

**ENVIRONMENTAL PROTECTION AGENCY****40 CFR Parts 261, 271, and 302**

[SWH-FRL-5150-3]

RIN 2050-AD59

**Hazardous Waste Management System; Carbamate Production Identification and Listing of Hazardous Waste; and CERCLA Hazardous Substance Designation and Reportable Quantities****AGENCY:** U.S. Environmental Protection Agency.**ACTION:** Final rule.

**SUMMARY:** The U.S. Environmental Protection Agency (EPA) is amending the regulations for hazardous waste management under the Resource Conservation and Recovery Act (RCRA) to reduce hazards to human health and the environment from the ongoing manufacture of carbamate chemicals, which are formulated for use as pesticides and in the production of synthetic rubber. EPA is listing as hazardous six wastes generated during the production of carbamate chemicals. EPA is providing an exemption from the definition of hazardous waste for certain wastes, if the generator demonstrates that hazardous air pollutants are not being discharged or volatilized during waste treatment. EPA is also exempting from the definition of hazardous wastes biological treatment sludges generated from the treatment of certain wastes provided the sludges do not display any of the characteristics of a hazardous waste (i.e., ignitability, corrosivity, reactivity, or toxicity). The Agency is also adding 58 specific chemicals to the list of commercial chemical products that are hazardous wastes when discarded and to the list of hazardous constituents upon which listing determinations are based. EPA is deferring action on 12 specific chemicals and 4 generic categories.

This action is taken under the authority of sections 3001(e)(2) and 3001(b)(1) of the Hazardous and Solid Waste Amendments of 1984 (HSWA), which direct EPA to make a hazardous waste listing determination for carbamate wastes. The effect of listing these wastes will be to subject them to regulation as hazardous wastes under subtitle C of RCRA; and the notification requirements of section 103 under the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA). EPA is not taking action at this time to adjust the one-pound

statutory reportable quantities (RQs) for these substances.

**EFFECTIVE DATE:** This final rule is effective August 9, 1995.

**ADDRESSES:** The official record of this rulemaking is identified by Docket Number F-95-CPLF-FFFFF and is located at the following address. EPA RCRA Docket Clerk Room 2616 (5305), U.S. Environmental Protection Agency, 401 M Street, SW., Washington, DC 20460.

The docket is open from 9 a.m. to 4 p.m., Monday through Friday, excluding Federal holidays. The public must make an appointment to review docket materials by calling (202) 260-9327. The public may copy 100 pages from the docket at no charge; additional copies are \$0.15 per page.

**FOR FURTHER INFORMATION CONTACT:** The RCRA/Superfund Hotline, toll-free, at (800) 424-9346 or at (703) 920-9810. The TDD Hotline number is (800) 553-7672 (toll-free) or (703) 486-3323 in the Washington, DC metropolitan area. For technical information on the RCRA hazardous waste listings, contact John Austin, Office of Solid Waste (5304), U.S. Environmental Protection Agency, 401 M Street, SW, Washington, DC, 20460, (202) 260-4789.

For technical information on the CERCLA aspects of this rule, contact: Ms. Gerain H. Perry, Response Standards and Criteria Branch, Emergency Response Division (5202G), U.S. Environmental Protection Agency, 401 M Street, SW, Washington, DC, 20460, (703) 603-8760.

**SUPPLEMENTARY INFORMATION:** The contents of the preamble to this final rule are listed in the following outline:

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**I. Legal Authority**

These regulations are being promulgated under the authority of Sections 2002(a) and 3001 (b) and (e)(1) of the Solid Waste Disposal Act, as amended, 42 U.S.C. 6912(a), and 6921 (b) and (e)(1) (commonly referred to as RCRA), and section 102(a) of the Comprehensive Environmental Response, Compensation, and Liability Act of 1980 (CERCLA), 42 U.S.C. 9602(a).

**II. Background****A. Introduction**

As part of its regulations implementing Section 3001(e) of the Resource Conservation and Recovery Act of 1976, as amended (RCRA), EPA published a list of hazardous wastes that includes hazardous wastes generated from specific sources. This list has been amended several times, and is published in 40 CFR 261.32. In this action, EPA is amending this section to

add six wastes generated during the production of carbamate chemicals. In addition, under the authority of section 3001 of RCRA, EPA maintains at 40 CFR 261.33 a list of commercial chemical products or manufacturing chemical intermediates that are hazardous wastes if they are discarded or intended to be discarded. In this action, the Agency is amending 40 CFR 261.33 to add 58 specific materials to this list.

All hazardous wastes listed under RCRA and codified in 40 CFR §§ 261.31 through 261.33, as well as any solid waste that exhibits one or more of the characteristics of a RCRA hazardous waste (as defined in 40 CFR Sections 261.21 through 261.24), are also hazardous substances under the Comprehensive Environmental Response, Compensation, and Liability Act of 1980 (CERCLA), as amended. See CERCLA Section 101(14)(C). CERCLA hazardous substances are listed in Table 302.4 at 40 CFR 302.4 along with their reportable quantities (RQs). Accordingly, the Agency is adding the newly identified wastes in its action as CERCLA hazardous substances in Table 302.4 of 40 CFR 302.4. EPA is not taking action at this time to adjust the one-pound statutory RQs for these substances.

### III. Summary of Proposal

#### A. Proposed New Hazardous Wastes

In the March 1, 1994 proposed rule (59 FR 9808) the Agency proposed to list as hazardous six wastes generated during the production of carbamates:

- K156—Organic waste (including heavy ends, still bottoms, light ends, spent solvents, filtrates, and decantates) from the production of carbamates and carbamoyl oximes.
- K157—Wastewaters (including scrubber waters, condenser waters, washwaters, and separation waters) from the production of carbamates and carbamoyl oximes.
- K158—Bag house dust, and filter/separation solids from the production of carbamates and carbamoyl oximes.
- K159—Organics from the treatment of thiocarbamate wastes.
- K160—Solids (including filter wastes, separation solids, and spent catalysts) from the production of thiocarbamates and solids from the treatment of thiocarbamate wastes.
- K161—Purification solids (including filtration, evaporation, and centrifugation solids), bag house dust, and floor sweepings from the production of dithiocarbamate acids and their salts. (This listing does not include K125 or K126.)

The Agency proposed adding K156, K157, K158, K159, K160, and K161 to 40 CFR 261.32 because the wastes satisfy the criteria in 40 CFR 261.11(a)(1–3) for listing hazardous wastes.

The Agency also proposed to add 70 substances and 4 generic classes of chemicals to 40 CFR 261.33. EPA maintains at 40 CFR 261.33 a list of discarded commercial chemical products, off specification species, container residues, and spill residues thereof, which are regulated as hazardous wastes. The Agency proposed to list 22 of the 70 substances as acutely hazardous under 40 CFR 261.33(e), because toxicological studies have found the substances to be fatal to humans in low doses or in the absence of data on human toxicity, it has been shown in animal studies to have an oral (rat) LD50 of less than 50 milligrams per kilogram, a dermal (rabbit) LD50 of less than 200 milligrams per kilogram, an inhalation (rat) LC50 of less than 2 mg/L, or is otherwise capable of causing or significantly contributing to serious illness (see 40 CFR 261.11(a)(2)). The remaining 48 substances and 4 generic classes of carbamate chemicals (i.e., carbamates, carbamoyl oximes, thiocarbamates, and dithiocarbamates) were proposed to be listed under 40 CFR 261.33(f) as toxic hazardous wastes pursuant to 40 CFR 261.11(a)(3). These substances were listed in Tables 5 and 6 of the proposed rule (59 FR 9812).

#### B. Determinations Not To List Certain Carbamate Wastes as Hazardous Waste

As a result of the Agency's studies, a number of generic groups of wastes produced from the manufacture of carbamates, carbamoyl oximes, thiocarbamates, and dithiocarbamates were not found by the Agency to require additional regulation as a listed hazardous waste under RCRA. The Agency proposed to not list as hazardous the following categories of wastes:

- Spent carbon and waste water treatment sludges from the production of carbamates and carbamoyl oximes
- Wastewaters from the production of thiocarbamates and treatment of wastes from thiocarbamate production
- Process Wastewater (including supernates, filtrates, and washwaters) from the production of dithiocarbamates
- Reactor vent scrubber water from the production of dithiocarbamates
- Organic wastes (including spent solvents, solvent rinses, process decantates, and still bottoms) from the production of dithiocarbamates

#### C. Exemptions

For wastewaters from the production of carbamate and carbamoyl oxime chemicals (Hazardous waste code K157), the Agency proposed to exempt from the definition of hazardous waste those wastewaters that do not exceed a total concentration of 5 parts per million by weight (ppmw) of formaldehyde, methyl chloride, methylene chloride, and triethylamine. Under § 261.3(a)(2)(iv), the new exemptions to the definition of hazardous wastes, the exemption was proposed to read as follows:

§ 261.3(a)(2)(iv) \* \* \*; or

(F) One or more of the following wastes listed in § 261.32—wastewaters from the production of carbamates and carbamoyl oximes (EPA Hazardous Waste No. K157)—Provided, that the maximum weekly usage of formaldehyde, methyl chloride, methylene chloride, and triethylamine (including all amounts that can not be demonstrated to be reacted in the process or is recovered, i.e., what is discharged or volatilized) divided by the average weekly flow of process wastewater prior to any dilutions into the headworks of the facility's wastewater treatment system does not exceed a total of 5 parts per million by weight.

The Agency also proposed to specifically exempt biological treatment sludges from the treatment of wastewaters from the production of carbamates and carbamoyl oximes from the definition of hazardous waste. Under § 261.3(c)(2)(ii), a new exemption to the definition of hazardous wastes is created for sludges from the biological treatment of these wastewaters. This new exemption was proposed to read as follows:

§ 261.3(c)(2)(ii) \* \* \*

(D) Biological treatment sludge from the treatment of one of the following wastes listed in § 261.32—wastewaters from the production of carbamates and carbamoyl oximes (EPA Hazardous Waste No. K157).

### IV. Changes to the Proposed Rule

#### A. Exemptions

The Agency is finalizing a regulatory strategy which allows for a concentration-based exemption from the K156 and K157 listings. In the March 1, 1994 proposed rule, a concentration-based exemption was specifically proposed only for K157. Using models to calculate the atmospheric concentrations of chemicals of concern resulting from the management of K157 and wastewaters derived from K156, the Agency found that for these wastewaters a total concentration of 5 parts per million by weight (ppmw) would be protective for wastewaters containing formaldehyde, methyl chloride,

methylene chloride, and triethylamine. Assuming further wastewater treatment as necessary before discharge, under the plausible mismanagement scenario of treatment in open tanks for K157 or wastewater derived from the treatment of K156, the Agency views this level as protective of human health and the environment. In addition, EPA notes that the 40 CFR Part 268 land disposal restrictions would not apply to wastes managed in tanks except to the extent the wastes were also managed in land-based units such as surface impoundments. Because the wastewaters from the treatment of K156 are similar to K157 wastes in composition and management, the Agency foresees no significant risks from the exemption of K156 wastes derived from K156 in the same manner as K157 and is finalizing a concentration-based exemption to the listing description of both K157 wastewaters, and wastewaters derived from the treatment of K156 organic wastes.

In response to comment, the Agency is modifying the exemption proposed to allow that portion of the chemicals of concern which is "destroyed through treatment" to be considered in the mass balance determination of exemption status. Under § 261.3(a)(2)(iv), new exemptions to the definition of hazardous wastes are created for these wastewaters. These new exemptions read (changes to proposal in **bold**):

§ 261.3(a)(2)(iv) \* \* \* ; or

(F) One or more of the following wastes listed in § 261.32—wastewaters from the production of carbamates and carbamoyl oximes (EPA Hazardous Waste No. K157)—Provided that the maximum weekly usage of formaldehyde, methyl chloride, methylene chloride, and triethylamine (including all amounts that can not be demonstrated to be reacted in the process, **destroyed through treatment**, or is recovered, i.e., what is discharged or volatilized) divided by the average weekly flow of process wastewater prior to any dilutions into the headworks of the facility's wastewater treatment system does not exceed a total of 5 parts per million by weight; or

(G) **Wastewaters derived from the treatment of one or more of the following wastes listed in § 261.32—organic waste (including heavy ends still bottoms, light ends, spent solvents, filtrates, and decantates) from the production of carbamates and carbamoyl oximes (EPA Hazardous Waste No. K156).—Provided, that the maximum concentration of formaldehyde, methyl chloride, methylene chloride, and triethylamine prior to any dilutions into the headworks of the facility's wastewater treatment system does not exceed a total of 5 milligrams per liter.**

Under these exemptions, wastes which are calculated to contain less

than a total concentration of 5 ppmwt for the sum of the four constituents of concern would not be hazardous wastes, and any sludges generated from further biological treatment would not be derived from hazardous wastes, assuming wastewaters are <5 ppmwt at the point of generation.

