of coke by-products produced from coal.

K145—Residues from naphthalene collection and recovery operations from the recovery of coke by-products produced from coal.

K147—Tar storage tank residues from coal tar refining.

K148—Residues from coal tar distillation, including, but not limited to, still bottoms.

Today's rule also amends appendix VII of part 261 to include the constituents for which these wastes are listed.

2. Recycling Exclusion

Several recycling exclusions were proposed on July 26, 1991 as 40 CFR 261.4 (a)(10–(12). Public comments on these exclusions were requested separately from comments on the rest of the listing proposal. For a brief summary of these public comments and EPA's response to them, see the Summary of Public Comments and Responses section later in this preamble. The public comments concerning the recycling exclusion are addressed fully in the exclusion rule promulgated on June 22, 1992 (57 FR 27880).

This rule excluded from the definition of solid waste Hazardous Waste No. K087, and any other wastes from the coke by-products process that are hazardous only because they exhibit the TC, when they are recycled to coke ovens as a feedstock to produce coke, to the tar recovery process to produce coal tar, or mixed with coal tar prior to its sale or refining. This exclusion for recycling is conditioned on there being no land disposal for the materials up to the point of recycling (see 40 CFR 261.4(a)(10); 57 FR 27888). Today, EPA is amending this exclusion to include the wastes being listed in this notice within the scope of the exclusion. The extension of the exclusion to the wastes being listed in today's rule is logical given the fact that many, if not all of the wastes listed here qualify for the existing exclusion under § 261.4(a)(10). In addition, all commenters to the proposed rule who commented on recycling issues supported this action.

As indicated in the proposal, the Agency is including the following additional materials in the recycling exclusion under 40 CFR 261.4(a)(10): K060, K087, K141, K142, K143, K144, K145, K147, K148, and wastes from the coke by-products industry that are hazardous only because they exhibit the TC. The exclusion does not apply if other hazardous wastes (*e.g.*, spent solvents, TC hazardous wastes from other industries, etc.) are mixed with the above-mentioned residues or charged to a coke oven. If the "no land disposal" condition of the exclusion is met, the wastes listed above are not solid wastes and, thus, not hazardous wastes, when they are recycled to coke ovens or tar recovery processes, or mixed with coal tar. The effect of this exclusion from the definition of solid waste is to remove these coke by-product wastes from RCRA control when they are recycled within the coking and tar refining industries. In other words, as long as coke by-product wastes are being recycled within the terms of the exclusion at 40 CFR 261.4(a)(10), no permit is needed for the storage or management of these wastes, no manifest is required for transport of these wastes, and so on. It is important to note, however, that certain recordkeeping requirements under the Land Disposal Restrictions program still attach to wastes that have been excluded from RCRA regulation. These requirements are discussed later in this preamble in the section entitled Interaction with Other Regulations.

C. Industry Overview

In the preamble to the proposed rule, EPA presented a description of the coking and tar refining industries, along with descriptions and quantities of

wastes generated and descriptions of waste management practices employed for the wastes. This information remains the most recent and accurate information on the industry available to EPA and was relied upon in developing the final rule. The industry statistics are based on 1987 data which indicate that 21 domestic companies produced approximately 28 million metric tons of coke at 34 plants. Updated information provided by an industry trade association indicates that there are currently 32 active plants which are divided into two segments: Captive coke producers (22 plants) and merchant coke producers (10 plants). The 22 captive coke plants are operated by major iron and steel companies and produce blast furnace coke that is generally used on-sit or within the same company at integrated iron and steel plants to produce steel. The 10 merchant coke plants generally produce blast furnace coke for sale to iron and steel companies, and metallurgical coke for sale to iron and steel foundries and to other metallurgical and chemical industries. A list of active plants is provided in the Background Document for today's rule.

In 1985, about 1,200 million liters of coal tar, 3.7 billion liters of sodium phenolate, 7,000 metric tons of naphthalene, and 580 million liters of light oil were produced as coke by-products. The crude coal tar is sold to independent tar refiners for the production of other coal tar by-products. The 1985 production of these coal tar by-products was approximately 45 million liters of light oil, 500 million liters of creosote oil, 550 million liters of refined tar (excluding tar used as road tar), and 470,000 metric tons of coal tar pitch. More recent data indicate that domestic coke plants produced 256,823,533 gallons of crude coal tar in 1991.

Table 1 presents estimates, based on data collected from 1985 to 1987, of the quantities of waste generated from the production of coke and coke by-products, recovery of coke by-products, and coal tar refining. The assumptions and data used to generate these estimates are provided in the Background Document for this rule. Tables containing the waste management practices used for these wastes and the percentage of facilities employing each waste management practice are also presented in the Background Document. Overall, at least 40 percent of the facilities who reported waste management practices in the 1985 RCRA 3007 questionnaire recycle the wastes and products addressed in today's rule.

TABLE 1.—ESTIMATED NATIONWIDE WASTE QUANTITIES (MT/YR)

Waste	Quantity
K141—Process residues from the recovery of coal tar, including, but not limited to, collecting sump residues from the production of coke from coal or the recovery of coke by-products produced from coal. This listing does not include K087 (decanter tank tar sludges from coking operations)	3,100
K142—Tar storage tank residues from the production of coke from coal or from the recovery of coke by-products produced from coal	10,000
K143—Process residues from the recovery of light oil, including, but not limited to, those generated in stills, decanters, and wash oil recovery units from the recovery of coke by-products produced from coal	4,500
K144—Wastewater sump residues from light oil refining, including, but not limited to, intercepting or contamination sump sludges from the recovery of coke by-products produced from coal	900
K145—Residues from naphthalene collection and recovery operations from the recovery of coke by-products produced from coal	450
K147—Tar storage tank residues from coal tar refining	2,800
K148—Residues from coal tar distillation, including, but not limited to, still bottoms	270

D. Process and Waste Descriptions

1. The Coking Process

Coke is manufactured by anaerobic carbonization of coal in high temperature (900–1200°C) coke ovens. Coke is the main product and is used as a reductant in the blast furnaces used in iron manufacturing. The coke oven gas (COG) is processed through recovery units to separate other such saleable by-products as coal tar, light oil, and ammonia liquor from the gas stream and the remainder of the gas stream is then used as fuel.

Figure 1 is a general process flow diagram that indicates the sources of by-product residues that are the subject of this rule. During the recovery of coal tar from the coke oven gas, tar residue accumulates in the tar decanter tank (K087), the tar collection sump (K141) and at the bottom of tar storage tanks (K147). The light oil recovery process generates wash and light oil residues (K143) in the scrubber tower, the stripping still, and in a decanter or centrifuge used to separate a polymerized resin referred to as wash oil muck from the recycled wash oil. A wastewater collecting sump, used to separate the oil and water in wastewaters from the light oil recovery area, generates wastewater sump residues (K144). Naphthalene recovery residues (K145) are generated in the final cooling tower, naphthalene separator and collection sumps. Facilities may also use an ammonia still, in which a "lime sludge" accumulates (K060).

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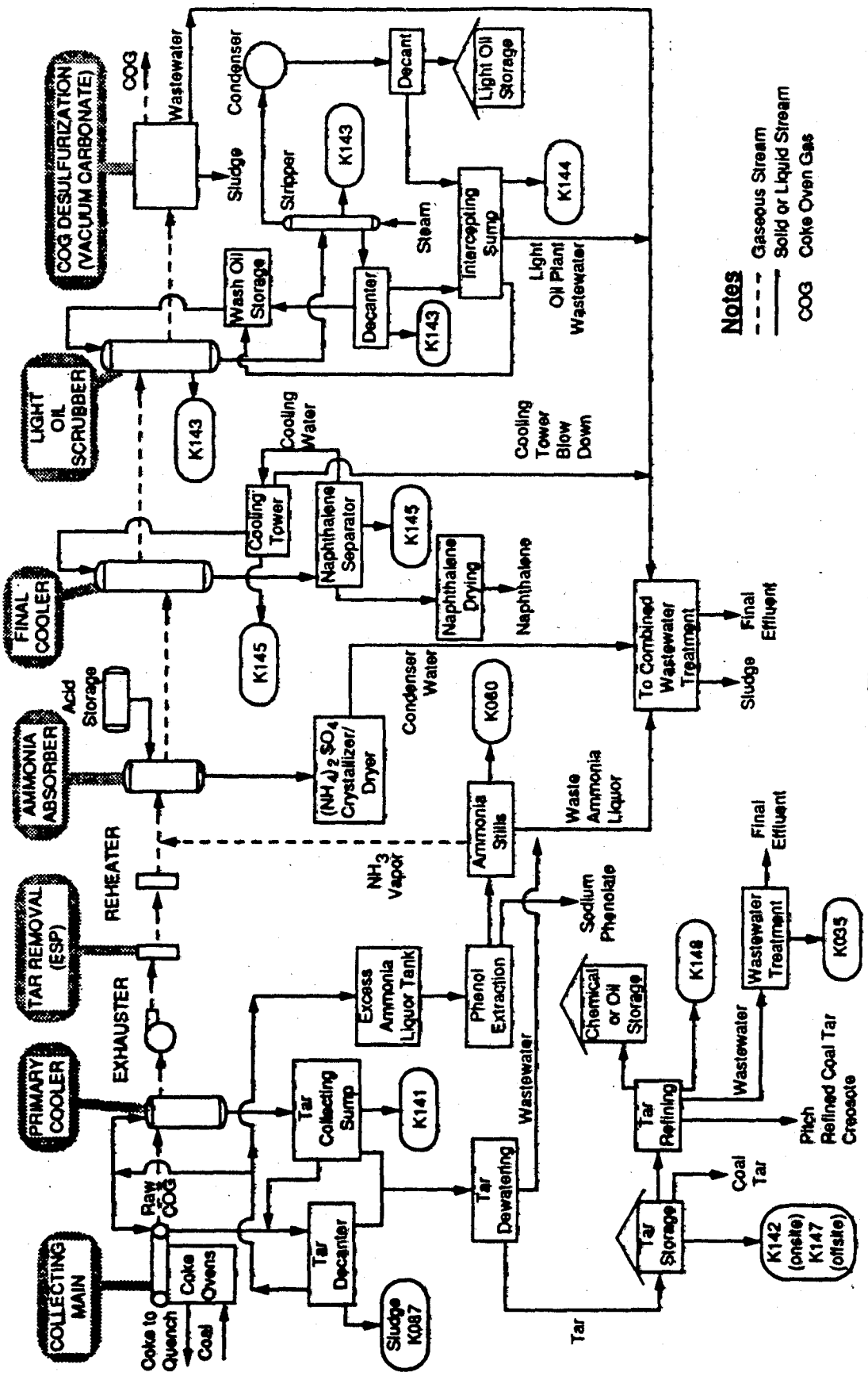

Figure 1
COKE BY-PRODUCTS RECOVERY

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2. The Tar Refining Process

Coal tar is typically refined to produce commercial and industrial products including pitch, creosote oil, refined tar, naphthalene, and commercial materials such as bitumen. Coal tar is refined by either batch or continuous distillation. The heavy liquid components such as pitch and creosote are sent to a distillation column for further refining. The pitch, which is generated at the softening point of tar, is discharged from the still, cooled, extruded, and poured into barrels or other containers for storage.

The coal tar refining plant may produce two process residuals that will be added to the list of wastes from specific sources. The first process residual is generated at the bottom of the coal tar storage tanks (K147). Based on the information provided to the Agency during the industry study and public comment periods, this residual is generated infrequently. Large volumes of tar storage tank bottoms were recently generated during the tank clean-outs required for compliance with the benzene NESHAPs rule. However, mechanical mixers or air agitators were installed at several plants to prevent future formation of this residual. The same residual is generated in coal tar storage tanks at coking facilities.

The second process waste from the refining plant, identified as K148, is high boiling-point residue, which accumulates on the fire tubes and at the bottom of the batch still and must be removed periodically. These tar refining residuals are either recycled to coke ovens at the same or adjacent facilities, or sold to other coking facilities as products. Tar distillation residues may also be recycled to the distillation tank along with crude coal tar.

In addition to the above, a sludge is often formed from the treatment of tar refining wastewaters. This sludge carries the K035 listing.

E. Wastes Included in Today's Listing

Today's rule adds seven wastes to the list of hazardous wastes from specific sources (40 CFR 261.32). These listings encompass all of the same materials described and proposed for listing in the proposed rule. The seven wastes added to § 261.32, K141, K142, K143, K144, K145, K147, and K148, retain the same scope as the corresponding proposed listed wastes. The listing descriptions also remain the same as those proposed, with the exception of the description of K144 wastes, which are now more accurately called "wastewater sump residues" rather than "wastewater treatment sludges." (For further explanation, see Footnote 1 to Table 6 below.) This change is based on information and comments received from the coke by-products industry. K144 wastes include the same materials as those originally proposed.

Descriptions of the manufacturing process and sources of the wastes are provided earlier in this preamble and are presented in greater detail in the Background Document for today's rule and in the preamble to the July 1991 proposed rule. EPA also provides data describing the composition of the wastes being listed in each of these documents.

Two commenters requested that more specific language be used to describe the listed wastes. The commenters requested that terms such as "including but not limited to" be deleted from the waste descriptions. These terms, however, are necessary in describing these wastes because the manufacturing processes generating the wastes are not always identical. If the Agency limited the scope of the listings to residues generated only by the specific unit operations shown in the generic process flow diagram, then residues of similar chemical composition that are generated from the same stage of the coke by-product recovery operation may not be encompassed by the listing. For example, wash oil circulation sludge generally has the same chemical composition as residues from wash oil recovery units when used to wash light oil and, therefore, would be listed as K143. However, in certain instances, wash oil may be used to wash other by-products such as naphthalene, and the wash oil circulation sludge would then be listed as K145. This preamble further clarifies the scope of the listings by providing a table that contains each of the coke by-product wastes specified in the proposed Consent Decree which resolves issues raised in *EDF* vs. *Reilly*, Civ. No. 89-0598 (D.D.C.) along with the appropriate hazardous waste listing numbers (see Summary of Public Comments and Responses section).