The Agency is not requiring that generators taking advantage of the K157 exemption actually monitor the concentration of the constituents of concern in untreated wastewater, but uses the same strategy used in other exemptions for wastewaters discharged into the headworks of a wastewater treatment system found at 40 CFR 261.3(a)(2)(4) (46 FR 56582, November 17, 1981). A generator must be able to demonstrate that the total amount of all constituents of concern that is discharged to the environment during the production week divided by the average weekly flow of the process unit discharge into the headworks of the final wastewater treatment step not exceed the standards.

This demonstration can be made through an audit of various records already maintained at most facilities, including invoices showing material purchases, lists including to whom and how much inventory was distributed and other, similar, operating records. A facility can exclude that portion of the constituents of concern not disposed to wastewaters. No portion of the material of concern which is volatilized may be excluded from the calculation. Under current regulations (40 CFR 262.11 and 268.7) generators are required to determine whether their wastes are hazardous. Facilities claiming the exemption would have to be able to demonstrate that they meet the exemption. Such information would be intended to verify compliance with this concentration standard. An EPA inspector would look to this information to verify the assessment made by the generator, and may employ direct analytical testing as further verification. If either measurement indicate a total concentration greater than 5 ppmwt for the sum of the concentrations of the four chemicals of concern, then the wastes is subject to regulation as K157 hazardous waste. In this manner, the Agency seeks to discourage and prevent air stripping or other technologies which would merely continue to volatilize these pollutants of concern.

Commenters argued and the Agency agrees that wastes derived from K156 are no longer hazardous wastes provided that the maximum concentration of formaldehyde, methyl chloride, methylene chloride, and triethylamine prior to any dilutions into

the headworks of the facility's wastewater treatment system does not exceed a total of 5 milligrams per liter. In the case of wastewaters derived from the treatment of K156 wastes, other wastes may be commingled for treatment. However, other hazardous wastes mixed with K156 or K157 wastes are not exempt. Records of incinerator feed rates and destruction efficiency can be used to support a facilities claim of exemption. A facility can demonstrate that it meets either of these exemptions only in part by direct effluent measurement at the headworks. In each case, the facility must also incorporate any emissions from the treatment system prior to the headworks in the overall determination of regulatory status.

The Agency is also expanding the proposed exemption of K157 wastewater treatment sludges to include sludges from the treatment of K156 wastes. The Agency is specifically exempting biological treatment sludges from the treatment of K156 and K157 wastes from the production of carbamates and carbamoyl oximes from the definition of hazardous waste, because it has characterized these sludges and found that they do not pose significant risks to human health or the environment in the advent of plausible mismanagement. Under § 263.3(c)(2)(ii), a new exemption to the definition of hazardous wastes is created for sludges from the biological treatment of these wastewaters. This new exemption would read (changes to proposal in **bold**):

§ 261.3(c)(2)(ii) \* \* \*

(D) Biological treatment sludge from the treatment of one of the following wastes listed in § 261.32—**organic waste (including heavy ends still bottoms, light ends, spent solvents, filtrates, and decantates) from the production of carbamates and carbamoyl oximes (EPA Hazardous Waste No. K156), and** wastewaters from the production of carbamates and carbamoyl oximes (EPA Hazardous Waste No. K157).

Without exemption, a large volume of previously disposed wastes and sludge currently collecting within the various treatment systems would require management as hazardous waste under the derived-from rule (40 CFR 261.3(c)(2)). However, in the case of the biological sludges from the treatment of carbamate and carbamoyl oxime wastewaters, the Agency could only identify risks resulting from the hazardous volatile air pollutants present in the wastewaters being treated. Neither these air pollutants nor other hazardous substances were found to be accumulating in the biological treatment

sludges studied by the Agency. Therefore, the Agency finds that these sludges do not meet the definition of hazardous waste, and is exempting these sludges derived from K156 and K157 wastes from the definition of hazardous wastes, provided the wastes are not otherwise characteristically hazardous. EPA believes that this exemption is particularly appropriate because of the small number of facilities in this industry and the Agency's thorough investigation of carbamate wastes.

#### B. Appendix VII and Appendix VIII

In the March 1, 1994 proposed rule, the Agency had proposed the listing of acetone, hexane, methanol, methyl isobutyl ketone, and xylene as part of the basis for listing of one or more hazardous wastes in part 261 appendix VII and as hazardous constituents for addition to part 261 appendix VIII. Because these constituents were not significant in the Agency's multipathway risk assessment, the Agency is not finalizing the addition of acetone, hexane, methanol, methyl isobutyl ketone, and xylene to part 261 appendix VII. Furthermore, because these constituents are no longer significant to the carbamate industry, and their addition to appendix VIII could have far reaching impact, the Agency is also not adding these solvents to appendix VIII.

In reassessing the basis for listing, the Agency discovered that although formaldehyde in K156 wastes had demonstrated significant risks via the direct inhalation pathway (59 FR 9827)

it was inadvertently omitted from the appendix VII basis of listing in the **Federal Register** notice for the proposed rule. The presence and risks attributed to formaldehyde in K156 waste are clearly documented in the proposal. The Agency has corrected this omission and added formaldehyde to the appendix VII basis for listing of K156. The Agency is also correcting the inadvertent omission of antimony and arsenic to the appendix VII basis of listing for K161 (see 59 FR 9830 and 9835).

Commenters also brought to the Agency's attention, that Agency had not listed the generic listings of carbamates, carbamoyl oximes, thiocarbamates, or dithiocarbamates, N.O.S. to appendix VIII. Based on either direct toxicological studies or the extrapolation of existing studies to the chemical group, the Agency finds each member of these groups may exhibit toxicological properties or degrade to other known toxic substances. As stated previously, the Agency is deferring the addition of the generic U360 through U363 listings until comment is taken of options to narrow their scope. This inadvertent omission of addition of these categories to appendix VIII will be corrected in the future rulemaking. Therefore, the Agency has not finalized the addition of these generic descriptions to appendix VII.

#### C. Listing of Commercial Chemical Products

The March 1, 1994 notice (59 FR 9808) proposed the addition of 22 substances to 40 CFR 261.33(e). This final action adds 18 of the 22 substances

to the list of acutely hazardous wastes. After evaluation of comments received, four substances (bendiocarb, thiophanate-methyl, thiodicarb, and propoxur), proposed for addition to 40 CFR 261.33(e) as acutely hazardous, are instead being added to 40 CFR 261.33(f) as toxic wastes when discarded. In each case, the Agency found that these four substances did not meet the § 261.11(a)(2) criteria for listing in § 261.33(e).

In the case of propoxur, the Agency has examined the more current inhalation studies provided, as well as additional studies performed on propoxur concentrates, and finds that these more recent studies indicate a 1-hour inhalation LC50 near, but greater than, 2 mg/L. The Agency was unable to document the quality of the prior study or all study protocols. Therefore, the EPA is finalizing the listing of propoxur as a U-waste, rather than as a "P" list waste, and designating propoxur as U411.

In the case of bendiocarb, thiophanate-methyl, and thiodicarb, it was noted that the Agency had based its decision on 4-hour exposure studies rather than 1-hour exposure studies consistent with the toxicological criteria of 40 CFR 261.11(a)(2). The Agency has reevaluated each of the compounds LC50 (1-hour) inhalation toxicity and based on these and the other toxicological results presented in the proposal is finalizing these three substances as toxic rather than acute hazardous wastes.

TABLE 1.—LIST OF PROPOSED ACUTE HAZARDOUS WASTES BEING ADDED AS TOXIC HAZARDOUS WASTES

Hazardous waste No.	Toxic hazardous wastes—CAS name (common name in parentheses)	CAS No.
U278 .....	1,3-Benzodioxol-4-ol, 2,2-dimethyl-, methyl carbamate (Bendiocarb) .....	22781-23-3
U409 .....	Carbamic acid, [1,2-phenylenebis(iminocarbonothioyl)]bis-, dimethyl ester (Thiophanate-methyl) .....	23564-05-8
U410 .....	Ethanimidothioic acid, N,N'-[thiobis[(methylimino)carbonyloxy]]bis-, dimethyl ester (Thiodicarb) .....	59669-26-0
U411 .....	Phenol, 2-(1-methylethoxy)-, methylcarbamate (Propoxur) .....	114-26-1

The Agency believes that as proposed the generic listing descriptions may be overly broad. Therefore, the Agency is not finalizing at this time the four proposed generic U listings (U360 through U363). With regard to the generic listings, the Agency believes that each generic group exhibits significant toxicological properties either directly from the chemicals themselves or their potential degradation products and that the range of variability in these effects in each case may pose risks to human health and the environment. As a result, the

Agency is not finalizing the generic U listings (U360 through U363) at this time, and will take comment at a future date on options to narrow the scope of the U360—U363 listings.

The Agency also evaluated the toxicological data for each waste proposed for addition to 40 CFR § 261.33(f). After review of the available toxicological data, 12 compounds were not considered to have adequate toxicological data or predicted toxicity values in the record to finalize these listings at this time. The Agency is deferring action on these 12 substances.

The Agency has performed a more rigorous quantitative structure activity relationship analysis (QSAR) to predict the aquatic toxicity of each of the 12 deferred chemicals. The results of the QSAR analysis supports the Agency's conclusion that carbamates, carbamoyl oximes, thiocarbamates, and dithiocarbamates are highly toxic to aquatic species. The results of these studies are presented in Table 2 and included in the Docket (see ADDRESSES). The Agency will present these studies and the methodology used for public

comment during a planned reproposal of the 12 deferred chemicals.

TABLE 2.—QSAR RESULTS FOR DEFERRED DISCARDED CHEMICAL PRODUCTS

Waste code	Toxic hazardous wastes CAS name (common name in parentheses)	CAS No.	Fish 96-h LD50 mg/L	Daphnid 48-h LC50 mg/L	Fish chronic value (ChV) mg/L	Daphnid chronic value (ChV) mg/L
U368 .....	Antimony tris (dipentylcarbamodithioato-S,S')- (Antimony trisdipentylthiocarbamate).	15890-25-2	0.09 .....	0.35 .....	0.004	0.01
U369 .....	Antimony, tris[bis(2-ethylhexyl)carbamodithioato-S,S']-, (Antimony tris(2-ethylhexyl)dithiocarbamate).	15991-76-1	.....	.....	0.001	0.003
U370 .....	Bismuth, tris(dimethylcarbamodithioato-S,S')-, (Bismuth tris(dimethylthiocarbamate)).	21260-46-8	1.8 .....	0.63 .....	0.03	0.06
U371 .....	Carbamic acid, [(dimethylamino)iminomethyl] methyl, ethyl ester monohydrochloride (Hexazinone intermediate).	65086-85-3	190.0 .....	30.0 .....	20.0	3.0
U374 .....	Carbamic acid, [[3-[(dimethylamino) carbonyl]-2-pyridinyl]sulfonyl]-phenyl ester (U9069).	112006-94-7	870.0 .....	1000.0 .....	90.0	100.0
U380 .....	Carbamodithioic acid, dibutyl-, methylene ester .....	10254-57-6	.....	.....	0.01	0.06
U388 .....	Carbamothioic acid, (1,2-dimethylpropyl) ethyl-, S-(phenylmethyl) ester (Esprocarb).	85785-20-2	3.9 .....	3.9 .....	0.40	0.40
U397 .....	Lead, bis(dipentylcarbamodithioato-S,S')- (Lead, bis(dipentylthiocarbamate)).	36501-84-5	0.07 .....	0.29 .....	0.003	0.008
U398 .....	Molybdenum, bis(dibutylcarbamothioato)- di-.mu.-oxodioxodi-, sulfurized.	68412-26-0	4.0 .....	1.7 .....	0.20	0.25
U399 .....	Nickel, bis(dibutylcarbamodithioato-S,S')- (Nickel dibutylthiocarbamate).	13927-77-0	0.12 .....	0.26 .....	0.004	0.01
U405 .....	Zinc, bis[bis (phenylmethyl) carbamodithioato-S,S']- (Zinc dibenzylthiocarbamate).	14726-36-4	0.10 .....	0.30 .....	0.004	0.01
U406 .....	Zinc, bis(dibutylcarbamodithioato-S,S')- (Butyl Ziram) .....	136-23-2	0.12 .....	0.26 .....	0.004	0.01
			0.46—Carp 28-d TSCA§ 8E 8379	0.74— daphnid 48-h TSCA§ 8E 9739		

## V. Response to Comments

The Agency is responding in this preamble to the most significant comments received in response to both the notice of March 1, 1994 (59 FR 9808) and the single comment received on carbamates that were part of the "Michigan List" proposal<sup>1</sup> (49 FR 49784, December 21, 1984).

Other comments received by the Agency are addressed in the Response to Comments Background Document that is available in the docket associated with this rulemaking.

### A. Scope of Listing

#### 1. Definition of Carbamates

Many commenters were confused by the scope of the listings and found it difficult to determine whether their production processes and discarded products were in the scope of wastes included in the listings. Many

commenters believed that the definition of a carbamates was too vague and that any number of compounds could be considered carbamates. Commenters requested that EPA specifically define each of the four generic classes of carbamate compounds (carbamates, carbamoyl oximes, thiocarbamates, and dithiocarbamates) along with the scientific rationale for each definition and to footnote the regulation with those definitions.

In the March 1, 1994, proposal (59 FR 9808), the Agency included the definition of carbamate in the engineering background document (F-94-CPLF-S0001). In response to comments that the categories are not sufficiently defined, EPA is providing additional clarification of the chemical characteristics of each of the specific groups listed above. A discussion of the term carbamate follows.

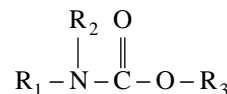
#### Chemical Definitions

Carbamates are salts or esters of carbamic acid. Today's regulations impact the production of chemicals of

four distinct functionalities: carbamates, carbamoyl oximes, thiocarbamates, and dithiocarbamates. The production of chemicals in these four groups, comprise the "carbamate industry" studied by EPA in this rulemaking proceeding.

#### Carbamates

A carbamic acid ester is a compound that has the following structure:



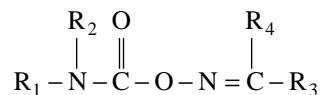
Where R<sub>1</sub> and R<sub>2</sub> can be identified as a hydrogen atom or any organic group beginning with a carbon sequence, and R<sub>3</sub> must be an organic group beginning with a carbon atom. The substitution of a metal cation at the R<sub>3</sub> position will result in a carbamate salt. Polyurethanes (i.e., polymers consisting of linked carbamate esters) are not within the scope of this rulemaking. Polyurethanes are large molecular structures which are unlikely to be bioavailable and which do not exhibit the toxicological

<sup>1</sup> In response to a petition for rulemaking filed by the State of Michigan, the EPA proposed to add 109 chemicals to the list of commercial chemical products that are hazardous when discarded.

properties of unlinked carbamate esters. For the purpose of this rulemaking, all salts or esters of carbamic acids with molecular weight less than 1000 daltons and/or Log octanol/water partition coefficient values of less than 8 are included.

#### Carbamoyl Oximes

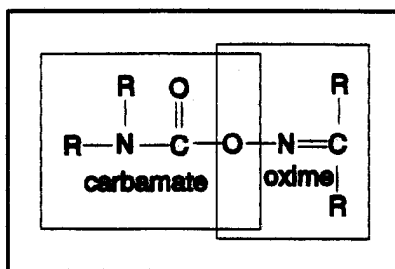
A carbamoyl oxime has the following chemical structure:



Carbamoyl oximes are a combination of the carbamate functionality and the

oxime functionality. Oximes are characterized by the structure  $\text{RO-N=C-R}_1, \text{R}_2$  where  $\text{R}_1$  and  $\text{R}_2$  can be a hydrogen or any organic group beginning with a carbon atom. The oxygen atom of the carbamate structure is used as a bonding point between the carbamate and oxime groups as shown in the following diagram:

BILLING CODE 6560-50-P



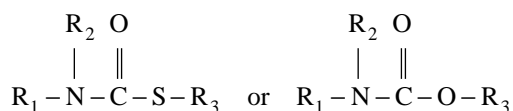
BILLING CODE 6560-50-C

For the purpose of this rulemaking, all salts or esters of carbamoyl oximes with molecular weight less than 1000 daltons and/or Log octanol/water partition

coefficient values of less than 8 are included.

#### Thiocarbamates

Thiocarbamates may be produced from the reaction of a carbamoyl



chloride with a mercaptan and differ from carbamates by the substitution of either oxygen atom with a sulfur atom as shown in the following diagram:

For the purpose of this rulemaking, all salts or esters of thiocarbamic acids with molecular weight less than 1000 daltons and/or Log octanol/water partition coefficient values of less than 8 are included.

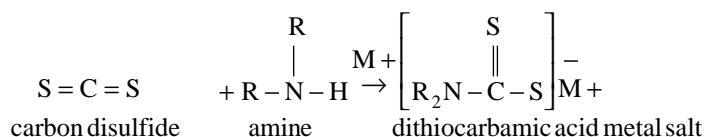
#### Dithiocarbamates

The dithiocarbamate differ from carbamates in that each oxygen atom of

the  $\text{C(=O)O}$  moiety is replaced with sulfur atoms. Dithiocarbamate esters have the following generic structure:



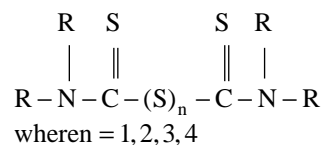
Dithiocarbamic acid is commercially important but is very unstable. As a result, it is often isolated as a metal salt. Usually, one or more hydrogen atoms on the amine function are replaced by an organic group. The following figure shows a typical reaction to produce a dithiocarbamic acid salt:



For the purpose of this rulemaking, all salts or esters of dithiocarbamic acids with molecular weight less than 1000 daltons and/or Log octanol/water partition coefficient values of less than 8 are included.

Thiocarbamoylsulfenamides which are derivatives of dithiocarbamic acids are not subject to this rulemaking.

Both alkyl and ethylene dithiocarbamates can form salts with metal ions and both can be oxidized to the corresponding thiuram sulfides (bis(aminothiocarbonyl)sulfides). Mono, di, tri and tetra sulfides are known and are included in this rulemaking. Thiuram sulfides have the following generic structure:



These sulfides are the linkage of two dithiocarbamic acids and are classed as dialkyldithiocarbamates in this rule, because thiuram sulfides are known to

decompose to carbon disulfide, dialkylamine, and dialkyldithiocarbamate.

## 2. Listing Obligations

Commenters also took issue with the inclusion of all the four chemical types of carbamates under the scope of the statutory obligation of HSWA and that of the proposed consent decree in *EDF v. Browner* (Civ.No. 89-0598, District of Columbia Circuit).<sup>2</sup> Specifically commenters believed that thiocarbamates and dithiocarbamates should not be included with carbamates and that the listing determination should have been limited to the specific compounds identified in the proposed consent decree. Several commenters believe EPA is obligated only to make hazardous waste listing determinations for production wastes from those specific dithiocarbamates, thiram, ziram and ferbam, listed in the proposed consent decree. Other commenters believe that the scope of the listings should be limited to pesticide products.

Sections 3001(e) and 3001(b) give the Agency the authority to list any waste as hazardous provided it satisfies 40 CFR 261.11. Furthermore, Section 3001(e)(2) of RCRA as amended mandates that the Agency make a determination whether or not to list as hazardous wastes from the manufacture of carbamates. Since the statute gives no further definition of carbamates, it is left to the Agency to determine the scope of the wastes subject to the mandate. The Agency believes that the mandate was to make hazardous waste listing determinations for wastes generated from the manufacture of carbamates. Neither the congressional mandate nor the EDF consent decree limited the Agency's authority to consider the range of wastes subject to this rulemaking.

One commenter suggested that EPA limit the scope of the listings to wastes from the manufacture of pesticide products. The Agency disagrees with the commenter. The Agency's industry study focused on the four distinct groups of chemicals. This study was designed to evaluate the wastes from the production of these chemicals and the potential of the products to pose a hazard to human health or the environment when discarded. Thus, the end use of the product was not considered to be relevant, only the

wastes. For dithiocarbamates which are used as both pesticides and rubber processing chemicals, the Agency found that the processes used, the wastes generated, the management practices, and the mismanagement scenarios were similar regardless of the end use. The Agency thus feels that regulating wastes from the production of dithiocarbamates without regard to end use is appropriate. For P and U listings, the Agency considered the toxicity of the material. The Agency feels that the end use is not an appropriate consideration because these listings regulate the disposal of the chemical as a waste.

## 3. Specific Substances

Commenters requested specific guidance in determining whether a given product fell within the scope of the listing. Commenters noted that the chemical definition of carbamate includes all salts and esters of carbamic acid. As such, commenters stated that carbamates could be viewed to include such substances as ammonium carbamate (a carbamic acid salt) and polyurethanes (polymers of linked carbamate ester structures). In order to narrow the scope of the proposed listing to the particular carbamate structures studied, it was suggested the Agency either list specific products to which the listing would apply, or restrict the listing applicable to pesticide products.

In response, the Agency believes the toxicity of carbamates, carbamoyl oximes, thiocarbamates, and dithiocarbamates to be a function of the bioavailability and reactivity of the chemicals as a waste, and therefore product use should not be a limiting factor, as bioavailable and reactive carbamates used for industrial purposes other than pesticides are assumed to have the potential to exhibit toxicity. With regard to the specific chemicals mentioned above, polyurethanes are large biologically unavailable molecules not within the scope of this rulemaking. Isotoic anhydride contains a -N-(C=O)-O- sequence, but chemically the substance is an acid anhydride and is not within the scope of this rulemaking. Furthermore, carbamates that are not isolated during production (i.e., transient intermediates and not removed from a process) are not included in the scope of the listing. Processes which include the brief formation of a carbamate intermediate which is not separated from the process or transported to another facility or process train and is converted to a non-carbamate is not included in the scope of the listing.

In the case of ammonium carbamate, the material is sold or transferred as a

product for use in the production of urea. The Agency believes that wastewaters from the production of ammonium carbamate fall under the K157 listing unless they meet the specified exemption. The Agency also notes that ammonium carbamate is currently regulated as a CERCLA hazardous substance with a final reportable quantity (RQ) of 5000 pounds.

## 4. Definition of Production

Several commenters stated that the definition of production should be clarified to limit the rule to the chemical synthesis of a carbamate, carbamoyl oxime, thiocarbamate or dithiocarbamate as an isolated product and propose a definition that does not include operations which isolate non-carbamate product for which there is otherwise a commercial market. Several commenters also wanted clarification on whether wastes from use or formulation were included in the scope of the proposed listings.

In studying the carbamate manufacturing industry, the Agency analyzed current carbamate manufacturing processes. In order to focus the study, the Agency determined the raw materials, processes and reactions that were unique to the carbamate manufacturing industry. The Agency concludes that carbamate production begins with the synthesis of non-carbamate intermediates, chemicals which have no other use except for the production of a carbamate product or carbamate intermediate, and includes all subsequent processes involved with the production of the respective carbamate. Therefore, wastes from chemical processes which produce non-carbamate basic or specialty chemicals, which have multiple uses, are not subject to the K156-K161 hazardous waste listings. For example, wastes from the production of phosgene or methyl isocyanate which are used in numerous chemical production activities would not be included in the scope of the listing. In the case of non-carbamate intermediates, which have no other use but the production of carbamate intermediates or final products, wastes from the production of such intermediates would be subject to the listing. Such wastes are properly classified as carbamate production wastes and within the scope of RCRA § 3001(e)(3), regardless of whether or not the production occurred at the ultimate site of manufacture of the carbamate chemical. Thus, wastes from the production of bendiocarb phenol, A-2213 (intermediate in oxamyl production), and carbofuran phenol, all

<sup>2</sup>The Environmental Defence Fund (EDF) sued the Agency for *inter alia*, failing to meet the statutory deadlines of section 3001(e)(2) for making a hazardous waste listing determination for carbamates. The resulting consent decree (entered December 9, 1994) establishes a number of deadlines, including a January 31, 1995, deadline for this action.

of which are solely used for the production of carbamates, are within the scope of the listing.

Wastes from the use of carbamate products are not generated from the production of carbamates and, therefore, are not within the scope of the proposed listings. Also, wastewaters from the formulation of carbamate products into consumer products (i.e., the production of end use pesticide products) are not subject of the K156-K161 listings. The K listings regulate only wastes from the manufacture of the chemical ingredients.

#### 5. Requests for Additions to the Listings

One commenter believed that the following wastes which EPA proposed not be listed should in fact be listed as hazardous:

*Wastewater treatment sludges.* The commenter believed that the wastewater treatment sludges from the production of carbamate and carbamoyl oximes contain high contaminant concentrations that warrant regulation. Specifically the commenter believed that concentrations of methylamine, trimethylamine and bis(2-ethylhexyl)phthalate, naphthalene, and 4-methylphenol were sufficiently high to warrant regulation of the sludges. The commenter believed that the risk modeling was flawed in that its exposure pathway assumptions understated the risks in the groundwater pathway and in the modeling techniques used.