As proposed, EPA is finalizing the determination not to list wastewaters from coking and tar refining operations. One commenter believed that these wastes should be listed as hazardous wastes because certain hazardous constituents were found at concentrations exceeding the health-based levels by over six orders of magnitude. As stated in the preamble to the proposed rule, EPA has found that these constituents are not typically and frequently found in the wastewaters at quantifiable levels. For example, constituents other than benzene that were identified as concerns by the commenter were either detected below the detection limit or not detected in at least 75% of the coking and tar refining wastewater samples collected by EPA. Since benzene is the only constituent of concern that is typically and frequently present at concentrations of regulatory concern and is a contaminant that is regulated by both the Toxicity Characteristic, EPA believes that wastewaters will be adequately regulated by both the TC rule and Effluent Guidelines for Industrial Point Source Discharges under the Clean Water Act. Any wastewater that exhibits the TC and is land disposed prior to receiving adequate treatment (or release through the Clean Water Act programs) must comply with all RCRA requirements.

Raw wastewater releases are unlikely for several reasons. First, a statutory ban exists on the disposal of liquids in landfills. Also, all facilities in this industry have closed their surface impoundments and lagoons in favor of more modern treatment plants. While problems existed in the past with wastewaters being mixed with other process wastes and causing environmental problems, such releases are less likely to happen, and, if they did, would cause the released materials to be a hazardous waste mixture (as described on page 35780 of the July 26, 1991 proposal). Lastly, the wastewater treatment plants at the coke by-products facilities have been or are being upgraded in compliance with the Clean Water Act and other EPA regulatory programs. Many of the upgraded plants use biological treatment process that may degrade both benzene and PAHs of concern below levels of regulatory concern.

One commenter stated that EPA is required to list a waste as hazardous if it exhibits any of the hazardous waste characteristics and cited 40 CFR 261.11(a) (1). EPA would like to clarify here that when considering a solid waste for listing, the Administrator *may* list a waste on the basis that it exhibits a hazardous waste characteristic but this is not a requirement. Indeed, a policy that required all wastes exhibiting a characteristic to be listed would render subpart C of part 261 meaningless. Section 261.11 reads, "The Administrator shall list a solid waste as a hazardous waste only upon determining that the solid waste meets one of the following criteria: (1) It exhibits any of the characteristics of hazardous waste identified in Subpart C * * * while the Agency has the authority to list a waste based solely on this criterion, the language of this section does not mean that the Agency is required to list upon determining that a waste exhibits a characteristic.

F. Basis for Listing

As stated in the preamble to the proposed rule, the Agency has based today's listing determination on the criteria set forth in 40 CFR 261.11(a)(3). In the preamble to the July 1991 proposed rule, EPA provided a detailed discussion of the basis for listing K141–L145, K147 and K148. The discussion included quantitative data on the concentrations of constituents of concern found in the wastes, summaries of the known health effects of the constituents of concern, data describing the relative persistence and mobility of the constituents of concern, mismanagement case studies, and an analysis of the relative hazards posed by the wastes. In general, the information presented in the preamble to the proposed rule remains the most current available to EPA and serves as the basis for today's listings for K141 through K145, K147, and K148.

In the preamble to the proposed rule, EPA provided a list of constituents found to be present in the wastes that were not selected as constituents of concern at the time of proposal, and stated that additional constituents may be added upon promulgation based upon the consideration of comments and/or additional data (56 FR 35772). After reviewing the analytical data presented in the Background Document to the proposed rule and the current health effects information on the constituents present in the wastes, one additional constituent that appeared on that list, chrysene, has been selected as a constituent of concern. As stated in the preamble to the proposed rule, the addition of chrysene to the list of constituents of concern has no effect on the Agency's ultimate decision to list these wastes as hazardous. Tables 2 and 3 are revised versions of Tables 5, 6, and 7 from the preamble to the proposed rule; they present the selected constituents of concerns in each of the newly listed wastes, and the range of measured concentrations of constituents in coke by-products and tar refining products.

In addition, the health effects information for many of the constituents of concern has been revised. Indeno (1, 2, 3-cd)pyrene has been raised from a possible human carcinogen (Class C) to a probable human carcinogen (Class B), and the qualitative information upon which this change was based is provided on EPA's Integrated Risk Information System (IRIS). Because the health-effects information on IRIS is peer reviewed by inter-Agency workgroups that reach consensus decisions regarding the data, the new carcinogen classification is considered scientifically sound. (More information regarding this change and IRIS is included in the background document to today's rule.)

Also, the health-based limits have been revised slightly for benzo(a)pyrene, benzo(b and k)fluoranthene, indeno(1, 2, 3-cd)pyrene, benz(a)anthracene, and naphthalene. In all cases, the change is two orders of magnitude or less and does not affect the results of the listing analyses which indicate that the wastes listed in today's rulemaking should be listed as hazardous. The specific changes are as follows:

TABLE 2.—CONSTITUENTS OF CONCERN

Constituents	K141	K142	K143	K144	K145	K147	K148
Benzene	X	X	X	X	X	X	
Benz(a)anthracene	X	X	X	X	X	X	X
Benzo(a)pyrene	X	X	X	X	X	X	X
Benzo(b and k)fluoranthene	X	X	X	X	X	X	X
Chrysene	X	X	X	X	X	X	X
Dibenz(a,h)anthracene	X	X		X	X	X	X
Indeno(1,2,3-cd)pyrene	X	X		X		X	X
Naphthalene	X	X	X	X	X	X	

NOTE: X indicates that the constituent has been found to be present at levels of regulatory concern in the individual waste stream.

TABLE 3.—COKE AND COKE BY-PRODUCT WASTES: CONSTITUENTS OF CONCERN AND RANGE OF MEASURED CONCENTRATIONS

[All Values in PPM]

Constituent	K141	K142		K143		K144		K145	
	Process residues from coal tar recovery[a]	Tar Storage Tank Residues		Residues from light oil processing		Wastewater treatment sludges from light oil refining		Residues from naphthalene collection and recovery	
		Range	Avg.	Range	Avg.	Range	Avg.	Range	Avg.
Benzene	3,850	230–290	260	39–8,500	1,600	200–14,000	3,000	120–3,000	1,000
Benz(a)anthracene	7,850	5,400–7,400	6,600	ND–320	[b]69	<15–140	[b]68	<3–<96	[b]22
Benzo(a)pyrene	8,450	4,500–8,300	6,500	<10–130	[b]34	<20–130	[b]65	ND–22	[b]7
Benzo(b)fluoranthene[c]	5,450	5,200–10,000	7,500	<5–230	[b]59	<15–220	[b]75	2.3–48	[b]26
Benzo (K) fluoranthene [c]									
Chrysene	7,950	4,000–7,400	6,000	<5–250	[b]59	<15–120	[b]66	2.7–<96	[b]22
Dibenz(a,h)anthracene	1,750	720–1,600	1,000	ND–<500	[b]30	7<–<61	[b]15	ND–5	[b]1.3
Indeno (1,2,3-cd)pyrene	6,150	2,000–4,100	2,900	ND–<500	[b]40	<15–77	[b]37	ND–9.9	[b]4
Naphthalene	95,000	32,000–84,000	55,000	1,400–480,000	52,000	360–53,000	27,000	5.7–300,000	140,000

[a] Only one data point exists. However, this residual is presumed to be comparable in composition to tar decanter sludge (listed waste K087).
[b] Arithmetic averages are based on one half the quantitation limit for constituents detected below quantitation limits and zero for constituents no detected (ND).
[c] GC peak resolution was not adequate to provide quantitation of the two isomers individually. The results shown are the sum of the two isomers.
Source: Background Document.

Constituent	K147 Tar storage tank residues		K148 Tar Distillation residuals	
	Range	Avg.	Range	Avg.
Benzene	230–290	260	NA	NA
Benz(a)anthracene	5,400–7,400	6,600	160–10,000	4,500
Benzo(a)pyrene	4,500–8,300	6,500	330–7,300	3,600
Benzo(b)fluoranthene[a]				
Benzo(k)fluoranthene[a]	5,200–10,000	7,500	150–13,000	6,100
Chrysene	4,000–7,400	6,000	240–7,900	3,800
Dibenz(a,h)anthracene	720–1,600	1,000	36–1,400	800
Indeno(1,2,3-cd)pyrene	2,000–4,100	2,900	110–3,300	1,700
Naphthalene	32,000–84,000	55,000	17–2,400	850

[a] GC peak resolution was not adequate to provide quantitation of the two isomers individually. The results shown are the sum of the two isomers.
NA—Constituent not analyzed (volatiles were not anticipated in still bottoms that have been heated to high temperatures).
Source: Background.

On July 17, 1992, (57 FR 31776) the Agency promulgated an MCL of $2x10^{-4}$ mg/L for benzo(a)pyrene. As indicated in the preamble to the proposed rule, EPA uses promulgated Maximum Contamination Limits (MCLs) when available. Therefore, the newly finalized MCL is being used in today's rule.

In addition, in April 1992, the Agency verified a risk specific dose (RSD) of $1.7x10^{-7}$ mg/kg/day for benzo(a)pyrene. This RSD was then used to determine health-based numbers for benzo (b and k) fluoranthene, chrysene, and indeno(1,2,3-cd)pyrene, which are calculated relative to the potency of benzo(a)pyrene. More information regarding these calculations and the reasons for the adjustments to them is provided in the background document to today's rule.

The same study used as the basis for the proposed level of concern for naphthalene is used for the level of concern used in today's rule. However, the revised provisional oral RfD for naphthalene was raised one order of magnitude (from 0.004 to 0.04) when the uncertainty factor was decreased from 10,000 to 1,000 (since the proposal). The revised provisional RfD is listed in the Annual 1992 Health Effects Assessment Summary Tables (HEAST). For more information on the changes in the health-based numbers for naphthalene, see the Background Document to today's rule.

A 1986 reference was the source for the proposed RSD of $3.2x10^{-7}$ mg/kg/day for benz(a)anthracene. However, a new 1988 source was identified which indicates a proposed RSD of $4.7x10^{-8}$ mg/kg/day. All of these new references are included in the docket to today's rule.

The Agency believes that these changes have no effect on the conclusion that the constituents of concern in the wastes being listed today are systemic toxicants and/or carcinogens present in concentrations capable of causing adverse health effects and therefore have no effect on today's ultimate listing decision. The constituents of concern are present at high enough concentrations to exceed both the proposed levels of concern, most of which were higher than the concentrations of concern used in today's rule, and those used in today's rule.

One commenter requested that the Agency base the health-based concentration limits on proposed MCLs, instead of RSDs, when available. Historically, final listing determinations have not been based on proposed health-based numbers. The Agency has recently proposed, in another rulemaking, the use of proposed MCLs to establish jurisdictional boundaries of RCRA subtitle C. (See 57 FR 21450–21522, May 20, 1992.) Since that issue remains unresolved, the Agency chooses not to use proposed MCLs for this rulemaking. Moreover, the adoption of proposed MCLs for the applicable constituents of concerns in today's rule would not change the overall conclusion regarding the hazard posed by the wastes due to the extremely high concentrations of the constituents of concern in the wastes. Thus, as shown in Tables 4–4F and 5, the health-based limits for the constituents of concern continue to rely on Reference Doses (RfDs), Risk-Specific Doses (RSDs), and final MCLs. For more information on the adoption of MCLs for benzo(a)pyrene and not other PAHs, see the Phase V drinking water rule, published July 17, 1992 (57 FR 31776).

Tables 4 through 4F are revised versions of Tables 8 through 8F of the proposed rule. They summarize the Agency's analysis of the hazards posed by the constituents of concern present in the listed wastes and products by presenting the average concentrations of the previous and additional hazardous constituents in the wastes, the updated health-based water concentration limits and updated hypothetical environmental exposure factors. In this analysis, EPA projected ground-water concentrations for the constituents of concern based on average waste concentrations (rather than maximum concentrations) and assuming three dilution and attenuation factors: 100, 1,000, and 10,000. These three levels encompass a broad range of dilution/attenuation factors (DAFs). The drinking water well concentrations calculated for dilution/attenuation levels of 100, 1,000, and 10,000 make the assumption that the concentration of each constituent of concern in the well water would be 1 percent, 0.1 percent, and 0.01 percent, respectively, of its average concentration in the waste. The calculated ratios of estimated drinking water concentration values to health-based water concentration-limit values presented in these tables serve to illustrate that, under the assumptions used here, even if only 0.01 percent of the average constituent levels in the wastes (i.e., HEEF of 10,000) reaches environmental receptors, the exposure concentrations could exceed the health-based levels of concern by up to five orders of magnitude.

TABLE 4.—BASIS FOR LISTING: HEALTH EFFECTS OF THE CONSTITUENTS OF CONCERN IN K141

Hazardous constituent	Average waste conc. detected (ppm)	Health-based water concentration limits (ppm)	Basic [a]	Estimated	Drinking conc.[b]	Well (ppm)	Calculated based limit	Conc. to ratios[c]	Health—
				HEEF 100	HEEF 1000	HEEF 10,000	HEEF 100	HEEF 1000	HEEF 10,000
Benzene	3,850	5×10^{-3}	MCL (A)	38.5	3.85	0.385	7,700	770	77
Benz(a)anthracene	7,850	2×10^{-6}	RSD (B_2)	78.5	7.85	0.785	39,000,000	3,900,000	390,000
Benzo(a)pyrene	8,450	2×10^{-4}	MCL (B_2)	84.5	8.45	0.845	420,000	42,000	4,200
Benzo(b)fluoranthene, Benzo(k)fluoranthene [d]	5,450	4×10^{-5}	RSD (B_2)	54.5	5.45	0.545	1,400,000	140,000	14,000
Chrysene	7,950	5×10^{-4}	RSD (B_2)	79.5	7.95	0.795	160,000	16,000	1,600
Dibenz(a,h)anthracene	1,750	7×10^{-7}	RSD (B_2)	17.5	1.75	0.175	25,000,000	2,500,000	250,000
Indeno(1,2,3-cd)pyrene	6,150	4×10^{-4}	RSD (B_2)	61.5	6.15	0.615	150,000	15,000	1,500
Naphthalene	95,000	1	RfD	950	95	9.5	950	95	9.5

[a] Reference Dose (RfD), Risk-Specific Dose (RSD), and Maximum Contaminant Level (MCL) are explained in the Background Document to today's rule, as are the classes of carcinogens. Classes A and B carcinogens are based on exposure limits at a 10^{-6} risk level.
[b] Calculated for three hypothetical environmental exposure factors (HEEFs).
[c] Ratio obtained by dividing values in estimated drinking well concentration column by values in health-based, water concentration limit column for all three HEEFs.
[d] GC peak resolution was not adequate to provide quantitation of the two isomers individually. The results show the sum of the two isomers.
Source: Background Document.

TABLE 4A.—BASIS FOR LISTING: HEALTH EFFECTS OF THE CONSTITUENTS OF CONCERN IN K142

Hazardous constituent	Average waste conc. detected (ppm)	Health-based water concentration limits (ppm)	Basis [a]	Estimated	Drinking conc.[b]	Well (ppm)	Calculated based limit	Conc. to ratios [c]	Health—
				HEEF 100	HEEF 1000	HEEF 10,000	HEEF 100	HEEF 1000	HEEF 10,000
Benzene	260	5×10^{-3}	MCL (A)	2.6	0.26	0.026	520	52	5
Benz(a)anthracene	6,600	2×10^{-6}	RSD (B_2)	66	6.6	0.66	33,000,000	3,300,000	330,000
Benzo(a)pyrene	6,500	2×10^{-4}	MCL (B_2)	65	6.5	0.65	330,000	33,000	3,300
Benzo(b)fluoranthene, Benzo(k)fluoranthene [d]	7,500	4×10^{-5}	RSD (B_2)	75	7.5	0.75	1,900,000	190,000	19,000
Chrysene	6,000	5×10^{-4}	RSD (B_2)	60	6	0.6	120,000	12,000	1,200
Dibenz(a,h)anthracene	1,000	7×10^{-7}	RSD (B_2)	10	1	0.1	14,000,000	1,400,000	140,000
Indenol(1,2,3-cd)pyrene	2,900	4×10^{-4}	RSD (B_2)	29	2.9	0.29	73,000	7,300	730
Naphthalene	55,000	1	RfD	550	55	5.5	550	55	5.5

a Reference Dose (RfD), Risk-Specific Dose (RSD), and Maximum Contaminant Level (MCL) are explained in the Background Document to today's rule, as are the classes of carcinogens. Class A and B carcinogens are based on exposure limits at a 10^{-6} risk level.
b Calculated for three hypothetical environmental exposure factors (HEEFs).
c Ratio obtained by dividing values in estimated drinking well concentration column by values in health-based, water concentration limit column for all three HEEFs.
d GC peak resolution was not adequate to provide quantitation of the two isomers individually. The results show the sum of the two isomers.
Source: Background Document.

TABLE 4B.—BASIS FOR LISTING: HEALTH EFFECTS OF THE CONSTITUENTS OF CONCERN IN K143

Hazardous constituent	Average waste conc. detected (ppm)	Health-based water concentration limits (ppm)	Basis [a]	Estimated	Drinking conc.[b]	Well (ppm)	Calculated based limit	Conc. to Ratios [c]	Health—
				HEEF 100	HEEF 1000	HEEF 10,000	HEEF 100	HEEF 1000	HEEF 10,000
Benzene	1,600	5×10^{-3}	MCL (A)	16	1.6	0.16	3,200	320	32
Benz(a)anthracene	69	2×10^{-6}	RSD (B_2)	0.69	0.069	0.007	350,000	35,000	3,500
Benzo(a)pyrene	34	2×10^{-4}	MCL(B_2)	0.34	0.034	0.003	1,700	170	17
Benzo(b)fluoranthene, Benzo(k)fluoranthene [d]	59	4×10^{-5}	RSD (B_2)	0.59	0.059	0.006	15,000	1,500	150
Chrysene	59	5×10^{-4}	RSD (B_2)	0.59	0.059	0.006	1,200	120	1.2
Naphthalene	52,000	1	RfD	520	52	5.2	520	52	5.2

[a] Reference Dose (RfD), Risk-Specific Dose (RSD), and Maximum Contaminant Level (MCL) are explained in the Background Document to today's rule, as are the classes of carcinogens. Class A and B carcinogens are based on exposure limits at a 10^{-6} risk level.
[b] Calculated for three hypothetical environmental exposure factors (HEEFs).
[c] Ratio obtained by dividing values in estimated drinking well concentration column by values in health-based, water concentration limit column for all three HEEFs.
[d] GC peak resolution was not adequate to provide quantitation of the two isomers individually. The results show the sum of the two isomers.
Source: Background Document.

TABLE 4C.—BASIS FOR LISTING: HEALTH EFFECTS OF THE CONSTITUENTS OF CONCERN IN K144

Hazardous constituent	Average waste conc. detected (ppm)	Health-based water concentration limits (ppm)	Basis [a]	Estimated	Drinking conc.[b]	Well (ppm)	Calculated based limit	Conc. to ratios [c]	Health—
				HEEF 100	HEEF 1000	HEEF 10,000	HEEF 100	HEEF 1000	HEEF 10,000
Benzene	3,000	5×10^{-3}	MCL (A)	30	3.0	0.30	6,000	600	60
Benz(a)anthracene	68	2×10^{-6}	RSD (B_2)	0.68	0.068	0.007	340,000	34,000	3,500
Benzo(a)pyrene	65	2×10^{-4}	MCL (B_2)	0.65	0.065	0.007	3,300	330	33
Benzo(b)fluoranthene, Benzo(k)fluoranthene [d].	75	4×10^{-5}	RSD (B_2)	0.75	0.075	0.008	19,000	1,900	200
Chrysene	61	5×10^{-4}	RSD (B_2)	0.61	0.061	0.006	1,200	120	12
Dibenz(a,h)anthracene	15	7×10^{-7}	RSD (B_2)	0.15	0.015	0.002	210,000	21,000	2,100
Indeno(1,2,3-cd)pyrene	37	4×10^{-4}	RSD (B_2)	0.37	0.037	0.0037	930	93	9.3
Naphthalene	27,000	1	RfD	270	27	2.7	2,70	27	2.7

[a] Reference Dose (RfD), Risk-Specific Dose (RSD), and Maximum Contaminant Level (MCL) are explained in the Background Document to today's rule, as are the classes of carcinogens. Class A and B carcinogens are based on exposure limits at a 10^{-6} risk level.
[b] Calculated for three hypothetical environmental exposure factors (HEEFs).
[c] Ratio obtained by dividing values in estimated drinking well concentration column by values in health-based, water concentration limit column for all three HEEFs.
[d] GC peak resolution was not adequate to provide quantitation of the two isomers individually. The results show the sum of the two isomers.
Source: Background Document.

TABLE 4D.—BASIS FOR LISTING: HEALTH EFFECTS OF THE CONSTITUENTS OF CONCERN IN K145

Hazardous constituent	Average waste conc. detected (ppm)	Health-based water concentration limits (ppm)	Basis [a]	Estimated	Drinking conc.[b]	Well (ppm)	Calculated based limit	Conc. to ratios [c]	Health—
				HEEF 100	HEEF 1000	HEEF 10,000	HEEF 100	HEEF 1000	HEEF 10,000
Benzene	1,000	5×10^{-3}	MCL (A)	10	1.0	0.10	2,000	200	20
Benz(a)anthracene	22	2×10^{-6}	RSD (B_2)	0.22	0.022	0.002	110,000	11,000	1,000
Benzo(a)pyrene	7	2×10^{-4}	MCL (B_2)	0.07	0.007	0.001	350	350	3.5
Benzo(b)fluoranthene, Benzo(k)fluoranthene [d].	26	4×10^{-5}	RSD (B_2)	0.26	0.026	0.0026	6,500	650	65
Dibenz(a,h)anthracene	15	7×10^{-7}	RSD (B_2)	0.15	0.015	0.002	210,000	21,000	2,100
Naphthalene	140,000	1	RfD	1,400	140	14	1,400	140	14

[a] Reference Dose (RfD), Risk-Specific Dose (RSD), and Maximum Contaminant Level (MCL) are explained in the Background Document to today's rule, as are the classes of carcinogens. Class A and B carcinogens are based on exposure limits at a 10^{-6} risk level.
[b] Calculated for three hypothetical environmental exposure factors (HEEFs).
[c] Ratio obtained by dividing values in estimated drinking well concentration column by values in health-based, water concentration limit column for all three HEEFs.
[d] GC peak resolution was not adequate to provide quantitation of the two isomers individually. The results show the sum of the two isomers.
Source: Background Document.

TABLE 4E.—BASIS FOR LISTING: HEALTH EFFECTS OF THE CONSTITUENTS OF CONCERN IN K147

Hazardous Constituent	Average waste conc. detected (ppm)	Health-based water concentration limits (ppm)	Basis[a]	Estimated	Drinking Conc.[b]	Well (ppm)	Calculated based limit	Conc. to ratios[c]	Health—
				HEEF 100	HEEF 1000	HEEF 10,000	HEEF 100	HEEF 1000	HEEF 10,000
Benzene	260	5×10^{-3}	MCL (A)	2.6	0.26	0.026	520	52	5
Benz(a)anthracene	6,600	2×10^{-6}	RSD (B_2)	66	6.6	0.66	33,000,000	3,300,000	330,000
Benzo(a)pyrene	6,500	2×10^{-4}	MCL (B_2)	65	6.5	0.65	330,000	3,300	330
Benzo(b)fluoranthene, Benzo(k)fluoranthene[d].	7,500	4×10^{-5}	RSD (B_2)	75	7.5	0.75	1,900,000	190,000	19,000
Chrysene	6,000	5×10^{-4}	RSD (B_2)	60	6	0.6	120,000	12,000	1,200
Dibenz(a,h)anthracene	1,000	7×10^{-7}	RSD (B_2)	10	1	0.1	14,000,000	1,400,000	140,000
Indeno(1,2,3-cd)pyrene	2,900	4×10^{-4}	RSD (B_2)	29	2.9	0.29	73,000	7,300	730
Naphthalene	55,000	1	RfD	550	55	5.5	550	55	5.5

[a] Reference Dose (RfD), Risk-Specific Dose (RSD), and Maximum Contaminant Level (MCL) are explained in the Background Document to today's rule, as are the classes of carcinogens. Class A and B carcinogens are based on exposure limits at a 10^{-6} risk level.
[b] Calculated for three hypothetical environmental exposure factors (HEEFs).
[c] Ratio obtained by dividing values in estimated drinking well concentration column by values in health-based, water concentration limit column for all three HEEFs.
[d] GC peak resolution was not adequate to provide quantitation of the two isomers individually. The results show the sum of the two isomers.
Source: Background Document.

TABLE 4F.—BASIS FOR LISTING: HEALTH EFFECTS OF THE CONSTITUENTS OF CONCERN IN K148

Hazardous constituent	Averge waste conc. detected (ppm)	Health-based water concentration limits (ppm)	Basis [a]	Estimated	Drinking conc.[b]	Well (ppm)	Calculated based limit	Conc. to ratios [c]	Health—
				HEEF 100	HEEF 1,000	HEEF 10,000	HEEF 100	HEEF 1000	HEEF 10,000
Benz(a)anthracene	4,500	2×10^{-6}	RSD (B_2)	4.5	4.5	0.45	23,000,000	2,300,000	230,00
Benzo(a)pyrene	3,600	2×10^{-4}	MCL (B_2)	3.6	3.6	0.36	180,000	18,000	1,800
Benzo(b)fluoranthene, Benzo(k)fluoranthene [d].	6,100	4×10^{-5}	RSD (B_2)	6.1	6.1	0.61	1,500,000	150,000	15,000
Chrysene	3,800	5×10^{-4}	RSD (B_2)	3.8	3.8	0.38	76,000	7,600	760
Dibenz(a,h)anthracene	800	7×10^{-7}	RSD (B_2)	0.8	0.8	0.08	11,000,000	1,100,000	110,000
Indeno(1,2,3-cd)pyrene	1,700	4×10^{-4}	RSD (C)	1.7	1.7	0.17	43,000	4,300	430

[a]Reference Dose (RfD), Risk-Specific Dose (RSD), and Maximum Contaminant Level (MCL) are explained in the Background Document to today's rule, as are the classes of carcinogens. Class A and B carcinogens are based on exposure limits at a 10^{-6} risk level.
[b]Calculated for three hypothetical environmental exposure factors (HEEFs).
[c]Ratio obtained by dividing values in estimated drinking well concentration column by values in health-based, water concentration limit column for all three HEEFs.
[d]GC peak resolution was not adequate to provide quantitation of the two isomers individually. The results show the sum of the two isomers.
Source: Background Document.

Table 5 is a revised version of Table 9 from the preamble to the proposed rule. It presents updated data on the water solubilities and partition coefficients (log K_{ow} and log K_{oc}) which, as explained in the proposed rule, provide an indication of the mobility and persistence of the constituents of concern. Several comments were submitted regarding the mobility and persistence of the constituents of concern; these comments are addressed below in the Summary of Public Comments and Responses section of this preamble.

As stated in the preamble to the proposed rule, the Agency considered the use of leachability models and subsurface fate and transport models to estimate concentrations of these constituents in drinking water. Several commenters believed that these models should have been used to determine the potential hazards posed by these wastes and products, while other commenters support the Agency's decision not to use models. This issue is addressed further in the Summary of Public Comments and Responses section of this preamble. However, as stated in the preamble, EPA continues to believe that the limitations of the available models, when applied to wastes or products generated from coking and tar refining processes, underestimate the hazard posed by the wastes.