*Spent carbon.* The commenter believes that chloroform is not the only constituent of concern in the spent carbons from the production of carbamates and states that the one sample taken by the Agency contained significant concentrations of methylene chloride, ethyl benzene and carbofuran. The commenter also believes that they should be listed because the listing criteria require EPA to list a waste as hazardous if it routinely exhibits a hazardous waste characteristic.

*Wastewaters.* The commenter believes that the Agency only considered mismanagement in tanks to result in only an air emission exposure pathway. The commenter believed that the Agency ignored spills or releases from tanks to surface waters or groundwater, and did not consider impacts to birds and other wildlife on direct contact with the wastewater, did not establish margins of safety to take into account lack of inhalation health-based standards, or take into account multiple sources of contaminants at carbamate facilities. They also believe that the surface impoundment should be considered a plausible management

scenario because they are used at some carbamate facilities, and may be used in the future at new facilities. As well they believe that wastewaters from the production of thiocarbamates contain EPTC (Eptam) at greater than 100 times the health based level. They also state that process wastewaters from the production of dithiocarbamates contain levels of carbon disulfide that exceed applicable health standards and that scrubber waters from the production of dithiocarbamates contain piperidine at significant concentrations.

*Organic Wastes from Dithiocarbamate Production.* The commenter disputes that fact that all of the organic wastes from Dithiocarbamate production are adequately managed as hazardous, because the F003 listing is not based on toxicity. The commenter maintains that these wastes should be listed as hazardous.

The Agency disagrees with the commenter on each of the points raised. For wastewater treatment sludges, spent carbons, thiocarbamate and dithiocarbamate wastewaters, and dithiocarbamate organic wastes the Agency did not project significant human health or environmental risks as currently managed. EPA notes that the commenter did not provide accompanying exposure assessment and risk levels in their comment package. They merely state that high concentrations warrant regulation.

For wastewater treatment sludges, the Agency considered as plausible mismanagement the current management practices of management in tanks and subsequent disposal in landfills. No significant risks were attributable to these management scenarios. In the assessment of landfill management, model leachate concentrations were matched to analytical TCLP leachate concentrations. It is reasonable to calibrate model outputs to experimental measurements of actual leaching potential obtained using the Agency's Toxicity Characteristic Leaching Procedure (TCLP, 40 CFR 262, Appendix II), because these experimental measurements may more accurately predict the waste's leaching potential. This procedure was designed to approximate the leaching of wastes co-disposed with municipal wastes, therefore the Agency has utilized these experimental measurements in lieu of model projections of the leachate composition.

Based on the Agency's assessment, spent carbons from carbamate production were found to be characteristically hazardous as D022 (chloroform) and the risk assessment

was dominated by risks attributed to chloroform. Absent the presence of chloroform, this waste would not satisfy the criteria for listing. While the commenter believes that all wastes which exhibit a characteristic should be listed, to implement hazardous waste management the Agency has put into place a two tiered system of characteristic and listed wastes. The U.S. Court of Appeals for the District of Columbia Circuit recently found in *Natural Resources Defense Council v. EPA*, 25 F.3d 1063 (District of Columbia Circuit 1994), that EPA is not compelled by its regulations to list a waste as hazardous because it exhibits a characteristic. The court found that EPA has the discretion to make a reasoned judgment as to under which system a waste should be managed. In this case, EPA has no information indicating that the current hazardous waste regulation of these spent carbons are inadequate. The Agency finds no need for redundant regulation, because risks are directly controlled by existing regulation.

In the case of wastewaters from thiocarbamate and dithiocarbamate production, the Agency determined that "plausible mismanagement" would be continued management in existing treatment systems comprised of tanks. The Agency does not view abandonment of existing treatment systems for unlined surface impoundments as "plausible." The Agency believes that since the carbamate manufacturers have already made a considerable investment in wastewater treatment systems using tanks, they will continue to use them. Furthermore, the Agency also believes permitting authorities are strongly biased against the permitting of new surface impoundments, due to the potential for such units to contaminate groundwater resources. This bias considerably lessens the likelihood of future surface impoundments.

In the current management scenario of tanks, the Agency does not project significant risks, and does not view the replacement of these tanks with other treatment units as plausible. The Agency was able to survey all U.S. producers of carbamates and could only identify the use of surface impoundments as polishing ponds after aggressive biological treatment in tanks. EPA's analysis indicated that the carbamate industry is unlikely to experience rapid and significant expansion and thus the development of significant new manufacturing sites and increased waste disposal is low. The EPA has, therefore, not listed these wastes as hazardous.



In response to the commenters' claims that the Agency ignored spills or leaks from tanks, failed to consider wildlife impacts, establish safety margins to account for the lack of inhalation health-based standards or consider the multiple sources of contaminants, the Agency disagrees with each of the commenter's assertions. When assessing management of waste in surface impoundments, EPA included spills and overflows in the calculations. These were not accidental or catastrophic releases, but rather based on probabilities of overflows and spills. In the case of tanks, accidental release scenarios or catastrophic release scenarios were not considered as a potential basis for listing. Wastewater treatment tanks are excluded from RCRA permitting provisions (40 CFR 264.1(g)(6) and 265.1(c)(10)), and the product storage tank are excluded under 40 CFR 261.4(c). Therefore, RCRA currently does not impose containment standards. However, the EPA Administrator has authority under RCRA section 7003 to bring suit on behalf of the United States as may be necessary to stop any imminent and substantial endangerment to health or the environment.

EPA performed a screening analysis of the potential impacts on terrestrial species. However, the Agency is still developing methodologies for characterizing risk to terrestrial wildlife and endangered species, and believes that the analysis presented in the risk background document (F-94-CPLP-S0003) needs to be further refined.

The Agency calculated risks for each exposure pathway of significance and considered the potential cumulative risks of multiple exposures to the same toxic contaminants via multiple pathways. The Agency acknowledges that there may be other exposures resulting from such pathways as facility air emissions or consumer product use, and has attempted to quantify only those risks associated with solid waste management.

The organic wastes from the production of dithiocarbamates were found by the Agency to be composed largely of solvents regulated by the F003 and F005 hazardous waste listings. While F003 is only listed because of the characteristic of flammability, the Agency acknowledges that additional toxicity concerns have since been reported in a number of scientific studies. However, these solvents were not found to present significant risks when managed in tanks or from residual incinerator emissions. The Agency concludes that the existing regulation of F003 wastes within the context of the

carbamate industry are protective of human health and the environment and that a separate listing designation would be redundant.

#### *B. Listing Exemptions*

##### 1. K157 Exemption

Many commenters supported the K157 exemption as proposed because they felt it provided operational flexibility, incentives for waste minimization and an opportunity to overcome some of the difficulties created by managing listed wastes under the current rules. Some commenters also wanted clarification on the point of application of the exemption (i.e., where in the treatment process the determination is made as to whether or not the exemption level is achieved). Several felt that the compliance point should be downstream of strippers and other treatment systems. Several commenters also requested that compliance with the exemption be demonstrated using analytical testing.

The Agency feels that the appropriate compliance point for application of the K157 exemption is the point of generation prior to aggregation with other carbamate and non-carbamate waste streams. The Agency feels that if the point of exemption were after aggregation of the listed wastes with other wastes it would provide some incentive to selectively mix wastewater streams to meet the exemption criteria. By applying the concentration limit at the point of generation, it is likely that only the wastewaters that meet the criteria will be exempted. In addition, if the compliance point is moved to the exit of steam strippers and incinerators, storage tank and other treatment unit emissions would no longer be considered in the exemption determination.

With regard to testing, the Agency does not preclude the direct measurement of the maximum concentration of formaldehyde, methyl chloride, methylene chloride, and triethylamine using quantitative analytical methods to demonstrate the exemption requirements are met. However, the Agency concludes that end-of-pipe analytical demonstrations alone do not prove compliance with the exemption criteria. All waste treatment emissions must be considered. For example, an end-of-pipe test prior to mixing with other sources provides a rapid determination of the concentration of constituents in the wastewater being disposed. However, this single point-of-compliance does not demonstrate that constituents were not evaporated to the environment. A mass

balance demonstration requires the facility to account for all of the materials introduced to the process showing amounts reacted, treated, recycled, and disposed. The accuracy of the mass balance approach is largely dependent on the process material records and accurate flow measurements during the production week. It is incumbent upon those claiming the exemption to provide documentation supporting the claim.

One commenter, however, believes that K157 waste should not be allowed an exemption because they believe the wastes exhibited one or more hazardous waste characteristics requiring listing, that air emission risk was well documented, and that because carbamate facilities are largely all RCRA permitted facilities, Agency resources would not be taxed by a change in the current exemption of wastewater treatment tanks from RCRA permitting and hence RCRA air emission controls.

The Agency disagrees. To implement hazardous waste management the Agency has put into place a two tiered system of characteristic and listed wastes. As discussed above, the D.C. Circuit Court recently found that EPA has the discretion to make a reasoned judgement as to under which system a waste should be managed. In the case of K157, the Agency believes that the same models used to calculate air emissions risks can also be used to determine a concentration at which this risk pathway has been abated such that unrestricted wastewater treatment could proceed. Thus, the Agency believes that the K157 exemption is warranted for those wastes that do not exceed the exemption limits. The Agency views any change to the current wastewater treatment unit exemption to be beyond the narrow scope of this hazardous waste listing determination. The Agency will further evaluate the regulatory status of wastewater treatment tanks in development of the Phase Four Land Disposal Restrictions Rule.

One commenter believes that EPA's method for determining the concentration of the constituents of concern may have ignored the benefit offered from various control devices for the volatile constituents. The commenter agrees that uncontrolled volatilized constituents should be included in the calculations; however, the commenter believes that the use of appropriate control devices for volatile constituents to capture or destroy the constituent should be part of the mass balance determination of regulatory status (i.e., whether or not the waste is exempt or not). As a result the commenter believes that the exemption should be amended to state that only

those hazardous constituents that cannot be demonstrated to be reacted in the process, recovered, or otherwise controlled should be included in the exemption calculation. The commenter also suggests that EPA consider credits or an exemption allowance for leak detection and repair programs which are currently in place and are part of the control process for carbamate production and K157 wastewaters.

The Agency agrees control devices for volatile constituents should be considered in the K157 wastewater exemption mass balance because there are valid control measures that prevent the release of the constituents to the environment, through recycling, or treatment. As a result the Agency is modifying the exemption to include the mass destroyed through treatment in the mass balance. The Agency believes that, while leak detection systems and repair programs are necessary to the safe and efficient management of wastes, these should be standard operating practices. Thus, the Agency believes that a credit or allowance for these management practices is not warranted.

One commenter believes that wastes are differentiated by treatability groups (wastewater or non-wastewater) while exemptions are by listing code. The commenter notes that wastes can change treatability group as a result of treatment, and requests clarification of EPA's intentions concerning K157 non-wastewaters generated through permissible switching of treatability groups when steam stripping generates wastewater bottoms (<1% total organic carbon, <1% total suspended solids) and non-wastewater overheads (>1% TOC). The commenter wishes to determine if K157 nonwastewaters derived as a result of steam stripping and then incinerated generating a K157 derived from wastewaters (scrubber waters) still meets the exemption.

Waste meeting the hazardous wastes listing descriptions of K156 and K157 are differentiated by their treatability group at the point of generation. Carbamate process wastes less than 1% total organic carbon (TOC) and less than 1% total suspended solids (TSS) are aqueous wastes designated as Hazardous Waste No. K157. Process wastes greater than 1% are designated as Hazardous Waste No. K156. Subsequent treatment does not change a waste's hazardous waste number. The commenter has described a case where K157 wastewaters are treated to separate an organic laden stream which is incinerated, and incinerator condensate returned for wastewater treatment. The Agency defines a hazardous wastes listing at the point of generation. In the

case where wastewaters are removed from the process and subsequently treated, all the streams are derived from K157, and therefore all the streams are potentially exempt if a mass balance shows that the maximum weekly usage of formaldehyde, methyl chloride, methylene chloride, and triethylamine (including all amounts that can not be demonstrated to be reacted in the process, destroyed through treatment, or is recovered, i.e., what is discharged or volatilized) divided by the average weekly flow of process wastewater prior to any dilutions does not exceed a total of 5 parts per million by weight. If the facility can demonstrate that the amount of these constituents discharged or volatilized is less than 5 ppm then the K157 waste is exempt.

## 2. K156 Exemption

Several commenters believe that the exemption outlined in the K157 exemption should be expanded to include organic wastes from the production of carbamates and carbamyl oximes (i.e. K156 wastes). As an option some commenters believe the same approach should be extended to other carbamate K-listed wastes (e.g., incinerator scrubber blowdown). Specifically, one commenter noted that K156 scrubber water and steam stripping bottoms generally no longer contain VOCs and the carbamate component has been treated. They therefore believe that the proposed exemption should be modified to include K156 wastes which contain <5 ppm of methyl chloride, formaldehyde, triethylamine, and/or methylene chloride) if the wastes are treated in biological treatment systems. This commenter believes that without the exemption, the mixture and derived-from rule will force manufacturers to collect incinerator scrubber waters or stripper bottoms derived from treatment of K156 wastes for off-site management or collect all K156 organic wastes for off-site management. The commenters also believe that the lack of an exemption for K156 non-wastewaters equivalent to that for K157 wastewaters would result in needless off-site shipments of wastes.