TABLE 5.—GROUND-WATER MOBILITY AND PERSISTENCE OF CONSTITUENTS OF CONCERN

Constituents of concern	Health-based water concentration limits (ppm)	Water solubility (ppm)	Log K_{ow} [a]	Log K_{oc} [b]	Persistence
Benzene	5×10^{-3}	1.78×10^{3}	2.13	1.92	low
Benzo(a) anthracene	2×10^{-6}	5.7×10^{-3}	5.61	6.14	high
Benzo(a)pyrene	2×10^{-4}	3.8×10^{-3}	6.04	5.60–6.29	high
Benzo(b) flouranthene[c]	4×10^{-5}	1.4×10^{-3}	6.57	5.74	high
Benzo(k)fluoranthene[c]	4×10^{-5}	5.5×10^{-4}	6.85	6.64	high
Chrysene	5×10^{-4}	1.8×10^{-3}	5.60	5.39	high
Dibenz(a,h)anthracene	7×10^{-7}	5.0×10^{-4}	6.50	6.22	high
Indeno(1,2,3-cd)pyrene	4×10^{-4}	5.3×10^{-4}	5.97	7.49	high
Naphthalene	1	3.17×10^{1}	3.30	3.04	high

Source: Montgomery, John H., *Groundwater Chemicals Desk Reference, 1990.*
[a]K_{ow} = Octanol-water partition coefficient.
[b]K_{oc} = Soil sorption coefficient.
[c]The health-based limit for benzo(b)fluoranthene was also applied to benzo(k)fluoranthene because the GC peak resolution was not adequate to provide quantitation of the isomers individually, and therefore, the results are the sum of the two isomers.

III. Summary of Public Comments and Responses

A. Hazardous Waste Listings

Several comments were submitted regarding the technical basis used by the Agency in making the listing determinations on wastes generated from the coking and tar refining industries. Five commenters expressed concerns over leachability and mobility, ground-water fate and transport models, dilution and attenuation assumptions, carcinogenicity risk levels, persistence, and mismanagement case studies. The substance of these comments is explained in more detail below.

As explained in the preamble to the proposed rule, the Agency believes that the use of available leaching and subsurface fate and transport models is not appropriate for evaluating wastes and products generated during the production, recovery, and refining of coke by-products (see FR 35769). Three commenters disagree that these models (*i.e.*, the Toxicity Characteristic Leaching Procedure (TCLP), the EPA Composite Model for Landfills (EPACML), and the Organic Leachate Model (OLM)) would underestimate the migration and transport of hazardous constituents to a drinking water source, as stated by the Agency.

Three commenters believe that the TCLP data should be considered as a basis for listing wastes generated from the coking and tar refining industries. They believe that the leaching procedure results in higher leached concentrations of constituents than would occur in an actual environmental setting due to the method's particle size reduction step. One commenter supports the Agency's decision not to rely on TCLP data as a

basis for listing because of the belief that the TCLP results in lower concentrations of constituents than would occur in the environment.

The Agency notes that the TCLP was developed by evaluating various laboratory methods that use different extraction media, extraction procedures, and liquid: solid ratios, and by determining the method which best obtained the concentrations of inorganic and organic constituents found in leachate from a simulated co-disposal landfill scenario. The simulated leachate was generated from large-scale columns, called lysimeters, packed with municipal waste and using this municipal waste leachate as a leaching fluid in studies on industrial wastes. Particle size reduction is used to simulate both the size reduction caused by the action of heavy landfill equipment and the degradation of structural integrity caused by repeated wet/dry and freeze/thaw cycles. The laboratory conditions selected for the TCLP were those which best simulated the concentrations of inorganic and organic constituents in leachate from wastes co-disposed with municipal wastes in landfills.

The TCLP is a reasonable worst-case mismanagement scenario which the Agency has historically used to determine whether a waste should be classified as hazardous. However, for wastes that clog the glass fiber filter utilized in the TCLP, it has been shown that portions of wastes that are mobile in soil columns are often classified as solids by TCLP standards (RTI, 1988). As stated in July's proposed rule, the tarry samples analyzed in support of today's rulemaking were found to pose problems with sample homogenization, filtration, and dispersion of solids in the leaching medium due to the varying amounts of tar in the wastes. Due to these analytical problems, the Agency maintains its belief that the TCLP results may underestimate the concentrations of constituents in leachates generated from the proposed wastes and should not be used as a basis for listing these wastes.

Three commenters also requested that EPA reconsider the use of the OLM and the EPACML. One commenter stated that the Agency is freely disregarding the TCLP and OLM results for this listing decision and that the models are not serving their mandated purpose. This commenter also stated that even though the EPACML may not account for immiscible flow conditions, the constituent concentrations at drinking water wells would not be underestimated. Another commenter stated that the OLM and EPACML apply more realistic environmental exposure factors (than the HEEFs) and that these models actually overestimate rather than underestimate constituent mobility because they do not account for biodegradation.

As described in the proposed rule, the EPACML estimates the dilution and attenuation of specific constituents during migration from leachate at the bottom of an unlined landfill (see U.S. EPA, "Background Document for EPA's Composite Landfill Model (EPACML)", 1990). If the Agency had applied the EPACML as it has in past rulemakings, leachate would have been diluted by a factor of 135 (at the 85th percentile of the probability distribution). (See 55 FR 11798, March 29, 1990). If hazardous constituent levels were to be reduced by that factor, the calculated constituent levels at the receptor sites would still exceed the health-based numbers by several orders of magnitude. However, the Agency notes that problems still exist in applying this model to these wastes. Due to the physical and chemical nature of the proposed listed wastes, immiscible flow may occur. Migration of constituents in the immiscible layer may be underestimated by a model that considers only homogenous flow. The underestimation occurs because the EPACML model does not account for the increased constituent concentrations that reach the receptor well in spiked patterns. The effect could be pronounced with wastes containing constituents in high concentrations. Because of these concerns, the Agency did not apply the EPACML to the proposed listed wastes.

The OLM is an empirical equation which was developed through application of modeling techniques to a data base of waste constituent concentrations and experimentally measured leachate concentrations (see 51 FR 41082 and 50 FR 48886). The OLM takes into account the concentrations of organic constituents and their aqueous solubility. EPA believes that, with the possible exception of tar distillation residues, the wastes proposed for listing may be subject to significant cosolvency effects. However, the OLM does not consider cosolvency effects and therefore tends to underestimate pollutant mobility in waste matrices where cosolvency may be significant. The Agency's response to the issue of biodegradation is discussed below.

Fate and transport models serve their intended purpose when applied to appropriate situations. Although the Agency prefers to use specific case studies and/or general modeling results to estimate potential risks from the mismanagement of wastes, the Agency is not required to use a particular model in evaluating the hazards posed by certain wastes. In this situation, however, due to the physical and chemical nature of the coke by-product wastes, the Agency selected an alternative approach to evaluate the potential hazard posed by these wastes. The Agency selected the use of Hypothetical Environmental Exposure Factors (HEEFs), applied to average constituent concentrations found in the wastes, as an alternative approach to estimating the mobility of constituents from the waste under a wide range of environmental conditions. Using this approach, the Agency concludes that under a range of possible environmental conditions, these wastes would pose a substantial hazard to human health and the environment if mismanaged.

The Agency recognizes that the basis for listing wastes as hazardous since 1980 has not always explicitly included the use of models to predict concentrations of hazardous constituents at receptor sites. Rather, EPA has relied on a weight-of-evidence approach including such factors as damage incidents and probability of mismanagement. The recently proposed Hazardous Waste Identification Rule (HWIR, 57 FR 21450—21522, May 20, 1992) contains several options that, depending on which is promulgated, may change the Agency's procedure for the identification and listing of hazardous wastes in the future.

Two commenters claimed that the Agency did not consider biodegradation in its risk analysis and therefore, overestimated the concentration of constituents at the receptor well. The commenters provided general examples of successful biodegradation under aerobic conditions but did not provide data to support these claims or examples under anaerobic conditions. As stated in the proposed rule, the Agency believes that benzene and PAHs are not expected to biodegrade in ground water due to the relatively low biological activity present in the ground-water system. In addition, the persistence of the contaminants of concern is demonstrated by their presence in soil, ground water and surface water at the mismanagement sites described in the proposed rule.

One commenter submitted a journal article that describes a testing program of wells serving water-supply systems in California in which benzene is either undetected or detected in small concentrations at the majority of wells. The article suggests that, due to the

large number of leaking underground storage tanks existing throughout the state, the absence of benzene near water-supply wells implies that biodegradation is occurring in the ground water.

The Agency agrees with the commenter only in that benzene generally biodegrades in ground waters with environments that are conducive to high biological activity (*i.e.*, with high dissolved oxygen levels or acclimated microorganisms). The Agency notes benzene has been found to be present in the ground water at receptor wells of several contaminated sites described in the preamble of the proposed rule. For example, at a steel manufacturing plant operating in New York from 1920 through 1983 on Lake Erie, benzene was detected at concentrations up to 340 ppm at ground-water monitoring wells installed near two waste management areas, a pit and a landfill, which received coking wastes almost exclusively. Thus, the Agency maintains that benzene is a persistent and mobile constituent of concern and that wastes containing benzene in sufficiently high concentrations may pose a hazard when improperly managed.

Several commenters questioned the Agency's concern over cosolvency effects relative to the use of the OLM in evaluating the proposed wastes. The commenters believed that use of the OLM should be reconsidered because the Land Disposal Restrictions for solvents prevent the disposal of solvents in landfills. Therefore, the commenters believed that cosolvency effects should not be considered and that the proposed wastes should be evaluated using the OLM. The Agency's concern over cosolvency effects is not directed at the commingling of the proposed listed wastes with listed solvents which must be treated prior to land disposal. The mobility of constituents may also be enhanced by the presence of organic phases that behave as solvents, such as benzene, from these and other codisposed hazardous wastes, or carboxylic acids from municipal waste leachates.

Two commenters criticized the use of and values for the Hypothetical Environmental Exposure Factors (HEEFs) because they believed the factor to be unrealistic as compared to the dilution and attenuation that occurs in actual environmental conditions. One commenter compared leaching and mobility factors generated by using the OLM and a dilution and attenuation factor (DAF) of 12 (which was generated by the EPACML) to the HEEFs used to support this listing determination and stated that the OLM factors are more realistic than the HEEFs because they are higher. Another commenter believed that the use of HEEFs is unrealistic because the estimated drinking well concentrations exceed the water solubilities for some constituents in some wastes and therefore, the constituents cannot be present in ground water at these concentrations. The commenters also stated that the Agency did not provide a scientific or sound basis for the HEEFs.

HEEFs are meant to be benchmarks of projected dilution and attenuation, and, as such, allow EPA to project potential exposure scenarios to see if health-based criteria can be exceeded under mismanagement conditions. The Agency believes these comparisons add to the weight-of-evidence approach used to determine whether or not a waste is potentially hazardous. In this case, several constituents exceed health-based criteria by several orders of magnitude at HEEFs used in this rulemaking to project dilution. (See discussion in "Basis for Listing," section II.F. above.) In addition, the Agency believes that the HEEFs should not be compared to values generated by the OLM since, as explained earlier, the OLM may significantly underestimate the constituent concentrations leached from these wastes due to the oily/tarry nature of the wastes and the possibility of immiscible flow of migrating constituents. Although other methodologies (*i.e.*, TCLP) tend to underestimate hazardous constituent concentrations in these wastes, they still may show unacceptably high constituent concentrations.

The Agency selected the use of HEEFs to evaluate the potential hazards associated with mismanagement of the proposed listed wastes because, as explained above, the models generally used to evaluate potential release, and fate and transport of hazardous constituents from landfills may not be appropriate for evaluating wastes from the coking and tar refining industries. As stated in the preamble to the proposed rule (56 *FR* 35769), "(t)he concentrations and toxicities of hazardous constituents in the wastes are of such a magnitude that, even under conservative assumptions regarding the potential for release of the constituents to the environment (use of HEEFs) and their subsequent transport in the subsurface environment, improper management of the wastes poses an unacceptable health risk."

This same range of 1.0 to 0.01 percent of the waste disposed reaching the point of exposure was also used as a basis for listing three categories of wastes from wood preserving operations that use chlorophenolic, creosote, and/or inorganic (arsenical and chromium) preservatives (see 55 FR 50450; December 6, 1990). The Agency has used a Dilution Attenuation Factor (DAF) of 100 for evaluating the mobility of constituents. The TCLP only uses a dilution and attenuation factor of 20. The Agency believes that a HEEF of 20 times 100 (or 2,000) would represent a way of projecting a benchmark of the leachability and mobility of constituents from a waste. Therefore, a HEEF of 10,000, in comparison, could represent a conservative basis for evaluating the hazard posed by a waste considering the uncertainty associated with estimating dilution and attenuation. The Agency notes that each of the constituents of concern have waste concentrations that equal or exceed their health-based limits assuming a HEEF of 10,000.

The Agency relies on information regarding the solubility of a pure substance in water as one of several indicators of the mobility of a constituent in ground water. The Agency does not believe that water solubilities should be quantitatively compared to the solubility of the substance in ground water that has been contaminated by a mismanaged waste because this does not represent a pure substance in water. Solubilities are dependent on many factors, including the presence of an organic or oily phase. The phenomenon of constituents occurring in ground water at concentrations exceeding their water solubilities is not completely understood; however, it has been demonstrated at a number of contaminated sites, as presented in the mismanagement case studies of the proposed rule. In addition, even if the concentrations of these constituents in ground-water systems were limited to the solubility of the pure substance in water, the estimated drinking well concentrations would exceed the health-based water concentration limits by several orders of magnitude. Several commenters supported the Agency's position of evaluating constituent solubilities based on mismanagement cases at a site.

Based on the information in Tables 4–4F of todays's rule, the concentrations of hazardous constituents in the proposed listed wastes indicate that the wastes will have an adverse impact on human health and the environment. For example, even with an estimated leaching and mobility factor as high as 10,000, the exposure concentrations for each of the wastes are at least equal to

the health-based level for at least one constituent of concern, and up to five orders of magnitude greater for another constituent of concern. This approach demonstrates that these wastes pose significant hazards to human health and the environment over a wide range of potential mobility and transport scenarios.

One commenter questioned the 10^{-5} and 10^{-6} risk levels used for carcinogens, stating that the National Contingency Plan under CERCLA uses 10^{-4} to 10^{-6} risk levels as a basis for cleanup standards at Superfund sites. When developing its preliminary remediation goals at Superfund sites, EPA uses 10^{-6} as a point of departure, which is considered the most desirable risk level, all things being equal, in establishing remediation goals (55 FR 8717; March 8, 1990). Site-specific factors that determine the overall risk to human health and the environment, remedy-specific factors that are based on the treatment technology, and potential future uses for the site and wastes are all factors used in determining the point within the range of 10^{-4} to 10^{-6} that defines the final cleanup standard. The Listing Program under RCRA, however, must evaluate certain wastes to determine if they are hazardous under all plausible mismanagement scenarios. The Agency does not rely on future use and site-specific information in its evaluation. Therefore, the Agency believes that there is no basis to depart from the more protective risk factor of 10^{-6}. The Agency notes, however, that even if the lower risk factor of 10^{-4} was used, the highly concentrate coke by-product wastes would still exceed the health-based limits (albeit for fewer constituents) and would still be listed today as hazardous wastes.

Another commenter claimed that the RfDs and RSDs used to develop the health-based concentration limits do not have a regulatory basis because they are not promulgated standards. The Agency does not "propose" health-based limits for promulgation as rules when listing wastes, as suggested by the commenter, because unlike Agency rules, these numbers do not prescribe behavior. Comparison of the health-based limits to the waste concentrations is only used in the initial listing process as a tool for demonstrating "(t)he nature of the toxicity presented by the constituent" in the waste, one of the criteria the Agency uses to make the listing determination (See 40 CFR 261.11(a)(3)(i)). These numbers serve as scientific guidance to the Agency in making its listing determinations. The RfDs and RSDs were presented in the proposed rule and made available for comment. The public had the opportunity to comment on the Agency's choice to use specific limits, the soundness of those limits and their underlying assumptions, and, most importantly, the Agency's overall assessment that those wastes possess toxic constituents in levels capable of causing harm to human health and the environment. However, only the waste listings are finalized; the health-based limits are used to support the listing decision. Additional information regarding the health-based limits and assumptions is provided in the background document to this rule.

Several comments were submitted regarding specific proposed listed wastes. Four commenters stated that K148, residues from coal tar distillation, does not exhibit leachability. Two commenters substantiated this claim with TCLP data and two other commenters related the leachability of K148 to that of asphalt because it has a higher melting point and asphalt binders decrease the leachability of arsenic wastes. As explained earlier in this section, the Agency does not believe that the TCLP can be used to determine the leachability of wastes such as K148 that are difficult to filter. In addition, the Agency did not receive any data to substantiate reduced leachability of K148, as compared to asphalt, particularly in the presence of other coking and/or tar refining wastes.

Several commenters questioned the relationship of the mismanagement case histories in the proposed rule (56 FR 35775) to the proposed listed wastes and believed that the Agency has not demonstrated that the wastes are capable of posing human health and environmental damage. One commenter believed that the Agency must cite actual human exposure in order to demonstrate that the wastes are capable of posing substantial harm. The Agency believes that, from the nature of the activities performed at these sites (i.e., primarily coking and tar refining operations), it is reasonable to conclude that the resulting environmental contamination was caused primarily by wastes generated from these operations. Due to the extent of contamination found at these sites relative to the health-based levels, the data are sufficient to demonstrate that potential exposure and harm exist, which is all that is required by 40 CFR 261.11(a)(3).

One commenter submitted detailed analytical concerns on one of the 13 analytical data reports used to support these listings. Overall, many of the comments addressed specific quality assurance/quality control steps in the analytical process. The Agency agrees with some of the quality concerns which address constituents that were not used to support the listing. However, most of the comments were either misinterpretations of the requirements of methods from "Test Methods for Evaluating Solid Waste: Physical/Chemical Methods" (SW–846), or they addressed requirements of the Contract Laboratory Program (CLP) instead of the SW–846 methods. These concerns are each addressed in detail and are available in the background document for today's rule. The Agency further notes that the data presented in the particular analytical data report in question support the listing of only one waste, and in addition, represent the lowest end of the concentration ranges found for the constituents of concern for this waste. EPA does not believe that any of the analytical comments affect the conclusions presented in today's rulemaking.

One commenter requested that the Agency clarify whether the K148 listing includes tar plant wastewater collection sump sludges. The Agency reviewed the specific waste streams that were originally grouped under the heading of tar plant wastewater collection sump sludges from the RCRA 3007 Questionnaires completed in 1985 and determined that these waste streams were incorrectly described as tar plant wastewater collection sludges and are already addressed in today's listings. Specifically, these waste streams were generated during coke by-product recovery operations rather than tar refining operations. Most of these waste streams are actually residues from sumps that collect wastewaters (i.e., from tar dewatering) generated from the tar recovery process and are encompassed by K141, process residues from the recovery of coal tar. One of the waste streams formerly grouped under the tar plant wastewater collection sump sludges heading is actually the tar product stream that is fed directly to the tar dehydrator.

The same commenter also requested that EPA discuss the final listing determination for each of the coke by-product wastes specified in the proposed Consent Decree which resolves issues raised in *EDF* vs. *Reilly*, Civ. No. 89–0598 (D.D.C.). The Agency has reviewed the RCRA 3007 Questionnaires and accompanying process flow diagrams which were the original sources for the waste categories specified in the consent decree and has determined that each of these wastes is addressed fully in today's rule. Table 6 presents the listing determination for

each of these wastes:

TABLE 6.—LISTING DETERMINATIONS ON WASTES IN PROPOSED CONSENT DECREE

Waste stream proposed in consent decree	Listing determination
Process residues from coal tar recovery operations including tar collection sump residue.	K141.
Tar storage tank residues	K147.
Residues from light oil plant processing units.	K143.
Wastewater treatment sludges from light oil refining, including interceptor sump sludge.	K144.[1]
Residues from naphthalene collection and recovery.	K145.
Wastewaters from coking and coke by-product operations.	No listing.
Tar storage tank residues, still bottoms, and residues from coal tar distillation.	K148.
Wastewaters from coal tar refining	No listing.
Benzol scrubber sludge	K143.
Oil/water separator effluent	No listing (wastewater).
Tar plant wastewater collection sump sludge.	K141 (see explanation in text above).
Naphthalene skimmer sludge	K145.
Wash oil circulation sludge and still residue.	K143, or K145.[2]
Primary light oil rectifier bottoms	K143.

[1] This waste stream is referred to at some facilities as wastewater sump residues rather than wastewater treatment sludges. To avoid confusion with the wastewater treatment sludges produced after combined wastewater treatment (see Figure 1), the Agency has decided to adopt the former description. The proposed language describing the waste has, therefore, been revised accordingly.

[2] When wash oil is used in light oil recovery, it is classified as K143, whereas when it is used in naphthalene recovery, it is classified as K145.

One commenter believed that the wastewater treatment sludge from coke by-product recovery wastewater should be listed as a hazardous waste. The commenter compared the data generated from tar refinery wastewaters in support of this rulemaking to data from the Best Demonstrated Available Technology (BDAT) Background Document for wastewater treatment sludges generated in the production of creosote, K035. The commenter concluded that the constituents of concern may be present at low or non-detected levels in tar refining wastewaters and still be found at high concentrations in the wastewater treatment sludges due to partitioning from the wastewaters.

The Agency does not believe it has enough information to make a listing determination at this time for these wastewater treatment sludges. As stated in the preamble to the proposed rule, EPA does not have analytical data on the concentrations of constituents of concern in these sludges. The Agency also does not believe that the data presented by the commenter justify investigation of these sludges. The sludge sample referred to by the commenter, which contained high concentrations of PAHs, was from the bottom oil layer of the oil/water separator, which precedes the wastewater treatment unit in the creosote wastewater treatment plant. The other K035 samples presented in the Background Document represent sludges generated following either biological treatment or solar evaporation and contain these constituents at concentrations two to three orders of magnitude lower than the bottom oil layer.

As stated earlier in this section, the constituents of concern were not typically and frequently found at levels of regulatory concern in the coke byproduct wastewaters and therefore, the Agency does not believe that they would be typically and frequently found at levels of regulatory concern in the wastewater treatment sludges. In addition, since a significant number of facilities use biological treatment to treat these wastewaters before discharging them to a POTW or through their NPDEs permitted outfall, even low concentrations of organics would be biologically consumed in the treatment process. Lastly, the PAHSs found in the tar refining wastewaters were generally found at concentrations an order of magnitude lower in the coke by-products wastewaters than in the creosote wastewaters. The Agency expects that concentrations of PAHs would, therefore, be lower in the coke by-products treatment sludges. This probably occurs because the heavier organic layers are removed prior to wastewater treatment in the coke by-products recovery process.

B. Recycling Exclusion

The Agency received comments from several industry groups concerning the recycling exclusions proposed on July 26, 1991 (56 FR 35787) as § 261.4(a)(10)–(12). All the commenters supported the general concept of an exclusion from the definition of solid waste for coke by-product residues that are recycled by being returned to coke ovens as a feedstock to produce coke.

Two commenters made reference to the September 14, 1991 effective date of the benzene by-product NESHAP rule as a major reason for the immediate promulgation of an exclusion at the point of generation. This compliance date forced coke oven operators to either retrofit or replace the storage vessels used for coke by-product residues. This action generated large amounts of residues that would have to be sent off-site for disposal if they were not excluded at the point they were generated. The large amounts generated would cause the facilities to exceed the 90-day accumulation limit and, thus, become subject to permitting standards. In addition to the NESHAP deadline, the effective date of the permitting standards for boilers and industrial furnaces (BIF rule; 56 FR 7134) was August 21, 1991. Absent some regulatory relief by that date, commenters asserted that coke oven operators would be forced to stop recycling coke by-product residues due to the technical infeasibility of meeting the destruction and removal standards imposed by the BIF rule.

In response to commenter concerns over the effective date of the BIF rule, because the Agency did not want to disrupt the legitimate recycling of coke by-product residues, and because large amounts of residues were being generated as a result of the NESHAPs rule, EPA issued an Administrative Stay on September 5, 1991 (56 FR 43874). The effect of this action was to stay the permitting standard of the BIF rule as they apply to coke ovens that process TC hazardous residues in the production of coke. In a later Federal Register notice (57 FR 27880), EPA nullified the stay by promulgating an exclusion from the definition of solid waste for coke by-product residues that exhibit the Toxicity Characteristic when they are recycled by being returned to coke ovens or mixed with coal tar. The Agency also clarified the scope of the exclusion by placing certain conditions on it (*i.e.*, no land disposal).

One commenter (an industry trade association) requested that the exclusion for coke by-product residues be expanded to encompass materials burned as fuel in blast furnaces in iron and steelmaking operations. Because the residues contain the same constituents as the final coke product, the commenter contended that burning of coke by-product residues in blast furnaces along with coke would not have a significant effect on the composition of the steel product. EPA disagrees with the commenter. Blast furnaces normally are charged with coal tar product that contains the coke by-products covered by this rule, as opposed to the actual coke by-product wastes themselves. Due to this distinction, the Agency believes that the introduction of raw by-product wastes into the blast furnace may have an adverse effect on emissions from the blast furnace. In addition, the use of by-product wastes in blast furnaces may cause other engineering problems not posed by the processing of coal tar

product. (Nor have any other interested members of the public had any opportunity to comment on this issue.) The Agency has insufficient information on the use of coke by-product wastes in blast furnaces and may evaluate this practice further in the future. Until such time, this issue is outside the scope of today's rulemaking. See also 50 FR at 49171–72, 49174 (November 29, 1985) (general discussion of use of secondary materials in blast furnaces).

Before publication of the exclusion rule on June 22, 1992, coke by-product residues that exhibited the TC as generated were solid and hazardous wastes, and had to be managed as such. If these residues were stored on-site for a period exceeding 90 days, they had to be stored in accordance with RCRA Subtitle C controls on storage, including permitting standards. If hazardous residues were shipped off-site for recycling or disposal, they were required to be shipped with a manifest. Facilities that received hazardous waste residues for recycling were required to have a RCRA permit if the residues were stored at the facility prior to recycling. Coking industry representatives indicated that this strict regulatory regime for coke by-product residues served as a disincentive for waste minimization and recycling efforts in the coke by-products industry. Over 50 percent of the commenters to the proposed rule stated that coke by-products facilities that currently do not have RCRA permits would not obtain a RCRA permit to manage the residues prior to recycling, due to the corrective action implications of a permit and the associated costs. Consequently, absent some regulatory relief, the residues would be sent off-site for incineration or disposal.

This was not the Agency's intent. As discussed in the Administrative Stay under rules existing at that time, EPA views the required pretreatment steps as part of the recycling process. The Agency recognizes that prior processing of the residues is necessary to obtain a homogeneous material suitable for charging to a coke oven with coal or mixing with coal tar. Therefore, this processing is considered an integral part of the recycling process itself and, as such, is exempt from regulation under 40 CFR 261.6(c)(1). The exemption encompasses all the units associated with the recycling operation, in this case, the process units and ball mills used to process the residues prior to reinsertion to coke ovens.

In any case, this issue is now moot because the materials are excluded from being solid waste. As long as the terms of the exclusion are met (i.e., no land disposal from the point of generation to the time the wastes are recycled and proper documentation is kept), no RCRA regulations apply. However, generators of these wastes must be aware of the prohibition on speculative accumulation of wastes intended for recycling. A material is *not* accumulated speculatively if the person accumulating it can show that the material is potentially recyclable and has a feasible means of being recycled; and that, during the calendar year (commencing on January 1), the amount of material recycled or transferred to a different site for recycling equals at least 75 percent by weight or volume of the amount of that material accumulated at the beginning of the period. (See 40 CFR 261.1(c)(8).) Therefore, the burden of proof rests with the person accumulating materials for recycling. EPA believes that speculative accumulation will not be a problem for most generators of coke by-product residues due to the ongoing use/reuse of these materials in their processes.