The Agency has considered the expansion of the exemptions for other wastes proposed for listing. For untreated K156 wastes the Agency does not believe that it is appropriate to provide an exemption similar to K157 wastes. K156 wastes typically contain high concentrations of organic solvents such as xylene, methanol, methyl isobutyl ketone, toluene, acetone, and triethylamine and significant concentrations of such compounds as

benzomyl, carbendazim, carbaryl, and carbofuran. The Agency used a multipathway risk assessment and found that the constituents found in these wastes presented a risk to human health and the environment if the waste is improperly managed. Thus, the Agency does not feel an exemption for untreated K156 wastes is warranted.

The Agency believes, however, that some K156 wastes deserve the same type of exemption as K157 wastewater. Wastes derived from the treatment of K156 wastes such as incinerator condensate waters and other dilute wastes present risks similar to those from K157 wastewaters. For example, a carbamate process unit may generate an organic stream (i.e., >1% TOC) that is identified as K156. This material then undergoes incineration or steam stripping generating a wastewater stream (e.g., scrubber blowdown) with <1 % TOC. This wastewater is very similar in constituent type and concentration as a K157 waste yet carries the K156 designation as a result of the derived-from rule (40 CFR 261.3(c)(2)).

Commenters noted that these derived from wastes are currently managed in the same treatment systems used for K157 wastes, and that these are the same treatment systems sampled and evaluated by the Agency during its multipathway risk assessment. Because wastewater "derived from" K156 wastes contain pollutant levels which would be safe to undergo biological treatment are currently managed with the K157 wastewaters the Agency studied, the Agency has considered the expansion of the wastewater exemption to include wastewaters derived from the treatment of K156. The risks of concern the Agency measured for these units were from the volatilization of waste contaminants. Since the K156 derived from wastewaters have such similar properties and constituent concentrations and continue to be treated in tanks, the Agency concludes that these derived-from wastes deserve to be provided the same regulatory coverage as K157 wastes. Furthermore, the Agency believes that the lack of a similar exemption for K156 may reduce the incentives for source reduction by facilities. Source reduction practices would result in the production of smaller volumes of more concentrated wastes and these wastes would likely be K156 rather than K157.

The Agency has therefore added a concentration-based exemption for wastes derived from K156 wastes. The exemption reads:

§ 261.4(a)(2)(iv) \* \* \*

(G) Wastewaters derived from the treatment of one or more of the following wastes listed in § 261.32—organic waste (including heavy ends still bottoms, light ends, spent solvents, filtrates, and decantates) from the production of carbamates and carbamoyl oximes (EPA Hazardous Waste No. K156).—Provided, that the maximum concentration of formaldehyde, methyl chloride, methylene chloride, and triethylamine prior to any dilutions into the headworks of the facility's wastewater treatment system does not exceed a total of 5 milligrams per liter.

Therefore, in order to be exempt, these K156 derived wastewaters would need to demonstrate that the emissions of formaldehyde, methyl chloride, methylene chloride, and triethylamine not exceed a total 5 ppm for environmental discharges and subsequent wastewater treatment. This exemption is different from the K157 exemption in that it is only for wastewaters (i.e., TSS<1% and TOC<1%) derived from the treatment of K156 and not for the generated K156 wastes themselves.

While in general commenters requested this extension of the exemption proposed for K157 wastes to also include similar wastewaters derived from the treatment of K156 wastes, one commenter did object to the proposed exemption, as noted above in section V.B.1. Because significant treatment will be necessary for these to meet the exemption criteria, and the Agency's sampling had included sludges derived from both K156 and K157 wastewaters, the Agency is confident that risks would not be increased by extending the exemption to wastes derived from K156 wastes and is finalizing the above exemption in this rulemaking.

### 3. Wastewater Treatment Sludge Exemption

One commenter felt that since K156 scrubber water and steam stripping bottoms no longer contain VOCs and the carbamate component has been treated, that the K156 hazardous waste code should not apply to downstream biological treatment system sludges. The commenter therefore believes that the proposed biological treatment sludge exemption should be modified to include K156 wastes which contain <5 ppm of methyl chloride, formaldehyde, triethylamine, and/or methylene chloride) if the wastes are treated in biological treatment systems. The commenter believes that without the exemption, the mixture and derived from rule will force manufacturers to collect incinerator scrubber waters or stripper bottoms derived from treatment of K156 wastes for off-site management

or collect all K156 organic wastes for off-site management.

The Agency agrees with the commenter and has reevaluated its decision to exempt wastewater treatment sludges. During the industry study the Agency sampled wastewater treatment sludges that were derived from the treatment of K157 wastes as well as sludges derived from K156 wastes. The Agency performed a multipathway risk assessment on the sludges using the collected data and determined that they did not meet the criteria for listing presented in 40 CFR 261.11. The Agency is therefore expanding the scope of the exemption to include K156 derived from wastewaters. The exemption reads:

§ 261.3(c)(2)(ii) \* \* \*

(D) Biological treatment sludge from the treatment of one of the following wastes listed in § 261.32—organic waste (including heavy ends still bottoms, light ends, spent solvents, filtrates, and decantates) from the production of carbamates and carbamoyl oximes (EPA Hazardous Waste No. K156), and wastewaters from the production of carbamates and carbamoyl oximes (EPA Hazardous Waste No. K157).

As noted in Section A.5 above, one commenter believed that wastewater treatment sludges contain high contaminant concentrations that warrant regulation. Specifically the commenter believed that concentrations of methylamine, trimethylamine and bis(2-ethylhexyl)phthalate, naphthalene, and 4-methylphenol were sufficiently high to warrant regulation of the sludges. Specifically, the commenter believed that total bis (2-ethylhexyl) phthalate was recorded in one sample as 22 mg/kg, compared to the health-based concentration of 0.006 mg/L; the samples contain 3,320 mg/L, and 4,600 mg/kg total methylamine, compared with aquatic LC50 concentration of 150 mg/L and the lethal dose for mice (subcutaneous) of 2,500 mg/kg; and one sample contained an estimated 15,000 mg/kg total trimethylamine. Concentrations of naphthalene and 4-methylphenol in the sludges also exceed health-based concentrations. The commenter also believed that the risk modeling was flawed in that its exposure pathway assumptions understated the risks in the groundwater pathway and in the modeling techniques used.

For wastewater treatment sludges, the referenced constituents while present, were not present in mobile forms above health-based levels or aquatic LC50. Specifically, methylamine was detected in RP-09 at 4.6 mg/kg and not 4600 mg/kg as the commenter noted. As well

trimethylamine was found at 15 mg/kg and not 15,000 mg/kg as reported by the commenter. While some constituents in the solid wastes exceeded the health-based numbers, the constituents were not found to leach from the matrices. Only one leachate sample had bis 2-(ethylhexyl)phthalate (DL-05 TCLP (2 times the HBL)) present at a concentration that exceeded the health based number.

The Agency used these concentrations in the multipathway risk assessment and considered as plausible mismanagement the current management pathways of management in tanks and subsequent disposal in landfills. No significant risks were attributed to these management scenarios. The Agency believes that the management scenarios used in the risk assessment were appropriate because the industry is currently managing the sludges in this manner. In the assessment of landfill management, model leachate concentrations were matched to analytical TCLP leachate concentrations. The Agency calibrated model outputs to experimental measurements of actual leaching potential, and believes that it has accurately assessed the leaching potential of this wastestream. As a result the Agency does not believe listing of the wastewater treatment sludges is warranted and that the exemptions provide for these sludges is appropriate.

### C. Basis for Listing and Decisions Not to List

One commenter believes that the K156 through K161 listings are based on mischaracterized waste streams. The commenter believes that in some cases identified constituents of concern come from non-carbamate processes and thus should not be used in evaluating the risk of carbamate waste streams. The commenter also believes that the Agency did not collect enough data to support this rulemaking and that EPA has based the proposed listing on constituents that are only proposed for addition to appendix VIII rather than those already on appendix VIII. Several commenters did not believe that the EPA demonstrated that the K156 through K161 wastes meet the listing criteria set out in 40 CFR 261.11. Commenters believe that the Agency misapplied the listing criteria by using inappropriate mismanagement scenarios to evaluate the hazards posed by the carbamate wastes. The commenters believed that the Agency should have used management scenarios which the waste would normally undergo. Specifically, the commenter believes that the Agency only used exposure

routes for pesticide use rather than routes for pesticide wastes.

In addition, several commenters believe that dithiocarbamates as a group and individual dithiocarbamates did not meet the listing criteria set out in 40 CFR 261.11. Specifically, several commenters felt the Agency has not demonstrated that dithiocarbamates meet the reactivity criteria of 40 CFR 261.23(a) (1), (2), (3), and (4) or the toxicity criteria of 40 CFR 262.11(a)(2).

The Agency believes that it has accurately characterized the waste streams generated by carbamate manufacturers. In some cases waste streams that resulted from the treatment of commingled streams from carbamate and non-carbamate streams were sampled and analyzed. This is because, at many facilities, carbamate manufacturing is only part of the production activities occurring. It is common (especially for wastewaters) at carbamate manufacturing facilities to commingle wastes prior to treatment and disposal. The Agency believes that when streams are commingled for the purpose of treating one with the other that it was appropriate to sample the commingled stream. For example, at Zeneca's Bucks, AL facility, the Agency analyzed several streams that result from the treatment of thiocarbamate wastes as well as other processes. These streams are derived from carbamate streams and it is appropriate to characterize these streams and consider them for listing as hazardous. Specifically, the benzene and toluene in the commingled streams from the non-carbamate processes at Zeneca are used to extract the thiocarbamates from the wastewater streams because thiocarbamates are extremely soluble in benzene and toluene. Thus, since the commingling of the waste streams also provides a treatment step for the thiocarbamate wastewaters, it was appropriate to include the commingled streams in the risk assessment and use this information during the listing determination. In addition, while some constituents of concern may not be from carbamate processes, these were never the sole driving force behind the listing decision. In the specific case of thiocarbamate wastes, high concentrations of thiocarbamate products are present and clearly pose the potential for damage to human health or the environment if not properly managed.

The Agency believes that it has collected sufficient information and data to support listing of the six K wastes. During the carbamate industry study, the Agency collected generation and management information from all

carbamate manufacturers identified in the United States during 1991 using a RCRA Section 3007 survey. To supplement the data and information collected in the survey, the Agency visited nine carbamate facilities and collected waste samples at eight of these facilities. These facilities are representative of the carbamate industry and produce 55 percent by weight of all carbamates manufactured in the U.S. These eight facilities represent products that make up over 89 percent of overall carbamate production. The Agency collected and analyzed approximately 60 samples from these facilities. These samples were supplemented by 26 samples collected from carbamate facilities by the Office of Water during the development of the effluent guidelines for pesticide manufacturers. The Agency believes that the 86 samples are representative of the wastes generated by carbamate manufacturers and that these analyses, in addition to the information provided in the RCRA Section 3007 surveys, provide sufficient data to support this rulemaking.

The Agency also believes that it is acceptable to propose both additions to appendix VIII and appendix VII at the same time. The Agency believes that it has the basis for proposing additions to appendix VIII based on the presence of the constituents in carbamate wastes and their toxicity. In addition, the Agency took comments on the proposed additions to appendix VIII. There is nothing that prohibits the simultaneous hazardous waste listing and appendix VIII addition, provided that the Agency solicits and responds to public comment on both actions. The Agency believes that listing the wastes and making the additions to appendix VIII simultaneously is an efficient system for developing the regulations and allows for public participation. Simultaneous hazardous waste listing and addition to appendix VIII is a long-standing practice of the Agency. In addition, the Agency notes that the following constituents which are part of the basis for these hazardous waste listings were on appendix VIII at the time this rule was proposed: benzene, chloroform, methyl ethyl ketone, methylene chloride, pyridine, carbon tetrachloride, formaldehyde, and methyl chloride.

The Agency also believes that it has demonstrated that the K156 through K161 wastes meet the listing criteria of 40 CFR 261.11. The Agency considered each of the criteria outlined and determined that these wastes are capable of posing a substantial threat to human health and the environment when improperly treated, stored, transported or disposed. The Agency

disagrees with the commenter with regard to the management scenarios used in the listing determinations. The mismanagement scenarios that were used in the evaluation of carbamate wastes were not hypothetical, but were based on actual waste management practices currently used by the industry. Because these practices are, in fact, engaged in by the industry they are plausible management scenarios for these wastes. The Agency did not rely on pesticide use exposure routes and specific damage incidents as the sole basis for listing. Specific damage incidents involving pesticides were used as supporting documentation that carbamates can have a significant environmental impact if improperly disposed.

EPA believes that dithiocarbamate wastes pose significant risks to human health and the environment, because these materials are bioavailable and degradable and have the potential to exhibit significant aquatic toxicity, reproductive and neurological effects, and have the potential once released in the environment to form among other degradation products, carbon disulfide (a potent reproductive and neurological toxicant).

These risks specifically meet EPA's listing criteria as described in the preamble to the dyes and pigments listing determination (59 FR 66072, December 22, 1994). With regard to the toxicity of the dithiocarbamates, the Agency believes that in addition to the toxic effects of intact dithiocarbamates, the formation of toxic decomposition products is a major concern for dithiocarbamates. Dithiocarbamates exhibit risks as a result of the parent compound, metal ion, and daughter products. As presented in the proposed rule, dithiocarbamates exhibit acute aquatic toxicity in a narrow range for those compounds with available data ( $LC_{50}$  of 0.049 to 2.9 mg/L). As a chemical class dithiocarbamates exhibit reactive properties (i.e., react in water under ambient environmental pH conditions to form sufficient toxic gas, fumes, or vapors to either create a toxic or irritating atmosphere or to impart toxicity to the aqueous media are reactive wastes subject to existing hazardous waste regulation as Hazardous Waste No. D003 (40 CFR 261.23(a)(4))). Dithiocarbamates react under acidic conditions to form carbon disulfide, which has potent reproductive effects. One commenter supplied confidential studies showing that under pH 2 conditions over eight hours less than one percent of the dithiocarbamate products tested decomposed. The Agency calculates

from this data that the concentration of carbon disulfide formed in a hypothetical leaching test would be toxic even when assuming a 100 fold dilution/attenuation factor. Record sampling during the industry study has also found decomposition products such as methylisothiocyanate and n-nitrosodimethylamine in the wastes sampled. Methylisothiocyanate is reactive and toxic, and n-nitrosodimethylamine is a known carcinogen. In addition, once released into the environment dithiocarbamate metal salts degrade or exchange metal ions, producing free metals ions. Finally, the ability to form other toxic substituents was documented during a spill of metam sodium (a dithiocarbamate) that had catastrophic environmental impacts on the surrounding environment along a 45-mile stretch of the Sacramento River and portions of Lake Shasta. As a result, EPA believes that regulation of dithiocarbamate wastes as hazardous wastes is necessary because of the reactivity and aquatic toxicity of this class of chemicals.

#### *D. Conflict With Other Regulatory Programs or Initiatives*

Several commenters believe that EPA should not proceed with the listing because these wastes are, or will be regulated under Clean Water Act (CWA), Clean Air Act (CAA) and other provisions of RCRA. Furthermore, the commenters believe EPA should not add additional wastes to the listings until the issues regarding the definition of solid wastes resulting from the courts decision invalidating the mixture and derived-from rules in Shell Oil decision (Shell Oil v. EPA, 950 F.2d 751, D.C. Cir. 1991) have been resolved. Specifically, the commenter believes that the listings should be deferred until the rule resulting from the work of the Definition of Solid Waste Task Force and the Hazardous Waste Identification Committee are finalized because these may profoundly impact the regulatory classification of wastes. Another commenter believes residues from the treatment of listed wastes should be provided a de minimis exit from RCRA Subtitle C.

The Agency noted in the proposal that significant regulatory gaps currently exist between RCRA regulation of air emissions from hazardous waste management and the CAA regulation. Although future regulations are planned in these areas, the coverage and scope of future regulations is uncertain and does not act to mitigate existing risks. The Agency has determined that risks posed by carbamate waste management

should be controlled through regulation under RCRA. Potential future regulation will be developed with consideration given to the then-existing regulatory scheme as well as the need to close any remaining regulatory gaps that are beyond the narrow scope of the carbamate listing determinations in this rulemaking. The Agency would also like to note that the HWIR rule is not designed to limit entry to the hazardous waste regulatory system but is a system where listed wastes may be able to be easily removed from the hazardous waste management system.

#### *E. Constituents of Concern for Appendix VII*

Some commenters believe that several constituents were included on appendix VII (i.e., the appendix that identifies the constituents of concern that are the basis for listing a waste) even though they were measured in the wastes at concentrations below health based levels in multipathway risk assessment. Commenters also believe that the format of listings is inconsistent with previous appendix VII listings. Specifically, the commenters believe that EPA has in the past listed only the metal or organic compounds directly related to the waste and none of the solvents which may be present. The commenters believe that appendix VII should only include the hazardous constituents that are specific carbamates, carbamoyl oximes, thiocarbamates and dithiocarbamates.

Wastes may be listed as hazardous if they contain toxic constituents identified in appendix VIII of 40 CFR part 261 and the Agency concludes, after considering eleven factors enumerated in section 261.11(a)(3), that the waste is capable of posing a substantial present or potential hazard to human health or the environment when improperly managed.

To determine whether a waste is hazardous for toxicity under 40 CFR 261.11(a)(3), EPA determines the presence of an appendix VIII constituent, regardless of concentration. EPA then examines all the health effects data on that constituent, along with other factors (generally related to exposure) required to be considered under 40 CFR 261.11(a)(3). Concentration of the hazardous constituent is among those factors (40 CFR 261.11(a)(3)(ii)). Other factors include the plausible types of mismanagement scenarios to which the wastes could be subjected and the potential of the constituent or any toxic degradation product to migrate from waste into the environment under the improper management scenarios (40 CFR 261.11(a)(3)(iii) and (vii)). These

factors are evaluated to decide whether to list the waste as a hazardous waste.

After determining that a waste should be listed as hazardous, EPA would then list in appendix VII the constituents that led to that listing. The Agency has reassessed each of the constituents listed as a basis of listing and has limited the hazardous constituents for the basis of listing to those constituents which were found to present health based or environmental risks in the multipathway analysis, and to toxic products present at percent levels which are potentially hazardous to human health and the environment. Therefore, the Agency has removed acetone, hexane, methanol, methyl isobutyl ketone, and xylene from the appendix VII basis of listing, because these substances were not significant in the risk analysis. The Agency has also corrected the basis of listing for K156 to include formaldehyde and the basis of listing K161 to include antimony and arsenic, because these constituents were significant in the risk assessment.

The commenters also believe that the terms thiocarbamates, Not Otherwise Specified (N.O.S.) and dithiocarbamates, N.O.S. are overly broad, include a variety of compounds for which EPA has not established health or environmental hazards, are not hazardous constituents on appendix VIII and are not proposed for inclusion on appendix VIII. Therefore, the commenter concludes that generic categories are inappropriate for inclusion in appendix VII listings. The Agency has deferred action on these generic categories, and may further address the addition of the generic categories to appendix VIII in a future proposal.

#### *F. Constituents of Concern for Appendix VIII*

Several commenters believe that many of the additions to appendix VIII (i.e., the appendix that contains a list of hazardous constituents to be evaluated for listing determinations (see 40 CFR 261.11)) were inappropriate. One commenter believes that the rule adds constituents to appendix VIII based on presence of a constituent rather than its concentration. Many commenters believe that constituents of concern should be limited to constituents that are present at concentrations that threaten human health and the environment. A commenter believes that constituents can only be added to appendix VIII if they are toxic, carcinogenic, mutagenic, or teratogenic to humans and other life forms and that the Agency has added constituents with

no toxicological data or incomplete toxicological data.

Waste constituent concentrations are not a factor in the addition of toxic substances to appendix VIII. The criteria for additions to appendix VIII (40 CFR 261.11(a)(xi)) direct the Agency to add substances "shown in scientific studies to have toxic, carcinogenic, mutagenic or teratogenic effects on humans or other life forms." While the Agency has readily acknowledged some gaps in the available toxicity studies, the Agency need have but one scientific study meeting the § 261.11 criteria and in some cases developed empirical structural activity relationships (SAR) where direct toxicological testing was not available. Furthermore, the Agency views its SAR analysis as scientific studies for the purpose of adding substances to appendix VIII.

Nevertheless, the Agency has reviewed the available toxicity data for each of the additions to appendix VIII and concludes that for 12 substances the toxicity data in the record is inadequate for final action. Final action on these 12 substances is being deferred to allow notice and comment on additional quantitative structure activity relationships (QSAR), developed for these chemicals. EPA plans to repropose these substances at a future date. The results of these new studies are presented in section IV.C.

Several commenters stated that EPA should not propose constituents for addition to appendix VIII at the same time that it is listing them as the constituents of concern for a hazardous waste listing. EPA believes it is proper to consider the expansion of appendix VIII and additional hazardous waste listings together. Constituents are added to appendix VIII if they have been shown in scientific studies to have toxic, carcinogenic, mutagenic, or teratogenic effects on human or other life forms. The Agency feels that each of the constituents being added to appendix VIII meets at least one of these criteria. The Agency solicited and received comments on the proposed additions to appendix VIII, and after considering these comments has concluded that the additions being finalized are appropriate. There is no regulation or statute that prohibits the simultaneous hazardous waste listing and appendix VIII addition. The Agency believes that listing the wastes and making the additions to appendix VIII simultaneously is an efficient system for implementing the hazardous waste program that allows for meaningful public participation. Simultaneous listing and addition to appendix VIII is a long-standing practice of the Agency.

Several commenters believed the Agency proposed various additions to appendix VIII (including acetone, hexane, methanol, methyl isobutyl ketone, and xylene) without considering the far reaching impact on numerous exempt waste streams. Commenters felt that inclusion of these solvents on appendix VIII may affect the regulatory status of wastes at facilities not involved in production of carbamates because these solvents are so widely used throughout the chemical manufacturing industry and believe that the Agency has not considered the wide ranging impact of this action. Commenters also felt that the addition of these solvents to appendix VIII based on their toxicity contradicts the original classification of these solvents as hazardous due solely to ignitability in the F003 listing. Commenters believe that adding the toxic label to these solvents causing them to be considered toxic in addition to ignitable will expand corrective action implementation and may expand state restrictions based on blanket application of appendix VIII.

With regard to the solvents acetone, hexane, methanol, methyl isobutyl ketone, and xylene, commenters specifically requested clarification of whether or not these solvents, when discarded as F003 spent solvents, which were originally listed only on basis of their ignitability, would now be considered toxic and hence no longer able to be exempt under 40 CFR 261.3(a)(2)(iii). This section of the CFR specifies that a waste is not a hazardous waste if it is a mixture of a solid waste and hazardous waste that is listed solely for one or more of the characteristics and the resultant mixture no longer exhibits the any of a hazardous wastes characteristics. Commenters believed the F003 wastes would now be both toxic and ignitable should the above solvents be listed in appendix VIII.

The Agency believes the addition of these solvents to appendix VIII would not have directly changed the regulatory management of F003 wastes. One commenter, however, correctly noted that the addition of these solvents to appendix VIII would eliminate the 264.340(b) exemption of incinerators, which burn only characteristically hazardous wastes, from trial burn requirements. This exemption allows incinerators that burn only characteristically hazardous wastes such as ignitable wastes do not need to analyze for these constituents as required in 40 CFR 264.31 or meet the closure requirements of 264.351. As noted in the previous section, the Agency has finalized only those substances which presented a hazard in

the multipathway analysis. As a result, the Agency has not finalized the addition of the solvents acetone, hexane, methanol, methyl isobutyl ketone, and xylene. The Agency believes that the additions to appendix VIII as amended do not have this impact. The Agency also believes that changes to the current regulatory structure for F003 solvents and characteristic waste incineration are beyond the narrow scope of the carbamate listing determinations.

With regard to the expansion of state restrictions based on blanket application of appendix VIII and other changes in state requirements resulting from this rule, states are free to impose more stringent regulations at any time. The potential for state action beyond the minimum federal RCRA requirements are not controlled by the Agency.

#### G. P Listings

Several commenters challenged the basis for including several wastes as acutely hazardous wastes and presented additional toxicity data to support their position. As well, some commenters believe that the proposed P and U listings were not adequately supported by the administrative record.

After evaluation of comments received, four wastes (bendiocarb, thiophanate-methyl, thiodicarb, and propoxur), proposed for addition to 40 CFR 261.33(e) as acutely hazardous wastes, are instead being added to 40 CFR 261.33(f) as toxic wastes. In each case, the Agency found that these four wastes did not meet the § 261.11(a)(2) criteria for listing in § 261.33(e). The Agency disagrees with the commenter's assertion regarding the administrative record. The Agency criteria for including a waste on 40 CFR 261.33(e) are based on toxicity benchmarks that are clearly presented in 40 CFR 261.11(a)(2). The applicable toxicity data for the proposed wastes was presented in the proposed rule (59 FR 9808). As a result, the Agency contends that all the information used to make the listing decisions regarding P wastes was presented in the public record.