Three commenters requested a clarification in the final rule that today's rule does not apply to closing or historic sites. The commenters are incorrect. Since inception of the RCRA program, hazardous waste listings apply to the material being disposed, not when it is disposed of. A listed coke by-product waste disposed in 1970 is still that same listed waste. (*Chem. Waste Management* v. *EPA*, 869 F.2d 1526 (D.C. Cir. 1989)) Hazardous waste listings thus apply retroactively to wastes disposed in units that ceased operation prior to the effective date of the listings. This does not mean that such wastes must be exhumed for proper treatment; they are subject to subtitle C controls only when they are actively managed. EPA has interpreted "active management" as physically disturbing accumulated wastes within a management unit or disposing of additional hazardous wastes in existing units containing previously disposed wastes (September 1, 1989; 54 FR 36597). Therefore, the listings promulgated today do apply to wastes disposed before the effective date of this rule, when such wastes are actively managed. For example, if an abandoned site is being remediated and wastes or contaminated media are being removed from the site, any wastes meeting the listing descriptions finalized today must be managed in accordance with all applicable requirements.

One commenter was concerned about environmental media contaminated with the wastes being listed today. The commenter believed that recycling of such media should be treated the same as the recycling of the listed wastes. EPA clarifies here that the recycling of materials extracted from media that are contaminated with the wastes being listed today will fall within the exclusion for recycling as long as the recycling practice meets the terms of the exclusion (*i.e.*, no land disposal). If extracted material from contaminated media can be safely and effectively recycled, EPA sees no reason to regulate such recycling more stringently than the recycling of the process wastes themselves. Recycling of the listed materials is acceptable as long as they are not land disposed again. Extraction of recyclable materials from contaminated media remains subject to all applicable requirements of RCRA and CERCLA. In addition, the residues from this process (*i.e.*, leftover media that is unrecyclable, or other treatment residues) not only will be hazardous waste but, once EPA prohibits these wastes from land disposal, would have to meet the treatment standard for these wastes before they could be land disposed.

Several commenters made reference to the similarity between the coke by-products recovery process and the recycling practice addressed in the AMC I decision, involving in-process recycled materials in the petroleum refining industry (*AMC* v. *EPA*, 824 F.2d, D.C. Cir. 1987). The commenters believe that the similarities between the two situations provide a sound basis for an exclusion for coke by-product residues, conditioned on no land disposal of materials.

EPA agrees that it is possible to craft a reasonable exclusion that allows these materials to be recycled so as not to become part of the waste management problem. EPA does not agree with the commenters' characterization of the AMC I decision, an opinion now substantially repudiated by the D.C. Circuit.

Upon promulgation of the exclusion, the recycling of coke by-product plant residues, by reinsertion to coke ovens, the tar recovery or refining process, or mixing with coal tar, was excluded from regulation, provided the condition of the exclusion at 40 CFR 261.4(a)(10) is met (*i.e.*, no land disposal up to point of recycling). Consequently, if the terms of the exclusion are satisfied, coke by-product plant residues shipped off-site for recycling need not be accompanied by a manifest because they are not solid wastes and, therefore, not hazardous wastes. Of course, management of coke by-product residues that involves land disposal carries the provision that those residues must be managed in

accordance with all applicable RCRA requirements. It is important to note that, although manifesting is not required for coke by-product wastes being shipped for recycling within the terms of the exclusion, generators of theses wastes remain subject to LDR notification requirements under § 268.7(a)(6). This provision requires generators of restricted wastes that have been excluded from the definition of solid or hazardous waste or otherwise exempted from Subtitle C regulation to place a one-time notice in the facility's operating record. The requirements of the LDR program as they relate to this rulemaking are discussed more fully in the section of this preamble entitled Interaction with Other Regulations.

Four commenters objected to EPA's reliance on the "used to produce a fuel" rationale in 40 CFR 261.2(c)(2) for classifying coke by-product residues as solid wastes. Two commenters stated that the recycling of coke by-product residues into coke ovens falls under 40 CFR 261.2(e)(1) and, therefore, an exclusion at § 261.4(a) is unnecessary because the residues are already excluded from the definition of solid waste since they are used as ingredients in an industrial process to make a product (coke). EPA's rationale in classifying coke by-product residues as solid wastes in the July 26, 1991 proposal is also the reasons why 40 CFR 261.2(e)(1) does not exclude coke by-product residues from classification as a solid waste. 40 CFR 261.2(e)(2) provides that materials burned for energy recovery, used to produce a fuel, or otherwise contained in fuels are solid wastes, even if the recycling involves use, reuse, or return to the original process, as described in § 261.2(e)(1). The fact that coke has been recognized in the iron and steel industry for a long time not only for its physical and chemical value but also for its heating value in driving the iron reduction process in the blast furnace causes the "fuel" classification for coke.

The regulations classify secondary materials burned for energy recovery, used to produce a fuel, or otherwise contained in a fuel, as solid wastes because EPA believes that Congress intended the Agency to read its authority over waste-derived fuels expansively. EPA believes its authority over recycling is broadest when the recycling practice resembles a classic waste management activity, in this case, incineration. However, in the case involving recycling of coke by-product residues, the process is unlike waste management since the residues are similar to the coke and coal tar products, are amenable to use in the same process, and have no significant effect on the chemical composition of the products.

One commenter requested that the exclusion be expanded to include the recycling of coal tar materials generated by electric utilities during the remediation of historic manufactured gas plant (MGP) sites, specifically, the burning of coal tar wastes as fuels in high efficiency boilers. EPA wishes to clarify that the process of coal gasification is distinct from the coking process, from both a technical and a regulatory standpoint. The wastes from abandoned coal gasification plants are, therefore, not a part of this listing. The process referred to by the commenter is outside the scope of the recycling exclusion promulgated on June 22, 1992. The commenter may petition the Agency under 40 CFR 260.20 for a regulatory determination concerning the recycling activities at remediated MGP sites under a separate rulemaking.

One commenter proposed expanded approaches for dealing with the recycling of coke oven wastes. First, they recommended that EPA exempt these wastes from regulation as a hazardous waste when they are used as part of a CERCLA cleanup or RCRA corrective action. Secondly, the commenter urged the Agency to adopt a generic recycling exemption (i.e., from regulation as a hazardous waste) for recycling of these wastes and MGP wastes by any type of process if a person submits a petition and EPA approves such petition. This petitioning process would be similar to the existing process for delisting petitions.

Regarding the first suggestion, at a CERCLA site, treatment of a waste does not need a RCRA permit as long as the work is being done on-site and as long as Applicable and Relevant and Appropriate Requirements (ARARs) are observed. In these cases, where the wastes are removed from a remediated site, the material extracted can still be recycled to a coke oven if it meets the description of a waste in today's rule and if a coke by-products facility is willing to accept it. (Subsequent land disposal of the material again would void the exclusion.) Further, the issue of a national policy regarding recycling at remedial sites outside the scope of this rulemaking, which deals only with listing determinations regarding coke by-product wastes (RCRA 3001(e)). The Agency has recently raised the issue of cleanups at RCRA or CERCLA sites in the Hazardous Waste Identification Rule proposed on May 20, 1992 (57 FR 21450—21522). The Agency will resolve issues related to recycling at these sites as it decides which option in the HWIR rule to promulgate, in response to public comments.

With regard to the second point, under the exclusion to the definition of solid waste in § 261.4(a)(10), the materials can be excluded if they are returned to an excluded process (e.g., coke oven). The materials in question must have enough coke by-products material to meet the requirements of 261.4(a)(10). Given the demonstrated ability of several recyclers to accomplish extracting, reprocessing, and recycling of these materials without land disposal, the Agency feels that the current regulatory structure is sufficient to encourage not only the recycling of coke by-products wastes at operational facilities but also the remediation of these materials where they have been found in sufficient quantities in the environment (*e.g.*, abandoned sites).

Finally, one commenter requested that a Regulatory Flexibility Analysis be conducted. The Regulatory Flexibility Act (5 U.S.C. 601 *et seq.*) requires that whenever an agency publishes a notice of rulemaking, it must prepare a Regulatory Flexibility Analysis (RFA) that describes the effect of the rule on small entities. An RFA is unnecessary, however, if the Agency's administrator certifies that the rule will not have a significant economic effect on a substantial number of small entities. The commenter contended that the proposed rule would have a significant economic impact on their business because it proposed to exclude only processes that occur subsequent to the company's recycling activities. The Agency reiterates that any processing of coke by-products that occurs prior to recycling is considered part of the recycling process and is, therefore, excluded from regulation, provided that the terms of the exclusion are met. As a result, small entities are not significantly affected and a Regulatory Flexibility Analysis is unnecessary.

Additional detail and responses to additional comments are available in the Background Document to today's rule.

IV. Interaction With Other Regulations

A. Land Disposal Restrictions

The 1984 amendments to RCRA (HSWA) mandate that the Agency promulgate land disposal prohibition determinations under a specific schedule for wastes identified and listed prior to enactment of HSWA (RCRA sections 3004 (d), (e), and (g)(4); 42 U.S.C. 6924 (d), (e), and (g)(4)). If the

Agency failed to promulgate land disposal restrictions by the dates specified in section 3004(g)(4), the wastes were absolutely prohibited from land disposal after May 8, 1990. The statute also requires the Agency to make a land disposal prohibition determination for any hazardous waste that is newly listed or identified after November 8, 1984, within six months of the date of promulgation of the listing or identification (RCRA 3004(g)(4)). However, the statute does not provide for automatic prohibition of the land disposal of such wastes if EPA fails to meet this deadline.

The Agency is in the process of completing treatability and capacity analyses for the wastes covered by today's rule. For this reason, the Agency will address land disposal restrictions for these wastes in the near future. It should be noted that because the statute does not provide for automatic restriction or prohibition of land disposal for newly listed and identified wastes until such restrictions are promulgated, land disposal of these wastes will not be restricted or prohibited until the Agency promulgates land disposal restrictions for these wastes. However, these wastes may exhibit one of the prohibited hazardous characteristics or be subject to other regulatory or statutory restrictions such as the prohibition on disposing liquids in landfills. Wastes that exhibit the Toxicity Characteristic are considered newly identified and are not covered by the LDR, unless they also exhibit the EP Toxicity Characteristic (see the Third Third LDR Rule, June 1, 1990; 55 FR 22520). EPA expects to propose prohibitions and treatment standards for TC wastes, as well as for the wastes newly listed today, during the summer of 1992.

EPA wishes to point out that generators of restricted hazardous wastes that have been excluded or exempted from regulation are subject to a notification requirement under the Land Disposal Restrictions program in accordance with § 268.7(a)(6) (see 55 FR 3878; January 31, 1991). This subparagraph requires generators of restricted wastes that are excluded from the definition of solid or hazardous waste or otherwise exempt from Subtitle C regulation to place a one-time notice in the facility's files. This notice must contain information on the generation, subsequent exclusion or exemption from RCRA regulation, and the disposition of the waste. This recordkeeping requirement is similar to the provision in § 261.2(f) requiring documentation of claims that a material is not a solid waste. The information on the disposition of the waste must indicate that the waste is not land disposed or placed in any type of land-based unit and, therefore, remains eligible for the exclusion. The existing listed wastes covered by the exclusion at § 261.4(a)(10) (i.e., K060 and K087) are already prohibited from land disposal and have BDAT treatment standards associated with them and are therefore already subject to this recordkeeping requirement. The wastes being listed today will be addressed by the Agency in a future LDR rulemaking and will therefore become subject to the notification requirement once the prohibition for these wastes takes effect. As discussed above, these prohibitions and treatment standards for the TC wastes are expected to be proposed this summer.

V. State Authority

A. Applicability of Final Rule in Authorized States

Under Section 3006 of RCRA, EPA may authorize qualified States to administer and enforce RCRA programs 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), a State with final RCRA authorization administered its authorized hazardous waste program entirely in lieu of EPA. 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 obliged 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 section 3006(g) of RCRA (42 U.S.C. 6926(g)), new requirements and prohibitions imposed by the HSWA take effect in authorize States at the same time that they take effect in nonauthorized States. EPA is directed to implement these requirements and prohibitions in authorized States, including the issuance of permits, until the State modifies its program to reflect the Federal standards, and applies for and is granted authorization. While States must still adopt HSWA-related provisions as State law to retain final authorization, HSWA applies in authorized States in the interim.

Today's rule is promulgated pursuant to section 3001(e)(2) of RCRA, a provision added by HSWA. Therefore, the Agency is adding these requirements to Table 1 in 40 CFR 271.1(j), which identifies the Federal program requirements that are promulgated pursuant to HSWA and that take effect in all States, regardless of their authorization status. States may apply for either interim or final authorization for the HSWA provisions identified in 40 CFR 271.1(j) Table 1, as discussed in the following section of the preamble.

B. Effect on State Authorization

As noted previously, today's rule is promulgated pursuant to provisions added by HSWA. The addition of K141 through K145 and K147 and K148 to the list of hazardous wastes from specific sources is promulgated pursuant to section 3001(e)(2) of RCRA, a provision added by HSWA.

As noted above, EPA will implement the HSWA portions of today's rule in authorized States until they modify their programs to adopt these rules and such modifications are approved by EPA. Because this rule is promulgated pursuant to HSWA, a State submitting a program modification may apply to receive either interim or final RCRA authorization under section 3006 (g)(2) or 3006(b), respectively, on the basis that State regulations are substantially equivalent or fully equivalent to EPA's regulations. The procedures and schedules for State program modifications for either interim or final authorization are described in 40 CFR 271.21. It should be noted that all HSWA interim authorizations will expire on January 1, 1993 (see 40 CFR 271.24(c)).