Only one comment was received relative to the carbamate wastes proposed in response to the 1984 Michigan Petition. Eight carbamate waste listings were proposed in response to a petition by the State of Michigan to include 109 chemicals to the lists in 40 CFR § 261.33 (49 FR 49784, December 21, 1984). This rule was never finalized. The petitioner argued that bendiocarb should be listed as a P-waste based on an oral mammalian toxicity of 34–64 mg/kg. The Agency agrees that bendiocarb's

toxicity is of concern. The Agency's benchmark for inclusion of a waste on 40 CFR § 261.33(e) is the oral LD<sub>50</sub> for a rat of 50 mg/kg (see 40 CFR 261.11(a)(2)). The Agency has data that shows oral LD<sub>50</sub> values of 64–119 mg/kg for female rat and 72–156 mg/kg for male rat. Based on these criteria the Agency is finalizing the listing of benidocarb as U278.

#### H. U Listings

The criteria for designation of Acutely Hazardous Wastes found at 40 CFR 261.11(a)(2). While the listing criteria for these acutely hazardous wastes is clearly defined, commenters noted and requested a clear delineation of toxicological criteria for listing wastes as toxic under § 261.33(f).

While acute toxicity may be expressed in terms of numeric toxicological end points, such as oral LD<sub>50</sub>, inhalation LC<sub>50</sub>, and dermal LC<sub>50</sub>, the Agency does not have numeric criteria for listing commercial chemical products as toxic. However, the factors the Agency looks to in listing these materials are described in 40 CFR 261.11(a)(3). The Agency considered these factors including the toxicity of the various chemicals, in analyzing the potential to harm human and the environment. Based on this analysis, the Agency believes these discarded commercial chemical products meet the criteria expressed in § 261.11(a)(3) for listing a material as a hazardous waste. For further explanation, interested parties should refer to the background documents in the docket for this rulemaking. (See ADDRESSES section.)

In the case of carbamate, carbamoyl oxime, thiocarbamate, and dithiocarbamate chemicals, each class of compounds exhibits significant aquatic toxicity. Largely, the Agency's decision to list additional carbamate products was driven by available aquatic toxicity studies indicating LC<sub>50</sub> values less than 50 mg/L. Because of the solubility, persistence, mobility, and toxicity of these classes of chemicals, the Agency concludes that they present a significant risk to the environment if mismanaged.

Several commenters believe that the generic listings for carbamates, carbamoyl oximes, thiocarbamates, and dithiocarbamates are vague, overly broad, and ambiguous. They believe the generic listings capture substances that are not hazardous and cause unnecessary burdens on manufacturers, distributors, and end users. The commenters also believe that the generic categories are inconsistent with current Department of Transportation (DOT) hazardous materials listings and should be modified to be consistent with these

regulations. They felt that these listings would include a variety of compounds for which EPA has not established health or environmental hazards, are not hazardous constituents on Appendix VIII and are not proposed for inclusion on Appendix VIII. The commenters also believe that EPA is obligated to evaluate each chemical and waste stream individually to determine whether they meet the listing criteria and thus should not list generic wastes.

The Agency believes that the definition of each chemical group as amended is very clear and consistent with chemical nomenclature, such that generators of these wastes will be able to determine easily whether they manufacture a specific carbamate. Thus, the Agency does not believe that the definitions are ambiguous. The Agency understands that the generic categories designated as N.O.S are not identical to the categories in DOT regulations. The DOT regulations refer only to carbamate pesticides and thiocarbamate pesticides. The Agency does not feel that DOT regulation preclude a broader definition for the purposes of hazardous waste listing. However as previously stated, the Agency believes that generic N.O.S. categories as proposed may be overly broad and will defer finalizing the generic listing descriptions until alternative listing descriptions have been proposed and commented on.

#### I. Toxicity Information

Several commenters believe that EPA did not have adequate toxicity information to perform its risk assessment and believe that EPA's use of surrogates in determining toxicity of compounds is inappropriate. The commenter also believes EPA had insufficient risk data to promulgate the U listings. As well, commenters discovered differences between published toxicity information and that presented by the Agency in the proposed notice.

The Agency has reevaluated the toxicity data for each waste proposed for addition to 40 CFR § 261.33(f). As noted by commenters, several compounds had limited toxicological data. After review of the available toxicological data, 12 compounds are not considered to have adequate toxicological or predicted values in the record to finalize these 12 listings at this time. See section IV.C. The Agency is deferring final action on the 12 compounds, and may repose these substances at a later date.

#### J. Risk Assessment

The Agency received numerous comments on the risk assessment. Some commenters believe that the risk

assessment was extremely conservative, while other commenters believe that the risks from carbamate wastes were understated. The Agency has chosen to address the general concerns on both of these positions with regard to the risk assessment in this preamble. Detailed responses to specific comments on the appropriateness of model parameters, modeling assumptions, and exposure scenarios are provided in the Response to Comments Background Document that is available in the docket associated with this rulemaking.

#### 1. Comments Asserting That the Risk Assessment Understates Risk

Several commenters felt that the Agency's risk assessment substantially understated the risk posed by improper management of carbamate wastes because (1) some of the modeling parameters and data inputs are highly uncertain and (2) exposures from spills and other accidental releases were not considered.

The Agency believes that its modeling approach addresses all of the most significant exposures to wastes from this industry. As described in the background document to this rule (F-CPLP-S0003) the risk assessment procedure for selecting modeling parameters and assumptions is designed to ensure that the high end of the distribution of the exposed population is protected.

With respect to spills and other accidental releases, the Agency did include spills and overflows from surface impoundments based on probabilities of these occurrences. For wastes managed in tanks and surface impoundments, the Agency did not evaluate the potential impacts of a single catastrophic release to nearby soil and surface waters. The Agency believes that the probability of these types of potential exposure events occurring are extremely low and are less determinative in the listing determination than the more likely exposure scenarios evaluated.

One commenter stated that EPA should not rely as much on information which is specific to the industry (such as waste disposal practices and location of facilities) in its risk assessment. Instead, according to this commenter, the Agency should conduct a more generic risk assessment which would consider a wider range of potential disposal practices and site parameters.

The Agency used a combination of generic risk assessment scenarios and information specific to this industry in characterizing risks for this listing determination. The Agency believes that the use of industry specific information

is appropriate if that information is available and reliable. In this case, the carbamate manufacturing industry is relatively well defined and stable, and therefore the industry specific inputs are appropriate to use. The use of this information allows the Agency to more accurately characterize risks, since it better describes actual existing and potential conditions.

One commenter stated that the Agency did not adequately address the potential for impacts on endangered species and other terrestrial wildlife.

The Agency did conduct a screening assessment of potential impacts on terrestrial wildlife and concluded that risks were not likely to be significant. This assessment is presented in the risk assessment background document (F-CPLP-S0003). The Agency does recognize that risk assessment methodologies for terrestrial wildlife are still very much under development and that it cannot definitively conclude that risks will not exist.

One commenter believes that EPA should not rely on central tendency or average estimates of risk (as opposed to high end or conservative estimates) in its listing determination. This commenter states that this reliance violates both RCRA and Executive Order 12898 (Federal Actions to Address Environmental Justice in Minority Populations and Low Income Populations).

The Agency relies primarily on high end risk estimates in its listing determinations. The central tendency estimates are used primarily to project overall population risks in some cases and to provide an indication of the variability in risk estimates.

## 2. Comments Asserting That the Risk Assessment Overstates Risk

Several commenters believe that the Agency's risk assessment overstated the risks presented by the carbamate waste streams. One commenter believes that EPA's use of a multi-pathway risk assessment methodology is premature.

The Agency believes that a multipathway approach is well established and is appropriate for this rulemaking. The Agency has been using multipathway analyses for a number of years in a number of its programs including the Superfund program, the sewage sludge regulations, pesticide risk assessments, risk assessments for hazardous waste combustion facilities, and previous listing determinations. As a result the Agency believes that the use of a multipathway approach is not premature and is appropriate for this rulemaking.

Another comment was that the Agency misapplied the listing criteria by using inappropriate mismanagement scenarios to evaluate the hazards posed by the carbamate wastes.

The Agency believes it has correctly selected plausible mismanagement scenarios to evaluate the hazards posed by the carbamate waste. Although not all wastes generated by the carbamate manufacturing industry are handled in the same way, by looking across the industry at all plausible management practices, the Agency selected both typical case and plausible mismanagement scenarios to represent possibilities for the management of carbamate wastes. It is possible that specific manufacturing facilities within the industry managed their wastes quite differently than the plausible mismanagement scenarios. However, in selecting the mismanagement scenarios, the Agency looked across the industry and identified practices which would present the highest risk and considered those as the mismanagement scenarios. All mismanagement scenarios used in this analysis are currently in use in the industry by at least one facility although not all.

Another comment was that the Agency used exaggerated or implausible exposure assumptions causing an overly conservative risk estimate which does not represent reality at any facility. The commenters suggest that the Agency should consider site specific risk assessments to support any regulatory action in this area.

The Agency disagrees that the risk assessment is based on inappropriate assumptions and that exposure scenarios are highly exaggerated. Specific parameter criticism are addressed in the comment response document available in the docket for this rule. (See Addresses.) In general, in identifying the location of receptors, the Agency collected land use data and well water use data around 8 carbamate manufacturing facilities believed to represent the range of different types and locations of facilities present in the United States. These data were then used to develop central tendency and high end estimates for where individuals may be exposed to releases of constituents from the waste stream managed. As pointed out in the risk assessment background document, even the high end risk calculations use average values for most parameters.

While the risk assessment results may not specifically apply to any particular facility, the Agency believes they are representative of potential high end risks. The Agency is unable to conduct full site specific risk assessments for all

facilities because of the time and resources which would be required to collect and analyze all of the data which would be needed for each facility.

The Agency believes that the use of a generic risk assessment methodology combined with industry-specific information for parameter values is the best approach for determining whether or not a waste stream should be listed as hazardous. Site-specific assessments may mean that the Agency would list a waste stream as hazardous for one manufacturer while not hazardous for another. Such wastes may not be subject to hazardous waste control. The Agency is generally unable to predict and does not control how a waste will be managed and thus the waste may or may not be disposed at the point of generation and as such the exposure assumption may be very different than those at the specific site. Therefore, EPA currently believes that it is inappropriate to consider extensive site-specific factors when making listing decisions. The Agency's delisting program was developed to provide industry the opportunity to show that, on a waste-specific basis, its waste do not pose a hazard to human health or the environment. The Agency believes that delisting is an adequate mechanism for those who feel that wastes do not meet the hazardous waste criteria and exclude them from the hazardous waste management system.

Another comment is that the proposed rule is based on misclassification/characterization of waste streams because the use of generic composites resulted in overestimation of risk. The commenter also believes that the assessment was based on limited data sometimes using a maximum constituent concentration value to represent both average and worst case scenarios, and that measured values for concentrations of constituents in waste streams at specific sites do not match numbers used in generic risk assessment.

The Agency disagrees with the commenter with regards to the characterization of waste streams. The Agency did not use a maximum constituent concentration value to represent both average and worst case scenarios in its risk assessment. For some constituents, only one measured value existed and this measured value was used in the risk assessment. The labeling of tables in the risk assessment background document (F-CPLP-S0003) shows that this one value was entered in both columns for average and high end values. The concentrations in the waste stream as measured by the Agency or reported by the facility were



used in characterizing the waste. When there were several measured values for a constituent, the Agency averaged those values to get a central tendency value for characterizing the waste. It should be noted that the Agency did not characterize the waste streams on a site specific basis but developed generic characterizations for each waste stream based on data from several facilities. The Agency developed generic waste stream characterizations based on data from one or several facilities. These generic waste stream characterizations may not match on a one to one basis the constituents in any specific carbamate manufacturing facility's stream. However, the Agency believes that these generic characterizations provide a meaningful way of representing waste streams across an industry in which the waste will have high variability due to changes in manufacturing processes and products. The Agency believes that it will be infeasible to collect data on every waste stream generated by every carbamate manufacturing facility. Thus, the generic waste stream characterizations were used to capture the range of constituents that could exist in carbamate manufacturing wastes. The Agency also notes that the commenter did not provide any additional waste characterization data.

Another commenter believes that EPA fails to acknowledge the uncertainties associated with its risk conclusions. The Agency believes that it has adequately characterized the uncertainty in the risk analysis. The Agency attempted to characterize uncertainties in its risk assessment by providing both central tendency and a range of high end risk estimates for each pathway and exposure route for each waste group. The parameter uncertainties are presented as a range of values used for all input parameters.