It should also be noted that 40 CFR 271.21(e) requires that States having final RCRA authorization must modify their programs to reflect Federal program changes and must subsequently submit the modifications to EPA for approval. The deadline by which States must modify their programs to reflect this rule is July 1, 1994 (or July 1, 1995, if statutory changes are required). Once EPA approves the modification, the State requirements become RCRA subtitle C requirements.

States with authorized RCRA programs may already have regulations similar to those promulgated in today's rule. Such State regulations have not been assessed against the Federal regulations being finalized today to determine whether they meet the tests for authorization. Thus, a State is not authorized to implement its regulations

as RCRA requirements until the State program modification is submitted to EPA and approved. Of course, States with existing regulations may continue to administer and enforce those regulations as a matter of State law. In addition, in implementing the Federal program, EPA will work with the 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 their official applications for final authorization less than 12 months after the effective date of EPA's regulations are not required to include regulations equivalent to the EPA regulations in their application. However, States must modify their programs by the deadlines set forth in 40 CFR 271.21(e)(2). States that submit official applications for final authorization 12 months after the effective date of these standards must include standards equivalent to these standards in their application. The requirements States must meet when submitting final authorization applications are set forth in 40 CFR 271.3.

VI. CERCLA Designation and Reportable Quantities

All hazardous wastes listed in 40 CFR 261.31 through 261.33, as well as any solid waste that exhibits one or more of the hazardous waste characteristics, also are hazardous substances under section 101(14) of the Comprehensive Environmental Response, Compensation and Liability Act (CERCLA) of 1980, as amended. Therefore, the seven wastes being listed today are CERCLA hazardous substances. Hazardous substances are listed in Table 302.4 at 40 CFR 302.4 along with their respective reportable quantities (RQs); thus, EPA is today adding entries for K141, K142, K143, K144, K145, K147, and K148 to Table 302.4.

Under CERCLA 103(a), the person in charge of a vessel or facility from which a hazardous substance has been released in a quantity that equals or exceeds its RQ must immediately notify the National Response Center of the release as soon as that person has knowledge of the release. In addition to this reporting requirement under CERCLA, section 304 of the Emergency Planning and Community Right-to-Know Act (EPCRA) requires owners or operators of certain facilities to report the release of a hazardous substance to State and local authorities. EPCRA section 304 notification must be given to the community emergency coordinator of the local emergency planning committee for each area likely to be affected by the release, and to the State emergency planning commission of any State likely to be affected by the release.

Under section 102(b) of CERCLA, all hazardous wastes are assigned a statutory RQ of one pound unless and until adjusted by regulation. The Agency's methodology for adjusting RQs of individual hazardous substances begins with an evaluation of the intrinsic physical, chemical, and toxicological properties of each hazardous substance. The intrinsic properties examined, called "primary criteria," are aquatic toxicity, mammalian toxicity (oral, dermal, and inhalation), ignitability, reactivity, chronic toxicity, and potential carcinogenicity. Generally, for each intrinsic property, the Agency ranks hazardous substances on a scale, associating a specific range of values on each scale with an RQ of 1, 10, 100, 1,000, or 5,000 pounds. The data for each hazardous substance are evaluated using various primary criteria; each hazardous substance may receive several tentative RQ values based on its particular intrinsic properties. The lowest of the tentative RQs becomes the "primary criteria RQ" for that substance.

After the primary criteria RQs are assigned, substances are further evaluated for their susceptibility to certain degradative processes, which are used as secondary adjustment criteria. These natural degradative processes are biodegradation, hydrolysis, and photolysis (BHP). If a hazardous substance, when released into the environment, degrades relatively rapidly to a less hazardous form by one or more of the BHP processes, its RQ, as determined by the primary RQ adjustment criteria, is generally raised one level. This adjustment is made because the relative potential for harm to public health or welfare or the environment posed by the release of such a substance is reduced by these degradative processes. Conversely, if a hazardous substance degrades to a more hazardous form after its release, the original substance is assigned an RQ equal to the RQ for the reaction product. The downward adjustment is appropriate because the hazard posed by the release of the original substance is increased if it degrades to a more hazardous form.

The methodology summarized above is applied to adjust the RQs of individual hazardous substances. An additional process applies to RCRA waste streams that contain individual hazardous substances as constituents. As the Agency has stated (54 FR 33440, August 14, 1989), to assign an RQ to a waste stream, the Agency determines the RQ for each waste stream constituent and then assigns the lowest of these constituent RQs to the waste stream itself.

Waste streams K141, K142, K143, K144, K145, K147, and K148 each contain at least one constituent with an RQ of one pound (the lowest RQ). In order to coordinate RCRA and CERCLA rulemakings, the Agency included regulatory RQs of one pound for each waste stream in the July 26, 1991 proposed rule (56 FR 35758). EPA received no comments on these proposed RQ adjustments. The Agency is, therefore, promulgating these RQ adjustments by including final RQs of one pound for waste streams K141, K142, K143, K144, K145, K147, and K148 in Table 302.4 (40 CFR 302.4).

VII. Cost and Economic Analysis

Executive Order No. 12291 requires that a regulatory agency determine whether a new regulation will be "major" and, if so, that a Regulatory Impact Analysis (RIA) be conducted. An RIA is a quantification of the potential benefits, costs, and economic impacts of the rule. A "major" rule is defined as a regulation likely to: (1) Result in an annual effect on the economy of $100 million or more; (2) increase costs or prices for consumers, individuals, industries, Federal, State, and local government agencies, or geographic regions; or (3) significant adverse effects on competition, employment, investment, productivity, innovation, or on the ability of United States-based enterprises to compete with foreign-based enterprises in domestic or export markets.

The Agency estimated the costs of today's final rule to determine if it is a major regulation as defined by Executive Order 12291. Today's final rule is not a major rule, having costs below $100 million annually. Additionally, the Agency's cost analysis concluded that these costs would not result in significant price increases or significant adverse effects on competition, trade, employment, or investment. Because impacts of this rule do not meet the criteria set forth by Executive Order 12291, the Agency has determined that today's rule is not a major one. An effect and economic impact analysis has been performed, estimating the costs and economic impact incurred as a result of today's rule. This section of the preamble discusses the results of this analysis.

The full Cost and Economic Impact Analysis document is available in the public docket.

A. Cost Analysis

The Agency developed costs for today's final rule on a facility-specific basis for the coking industry (30 active coke facilities) and the tar refining industry (eight active tar refining facilities). Baseline management practice costs and post-regulatory management practice costs were developed at each facility; the incremental compliance cost of today's rule is determined as the post-regulatory cost minus the baseline cost.

The baseline management options include practices such as recycling to the coke oven or tar decanter, on-site landfilling, off-site reclamation, and burning in a boiler or blast furnace. The compliance management options include recycling to the coke oven or cement kiln for all waste streams, no generation-circulation for tar storage tank residues for coking merchant plants and tar refining plants, and off-site reclamation for K143 wash oil purifier residue and decanter muck.

Tables 7 and 8 summarize the annualized after-tax costs by waste code for baseline, least costly compliance option (recycle to the oven and no generation-circulation for tar storage tank residues from tar refining) and most costly compliance option (cement kiln). Tables 9 and 10 summarize the annualized after-tax costs by facility, including the part 262 costs. The total incremental annual after-tax compliance cost of today's rule is estimated to be between $380,000 (not including a $200,000 estimated savings for the tar refining industry) and $6.6 million. The Economic Impact Screening Analysis, available in the docket, provides a complete description of the cost analysis.

TABLE 7—SUMMARY OF COKING INDUSTRY IMPACTS FOLLOWING COMPLIANCE FOR HAZARDOUS WASTE LISTINGS K141–K145

[After tax private cost]

Waste stream product	Coke production (tons/year)*	Residual (tons/year)	Baseline		Least costly compliance option			Most costly compliance option		
			Current management practice	Annualized cost ($/yr)	Compliance management practice	Annualized cost ($/yr)	Incremental annualized cost ($/yr)	Compliance management practice	Annualized cost ($/yr)	Incremental annualized cost ($/yr)
K141	24,924,631	3,102	Baseline	54,980	Recycle to oven	234,732	149,752	Cement Kiln	952,364	897,334
K142	24,637,897	10,023	Baseline	497,012	Recycle to oven	661,443	175,450	Cement Kiln	3,147,559	2,650,547
K143	22,860,399									
(a) Scrubber residue.		452	Baseline	11,873	Recycle to oven	29,817	18,075	Cement Kiln	150,671	238,025
(b) Wash oil residue.		3,617	Baseline	30,862	Recycle to oven	236,702	207,857	Cement Kiln	1,016,390	985,528
K144	16,297,707	870	Baseline	23,480	Recycle to oven	37,411	33,930	Cement Kiln	343,023	319,542
K145	15,251,593	453	Baseline	14,994	Recycle to oven	29,919	15,207	Cement Kiln	220,580	205,587
Total				633,201		1,220,024	600,279		5,830,584	5,197,393

* 1984 production data from 1985 RCRA 3007 questionnaire.

TABLE 8.—SUMMARY OF TAR INDUSTRY IMPACTS FOLLOWING COMPLIANCE FOR HAZARDOUS WASTE LISTINGS K147–K148

[After Tax Private Cost]

Product	Tar processed gal/year)*	Residual (tons/year)	Baseline		Least costly compliance option			Most costly compliance option		
			Current management practice	Annualized cost ($/yr)	Compliance management practice	Annualized cost ($/yr)	Incremental annualized cost ($/yr)	Compliance management practice	Annualized cost ($/yr)	Incremental annualized cost ($/yr)
K147	178,368,000	2,516	Baseline	153,450	No generation-circ.	2,088	0	Cement Kiln	789,891	636,440
K148	175,928,000	242	Baseline	12,237	Recycle to oven	16,342	4,105	Cement Kiln	105,877	93,640
Total				165,687		18,430	4,105		895,768	730,080

* 1984 production data from RCRA 3007 questionnaire.

B. Economic Impact Analysis

The Agency assessed the economic impacts incurred due to today's final rule for the coke industry and the tar refining industry. The economic impacts for both industries were estimated by calculating the ratio derived from dividing the annual incremental after-tax compliance costs by the value of production on a facility-specific basis. A ratio greater than one percent of sales (value of production) indicates potentially significant adverse effects.

1. Coking Industry

EPA estimated costs for the 30 active coke facilities for which data was available. However, the economic impact analysis was conducted for all 32 coking facilities. Economic impacts for the two facilities for which the Agency did not possess data were estimated using the average production and incremental compliance costs for the 30 active coke facilities. Table 9 summarizes the impacts by facility and industry total for coking. Except for those facilities that claimed confidentiality (CBI facilities), Table 9 shows for each facility in the industry

the estimated annual value of production, least costly and most costly incremental annualized compliance costs, and costs of compliance as a percent of value of production.

Assuming facilities adopt the least costly management options, costs of compliance are insignificant for all facilities. For the least costly management options, the industry aggregate costs of compliance to value of production ratios is estimated at 0.009 percent (compared to the proposed rule industry aggregate of −0.001 percent). There are no adverse economic impacts associated with the least costly option. The increase in the industry aggregate cost to value of production ratio from the proposed rule is attributable to a contract recycler recycling the waste at the coking plant at $100/ton. The price of $100/ton includes capital expenditures for storage and processing equipment, removal of waste, and processing. The proposed rule costs included only facility labor for removal of waste, except for K143 which also included storage tanks.

Assuming that facilities adopt the most costly compliance option, cement kiln in all cases, there are no adverse economic impacts. For the most costly management option, the industry aggregate costs of compliance to value of production ratios is estimated at 0.13 percent (compared to the proposed rule industry aggregate of 0.36 percent).

TABLE 9.—SUMMARY OF COKING FACILITY AND INDUSTRY IMPACTS FOLLOWING COMPLIANCE WITH PROPOSED HAZARDOUS WASTE LISTINGS (K141–K145)

DPRA facility ID No.	Estimated value of production	Least costly options		Most costly options	
		Incremental annualized compliance costs	Costs of compliance as a percent of value of production	Incremental annualized compliance costs	Costs of compliance as a percent of value of production
	($/yr)	($/yr)	(%)	($/yr)	(%)
32	35,452,470	(1,715)	−0.005	36,226	0.10
31	42,237,649	2,180	0.005	32,404	0.08
10	63,842,000	2,932	0.005	81,212	0.13
26	80,094,745	10,557	0.013	122,092	0.15
24	73,820,932	15,111	0.020	125,814	0.17
22	78,427,293	2,358	0.003	43,999	0.06
8	94,202,216	5,788	0.006	125,539	0.13
15	85,064,165	10,266	0.012	122,056	0.14
23	83,800,535	8,716	0.010	109,003	0.13
1	132,008,745	12,316	0.010	142,520	0.11
9	155,552,951	21,612	0.014	225,317	0.14
11	107,763,220	3,503	0.003	28,693	0.03
20	158,266,321	11,316	0.007	127,295	0.08
28	139,573,862	10,645	0.008	122,191	0.09
30	128,027,092	8,923	0.007	185,977	0.15
4	209,541,571	18,395	0.009	178,545	0.09
2	187,411,097	19,117	0.010	213,670	0.11
25	168,991,246	20,841	0.012	232,759	0.14
16	336,478,730	70,182	0.021	752,809	0.22
3	275,262,890	27,028	0.010	291,834	0.11
27	262,956,386	16,782	0.006	353,208	0.13
7	464,034,330	16,457	0.004	395,011	0.08
50	[1] 136,629,820	21,625	0.016	235,075	0.17
52	[1] 172,462,500	31,264	0.018	348,351	0.20
CBI	[2] 474,025,289	(8,794)	−0.002	640,133	0.14
Other [3]	276,596,538	23,894	0.009	350,782	0.13
Total industry	4,425,544,613	382,299	0.009	5,812,515	0.13

[1] The estimated value of production for this firm is based strictly on their production of coke. No information is available on the rest of their production line. Thus, the value of production is likely underestimated and the impacts on these facilities overestimated.
[2] Information for CBI facilities is aggregated to protect the confidentiality of each individual facility.
[3] There are two active coking facilities for which no production or waste generation data are available. The average values for all other coking facilities are used as proxies for these two facilities, so that industry impacts are not underestimated. Thus, the average value of production is assumed for each of these facilities, as is the average incremental annualized compliance costs for both the least costly options and the most costly options.
Source: DPRA Incorporated.

2. Tar Refining Industry

There are 14 active tar refining facilities. Of these 14 facilities, three facilities do not generate K147 and K148. In addition, for three of the facilities no production or waste generation data are available. Incremental compliance costs were estimated for the eight active tar refining facilities for which the Agency has data. However, the Agency conducted an economic impact analysis for 11 tar refining plants (the three facilities that do not generate K147 and K148 were omitted). Economic impact for the three facilities for which there are no data were estimated using the average production and incremental compliance costs for the eight active tar refining facilities. Table 10 summarizes the impacts by industry total for tar refining. Nearly all the tar refiners requested confidentiality on the data they submitted on the RCRA 3007 questionnaire; therefore, Table 10 presents only aggregated information.

Assuming facilities adopt the least costly management options, costs of compliance are insignificant for all facilities. For the least costly management options, the industry aggregate costs of compliance to value of production ratios is estimated to be too small to be measurable as a cost or savings (compared to the proposed rule industry aggregate of −0.04 percent). There are no adverse economic impacts associated with the least costly option.

Assuming the facilities adopt the most costly compliance option, cement kiln in all cases, there are no adverse economic impacts. For the most costly management option, the industry aggregate costs of compliance to value

of production ratios is estimated at 0.26 percent (compared to the proposed rule industry aggregate of 0.97 percent). Under the proposed rule, five tar refining facilities were adversely affected, with costs to sales ratios exceeding one percent.

TABLE 10.— SUMMARY OF TAR REFINING INDUSTRY EFFECTS FOLLOWING COMPLIANCE WITH PROPOSED HAZARDOUS WASTE LISTINGS (K 147 AND K 148)

Facility name [1]	Estimated value of production	Least costly option [2]		Most costly option [3]	
		Incremental annualized compliance costs ($/yr)	Costs of compliance as a percent of value of production (%)	Incremental annualized compliance costs ($/yr)	Costs of compliance as a percent of value of production (%)
Aggregated facilities	$384,801,384	[4]0	0	1,011,248	0.26

[1] Because most tar refining facilities requested confidentiality, individual facility names are not shown. Rather, data from all facilities are presented in aggregate figures.
[2] Least costly option: No generation/circulation for tar storage tank residues (K147). Recycle to oven for still bottoms (K148).
[3] Most costly option: Cement kiln for both K147 and K148.
[4] Incremental annualized compliance costs were determined to be insignificant, either as a cost or a savings.
Source: Prepared for the U.S. EPA by DPRA Incorporated.

VIII. Regulatory Flexibility Analysis

Pursuant to the Regulatory Flexibility Act of 1980 (RFA), 5 U.S.C. 601 *et seq.*, whenever an agency is required to publish a notice of rulemaking for any proposed or final rule, it must prepare and make available for public comment a regulatory flexibility analysis that describes the effect of the rule on small entities (i.e., small businesses, small organizations, and small governmental jurisdictions). This analysis is unnecessary, however, if the agency's administrator certifies that the rule will not have a significant economic effect on a substantial number of small entities.

EPA has examined the rule's potential effects on small entities as required by the Regulatory Flexibility Act. I certify that today's proposed rule will not have a significant economic effect on a substantial number of small entities.

IX. Paperwork Reduction Act

This rule does not contain any new information collection requirements under RCRA that are subject to OMB review under the Paperwork Reduction Act of 1990, 44 U.S.C. 3501 *et seq.* Release reporting required as a result of proposing the listed wastes as hazardous substances under CERCLA and adjusting the reportable quantities (RQs) has been approved under the provisions of the Paperwork Reduction Act, 44 U.S.C. 3501 *et seq.*, and has been assigned OMB control number 2050–0046.

X. Compliance and Implementation

A. Section 3010 Notification

Generally, when new hazardous wastes are listed, all persons who generate, transport, treat, store, or dispose of the newly listed waste(s) are required to notify either EPA, or a State authorized by EPA to implement the hazardous waste program, of their activities pursuant to Section 3010 of RCRA. However, under the Solid Waste Disposal Amendments of 1980 (Pub. L. 96–482), EPA was given the option of waiving the notification requirements under Section 3010 of RCRA following revision of the Section 3001 regulations, at the discretion of the Administrator. EPA is proposed to waive this notification requirement for persons who handle wastes that are covered by today's rule and have already notified EPA that they manage other hazardous wastes and have received an EPA identification number. EPA is waiving the notification requirement because of the likelihood that persons managing today's newly listed wastes already are managing one or more hazardous wastes that generally are associated with the generation of K141–K145, K147, and K148 and have, therefore, previously notified EPA and received an EPA identification number. In the event that any person who generates, transports, treats, stores, or disposes these wastes has not previously notified and received an identification number, that person must obtain an identification number pursuant to 40 CFR 262.12 before that person can generate, transport, treat, store, or dispose of these wastes.

B. Compliance Dates for Facilities

Today's hazardous wastes listings are promulgated pursuant to HSWA. HSWA requirements are applicable in authorized States at the same time as in unauthorized States. Therefore, EPA will regulate the wastes listed today until States are authorized to regulate these wastes. The Agency will apply these Federal regulations to these wastes and to their management in both authorized and unauthorized States.

Newly regulated facilities (i.e., facilities at which the only hazardous wastes that are managed are today's newly listed wastes in units subject to permit requirements) must qualify for interim status within six months of publication of the rule in order to continue managing these wastes in such units. To retain interim status, a newly-regulated land disposal facility must, within eighteen months after publication of the rule, submit a part B permit application and certify that the facility is in compliance with all applicable ground-water monitoring and financial responsibility requirements (see RCRA section 3005(e)(3)).

Interim status facilities that manage the wastes listed today must file an amended part A permit application within six months of publication of today's rule (the effective date of the rule) if they are to continue managing these wastes in units that require a permit. The facilities must file the necessary amendments by the effective date of the rule, or they will not obtain interim status with respect to these wastes.

Currently permitted facilities that manage today's newly listed wastes must request permit modifications if they are to continue managing these wastes in units that require a permit. Since EPA will initially be responsible for processing these permit modifications, the Federal procedures for permit modifications to add newly listed or identified wastes will be followed. (See § 270.42(g).) This provision generally requires that a permitted facility that is "in existence"

for the newly listed or identified waste on the effective date of the waste listing must submit a Class 1 modification by that date. Essentially, this modification notifies the Agency and the public that the facility is handling the waste and identifies the units involved. By submitting this notice, the facility is temporarily allowed to continue management of the newly listed wastes until the Agency can make a final modification to the permit. Next, within 180 days of the effective date the permittees must submit a more detailed permit modification request (i.e., a Class 2 or 3 modification). This information will be used by the Agency to develop a final permit modification.

List of Subjects

40 CFR Part 261

Hazardous waste, Recycling, Reporting and recordkeeping requirements.

40 CFR Part 271

Administrative practice and procedure, Confidential business information, Hazardous materials transportation, Hazardous waste, Indians-lands, Intergovernmental relations, Penalties, Reporting and recordkeeping requirements, Water pollution control, Water supply.

40 CFR Part 302

Air pollution control, Chemicals, Hazardous substances, Hazardous materials, Hazardous wastes, Intergovernmental relations, Natural resources, Reporting and recordkeeping requirements, Superfund, Water pollution control, Water supply.

Dated: July 31, 1992.

William K. Reilly,

Administrator.

For the reasons set out in the preamble, chapter I of 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: 42 U.S.C. 6905, 6912(a), 6921, 6922, and 6938.

2. In § 261.4, paragraph (a)(10) is revised to read as follows:

§ 261.4 Exclusions.

(a) * * *

(10) EPA Hazardous Waste Nos. K060, K087, K141, K142, K143, K144, K145, K147, and K148, and any wastes from the coke by-products processes that are hazardous only because they exhibit the Toxicity Characteristic (TC) specified in section 261.24 of this part when, subsequent to generation, these materials are recycled to coke ovens, to the tar recovery process as a feedstock to produce coal tar, or mixed with coal tar prior to the tar's sale or refining. This exclusion is conditioned on there being no land disposal of the wastes from the point they are generated to the point they are recycled to coke ovens or tar recovery or refining processes, or mixed with coal tar.

* * * * *

3. Section 261.32 is amended by adding the following hazardous waste listings in alphanumeric order to the subgroup Coking to read as follows:

§ 261.32 Hazardous wastes from specific sources.

* * * * *

Industry and EPA hazardous waste No.	Hazardous waste	hazard code
	* * * * * * *	
Coking:		
	* * * * * * *	
K141	Process residues from the recovery of coal tar, including, but not limited to, collecting sump residues from the production of coke from coal or the recovery of coke by-products produced from coal. This listing does not include K087 (decanter tank tar sludges from coking operations).	(T)
K142	Tar storage tank residues from the production of coke from coal or from the recovery of coke by-products produced from coal	(T)
K143	Process residues from the recovery of light oil, including, but not limited to, those generated in stills, decanters, and wash oil recovery units from the recovery of coke by-products produced from coal.	(T)
K144	Wastewater sump residues from light oil refining, including, but not limited to, intercepting or contamination sump sludges from the recovery of coke by-products produced from coal.	(T)
K145	Residues from naphthalene collection and recovery operations from the recovery of coke by-products produced from coal	(T)
K147	Tar storage tank residues from coal tar refining	(T)
K148	Residues from coal tar distillation, including but not limited to, still bottoms	(T)

4. In part 261, Appendix VII is amended to add the following waste streams in alphanumeric order to read as follows:

APPENDIX VII—BASIS FOR LISTING HAZARDOUS WASTE

EPA hazardous waste No.	Hazardous constituents for which listed
	* * * * * * *
K141	Benzene, benz(a)anthracene, benzo(a)pyrene, benzo(b)fluoranthene, benzo(k)fluoranthene, dibenz(a,h)anthracene, indeno(1,2,3-cd)pyrene.
K142	Benzene, benz(a)anthracene, benzo(a)pyrene, benzo(b)fluoranthene, benzo(k)fluoranthene, dibenz(a,h)anthracene, indeno(1,2,3-cd)pyrene.
K143	Benzene, benz(a)anthracene, benzo(b)fluoranthene, benzo(k)fluoranthene.
K144	Benzene, benz(a)anthracene, benzo(a)pyrene, benzo(b)fluoranthene, benzo(k)fluoranthene, dibenz(a,h)anthracene.
K145	Benzene, benz(a)anthracene, benzo(a)pyrene, dibenz(a,h)anthrancene, naphthalene.
K147	Benzene, benz(a)anthracene, benzo(a)pyrene, benzo(b)fluoranthene, benzo(k)fluoranthene, dibenz(a,h)anthracene, indeno(1,2,3-cd)pyrene.
K148	Benz(a)anthracene, benzo(a)pyrene, benzo(b)fluoranthene, benzo(k)fluoranthene, dibenz(a,h)anthracene, indeno(1,2,3-cd)pyrene.

* * * * * * *

PART 271—REQUIREMENTS FOR AUTHORIZATION OF STATE HAZARDOUS WASTE PROGRAMS

1. The authority citation for Part 271 continues to read as follows:

Authority: 42 U.S.C. 6905, 6912(a), and 6926.

2. Section 271.1(j) is amended by adding the following entry to Table 1 in chronological order by date of publication:

§ 271.1 Purpose and scope.

* * * * * *

(j) * * *

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

Promulgation date	Title of regulation	Federal Register reference	Effective date
*	*	*	*
August 18, 1992.	The listing of wastes from the production, recovery, and refining of coke by-products produced from coal	[insert FR page numbers]	February 18, 1993.

* * * * * *

PART 302—DESIGNATION, REPORTABLE QUANTITIES, AND NOTIFICATION

1. The authority citation for part 302 continues to read as follows:

Authority: 42 U.S.C. 9602, 9603, and 9604; 33 U.S.C. 1321 and 1361.

2. Section 302.4 is amended by adding the waste streams K141 through K145, K147, and K148 to Table 302.4 in alphanumeric order. The appropriate footnotes to Table 302.4 are republished without change.

TABLE 302.4.—LIST OF HAZARDOUS SUBSTANCES AND REPORTABLE QUANTITIES

Hazardous substances	CASRN	Regulatory synonyms	Statutory			Final RQ	
			RQ	Code†	RCRA waste number	Category	Pounds (Kg)
*	*	*	*	*	*	*	*
K141			1*	4	K141	X	1 (0.454)
Process related from the recovery of coal tar, including, but not limited to, tar collecting sump residues from the production of coke by-products produced from coal. This listing does not include K087 (decanter tank tar sludge from coking operations.)							
K142			1*	4	K142	X	1 (0.454)
Tar storage tank residues from the production of coke from coal or from the recovery of coke by-products produced from coal.							
K143			1*	4	K143	X	1 (0.454)
Process residues from the recovery of light oil, including, but not limited to, those generated in stills, decanters, and wash oil recovery units from the recovery of coke by-products produced from coal.							
K144			1*	4	K144	X	1 (0.454)
Wastewater sump residues from light oil refining, including, but not limited to, intercepting or contamination sump sludges from the recovery of coke by-products produced from coal.							
K145			1*	4	K145	X	1 (0.454)
Residues from naphthalene collection and recovery operations from the recovery of coke by-products produced from coal.							
K147			1*	4	K147	X	1 (0.454)
Tar storage tank residues from coal tar refining.							
K148			1*	4	K148	X	1 (0.454)
Residues from coal tar distillation, including, but not limited to, still bottoms.							

†—indicates the statutory source as defined by 1, 2, 3, 4, or 5 below.
4—indicates that the statutory source for designation of this hazardous substance under CERCLA is RCRA Section 3001.
1*—indicates that the 1-pound RQ is a CERCLA statutory RQ.

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