One commenter believes that EPA did not provide sufficient record information to allow meaningful comment on the risk assessment assumptions. The Agency disagrees with the commenter's assertion that adequate documentation on the risk assessment was not available. All information on conducting the risk assessment and its assumptions are either included in the background document itself or in the reference cited, all of which are included in the docket.

#### K. CERCLA RQs

Several commenters believe that the Agency should have proposed adjusted RQs for the substances added to the CERCLA hazardous substances list instead of applying the statutory 1 lb RQ, and that adjusted RQs should be

put in place at the same time that the final rule is promulgated. Commenters believe that the 1 lb RQ would cause unnecessary and expensive reporting requirements and that the Agency should suspend the effective date of this rule until RQs are adjusted. One commenter believed that the Agency should not place carbamate compounds on the U-list as a mechanism to achieve CERCLA listing and to trigger actions by emergency responders under CERCLA.

The Agency plans to propose adjusted RQs of the substances added to the CERCLA hazardous substances list. Section 102(b) of CERCLA requires that a 1 lb RQ be set for these newly identified hazardous substances. Until an adjustment is promulgated, the statutory 1 lb RQ for newly identified hazardous wastes will remain in effect. The Agency disagrees with the commenters assertion that the addition of carbamates to the U-list was designed to achieve CERCLA listing and trigger actions by emergency responders under CERCLA. The addition of substances to the U-list was governed solely by the concentration and toxicity of these materials and the criteria for listing at 40 CFR 261.11. Section 101(14) of CERCLA establishes that all newly identified RCRA hazardous wastes are also CERCLA hazardous substances. The Agency does, however view it as beneficial for emergency first responders to quickly identify the potential hazards of carbamate, carbamoyl oxime, thiocarbamate, and dithiocarbamate products and feels that quick identification of hazards may speed corrective measures to limit environmental damage or risks to human health.

#### L. Regulatory Impact Analysis

There were many commenters who felt that the Economic Impact Analysis (EIA) conducted was inadequate or flawed. In particular, commenters felt that the addition of the Appendix VIII constituents would have a much greater cost impact than shown in the EIA. Other commenters felt that the scope of the EIA underestimated the number of affected facilities in that it did not take into account suppliers, distributors and customers using the P, U and Appendix VIII materials. In addition, commenters felt that it did not account for costs associated with soil and debris remediation, indirect state and federal regulatory impacts and reporting requirements under CERCLA and EPCRA, and costs incurred due to the mixture and derived-from rules. Commenters also believed that the EIA assumed that wastes currently recycled would continue to be recycled. Others

felt that the rules would cause competing non-carbamate chemicals to have a competitive advantage that would cause economic hardship to small carbamate manufacturers. Other commenters believe that the EIA was flawed because the Agency should have prepared an RIA.

In conducting its EIA, EPA examined all data submitted to it under its RCRA section 3007 survey of the carbamate production industry. EPA used this information to create a baseline scenario, or description of the current state of waste management in the industry. More important, EPA maintains that the 24 facilities analyzed for the EIA represents the entire universe of carbamate production facilities, and thus EPA is confident that its analysis is comprehensive. EPA then developed a post-regulatory scenario in which waste generators would comply with the RCRA regulations newly imposed as a result of this rule. In creating this post-regulatory scenario, EPA forecast the plausible, long-term management of the waste, and EPA calculated the waste management costs associated with this post-regulatory scenario. EPA maintains that it has correctly estimated the true, long-term costs associated with the management of carbamate production wastes resulting from the listing of new RCRA hazardous wastes even though compliance costs for any individual entity may be higher or lower than our estimate. The Agency does not consider the rule to have significant impacts and thus it does not require a full regulatory impact analysis.

EPA points out that the EIA was designed to assess the primary cost impacts associated with changes in management practices resulting from the RCRA hazardous listing of carbamate production waste. EPA believes that the addition of compounds to 40 CFR part 261 Appendix VIII will not materially affect the management of such wastes. All carbamate production facilities are currently permitted under RCRA. In addition, RCRA grants the Agency broad authority to respond to any imminent and substantial endangerment to human health and the environment posed by the past or present management of any solid waste (RCRA § 7003). In addition, because no other action has been taken by the Agency there will be no effect on the "mixture and derived from" exemption.

EPA acknowledges that there may be indirect effects as a result of this rulemaking. The EIA accounted for the costs of trial burns, monitoring equipment, personnel for monitoring, and other compliance related costs in incineration costs. In support of the

final rule, EPA identified some potential incremental costs for closure of abandoned surface impoundments. EPA also included the costs of handling and disposal of P and U wastes in the revised EIA and is confident that its analysis is comprehensive. EPA believes, however, that designation of these carbamates as P and U wastes will not result in significant costs for suppliers and customers because of the infrequent nature of waste generation.

As for the commenter's concern about POTW operators no longer accepting such waste, EPA notes that currently RCRA listed wastewater is routinely accepted for treatment by POTW operators and other CWA systems. EPA does not expect any significant problems in this area for generators of carbamate production wastes.

EPA also believes that the long-term economic impacts of changes to markets and product distribution will be minimal. EPA also rejects the assertion that farmers and other small business owners will file unnecessary reports as a result of this listing. The Agency believes that the agricultural sector is as sophisticated about complying with environmental requirements as any other sector.

EPA also believes that carbamate wastes presently being recycled should be able to continue to be recycled under RCRA exemption following the listing and that any administrative cost impacts associated with the listing would be small compared to other waste management costs.

EPA also points out that the scope of its EIA is limited to the effects of the Federal RCRA program. In its rulemakings, EPA is not able to account for actions taken by the states, tribes, municipalities, or other governmental entities. States are free to impose more stringent regulations at any time. In its rulemakings, EPA is not able to account for the variances between the federal and state programs.

#### *M. Impact on Recycling and Reuse*

Several commenters believe that the K listings and P and U listings will have a negative impact on established reuse and recycling program. Commenters were also concerned that the rule will have an adverse impact on product stewardship programs, especially return for refill programs for containers. The commenters believe that the final listings should exclude all wastewater generated as part of recycling operations and all residue returned as part of recycling program and all wastewaters generated in cleaning recycled containers.

The Agency does not foresee any adverse impact of K, P or U listings on container recycling programs. The scope of the K listings is limited to wastes from the production of the carbamate chemicals and does not include product container wash waters. Product container wash waters are subject to the P or U waste listings if discarded or mixed with other listed wastes. However, when returned to either a formulation process or the chemical production process these wash waters would not be solid wastes, because the material is used in an industrial process to make a product (§ 261.2(e)(i)), or is being returned to the original process without first being reclaimed (§ 261.2(e)(iii)).

The EPA does not believe regulation of P and U wastes will adversely impact the recycling. Several carbamates are largely formulated in aerosol containers which may be recycled for their scrap metal value. As recyclable scrap metal, empty aerosol containers are exempted from RCRA regulation (§ 261.6(a)(3)(iii)). However, aerosol containers that are not empty in accordance with § 261.7 and have contained P or U listed substances would be subject to hazardous waste regulation when discarded.

The EPA also does not foresee significant adverse impacts to return for refill programs. Containers that have held P or U regulated substances are hazardous waste when discarded if the container is not empty in accordance with the provisions of § 261.7. EPA views hazardous waste disposal requirements to encourage the return of the container by the public to such refill programs. Should containers, other than those which are empty, be disposed full compliance with all RCRA requirements would be triggered.

#### *N. Executive Orders*

Several commenters believed that the Agency did not comply with Executive Order 12866 Regulatory Planning and Review (58 FR 51735, October 4, 1993). EPA believes it has complied with all provisions of E.O. 12866. Pursuant to the terms of Executive Order 12866, it has been determined that this rule is a "significant regulatory action" because of policy issues arising out of legal mandates. As such, this action was submitted to OMB for review. Changes made in response to OMB suggestions or recommendations are documented in the public record. See F-94-CPLP-0006.

One commenter believes EPA failed to measure additional sources of contaminants with potential risk factors, and that these omissions are inconsistent with Executive Order

12898 Federal Action to Address Environmental Justice in Minority Populations and Low-income Populations, section 3-301(b), which provides that federal agencies should consider, whenever practicable and appropriate, multiple and cumulative exposures.

EPA believes it has complied with all provisions of E.O. 12898 (Environmental Justice). The Agency calculated risks for each exposure pathway of significance and considered the potential cumulative risks of multiple exposures to the same toxic contaminants via multiple pathways. The Agency acknowledges that there may be other exposures resulting from such pathways as facility air emissions or consumer product use, and has attempted to quantify only those risks associated with solid waste management.

#### *O. Paperwork Reduction Act*

One commenter believes that the Paperwork Reduction Act (PRA) requirements have not been met with respect to the proposed rule in that it believes the reporting requirements under CERCLA for releases constitutes information collection and this the rule should be submitted to OMB for review.

The proposed rule stated in error that this rule has no PRA requirements. However, this rule does not contain any new information collection requirements subject to OMB review under the Paperwork Reduction Act of 1980, 44 U.S.C. 3501 et seq. Facilities will have to comply with the existing Subtitle C recordkeeping and reporting requirements for the newly listed wastestreams.

Release reporting required as a result of listing 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 (ICR 1049, Notification of Episodic Release of Oil and Hazardous Substances).

#### *P. Compliance Schedule*

Several commenters believed that EPA has not provided the regulated community with adequate time to comply with the rulemaking and should allow additional time for compliance which may require capital projects. This final rule allows for six months for compliance with this rule consistent and is consistent with RCRA § 3010(b). A period of six months from the publication date of the listing is generally adequate time for the industry

to make arrangements for new waste management practices. The Agency realizes that some remedial activities such as the retrofit of surface impoundments may require a significantly longer compliance period. However, RCRA § 3004(j)(6)(A) allows a 4-year compliance period for surface impoundments to meet the Minimum Technology Requirement (MTR). The Agency views these as adequate periods for compliance to be implemented.

## VI. Compliance and Implementation

### A. State Authority

#### 1. Applicability of Rule in Authorized States

Under section 3006 of RCRA, EPA may authorize qualified states to administer and enforce the RCRA program within the state. (See 40 CFR part 271 for the standards and requirements for authorization.) Following authorization, EPA retains enforcement authority under sections 3007, 3008, 3013, and 7003 of RCRA, although authorized states have primary enforcement responsibility.

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

By contrast, under section 3006(g) of RCRA, 42 U.S.C. 6926(g), new requirements and prohibitions imposed by the HSWA (including the hazardous waste listings finalized in this notice) take effect in authorized states at the same time that they take effect in non-authorized states. EPA is directed to implement those requirements and prohibitions in authorized states, including the issuance of permits, until the state is granted authorization to do so. While states must still adopt HSWA-related provisions as State law to retain final authorization, HSWA applies in authorized States in the interim. Today's rule is promulgated pursuant to section 3001 of RCRA (42 U.S.C. 6921). Therefore this rule has been added to Table 1 in 40 CFR 271.1(j), which identifies the Federal program requirements that are promulgated

pursuant to HSWA and take effect in all States, regardless of their authorization status. States may apply for either interim or final authorization for the HSWA provisions in 40 CFR 271.1(j) Table 1, as discussed in the following section.

#### 2. Effect on State Authorizations

Because this rule (with the exception of the actions under CERCLA authority) is promulgated pursuant to the HSWA, a state submitting a program modification is able to apply to receive either interim or final authorization under section 3006(g)(2) or substantially equivalent or equivalent to EPA's requirements. The procedures and schedule for State program modifications under 3006(b) are described in 40 CFR 271.21. It should be noted that all HSWA interim authorizations are currently scheduled to expire on January 1, 2003 (see 57 FR 60129, February 18, 1992).

Section 271.21(e)(2) of EPA's state authorization regulations (40 CFR part 271) requires that states with final authorization modify their programs to reflect federal program changes and submit the modifications to EPA for approval. The deadline by which the states must modify their programs to adopt this regulation is determined by the date of promulgation of a final rule in accordance with § 271.21(e)(2). Table 1 at 40 CFR 271.1 is amended accordingly. Once EPA approves the modification, the State requirements become RCRA Subtitle C requirements.

States with authorized RCRA programs already may have regulations similar to those in this rule. These State regulations have not been assessed against the Federal regulations being finalized to determine whether they meet the tests for authorization. Thus, a state would not be authorized to implement these regulations as RCRA requirements until state program modifications are submitted to EPA and approved, pursuant to 40 CFR 271.21. Of course, states with existing regulations that are more stringent than or broader in scope than current Federal regulations may continue to administer and enforce their regulations as a matter of State law.

It should be noted that authorized states are required to modify their programs only when EPA promulgates Federal standards that are more stringent or broader in scope than existing Federal standards. Section 3009 of RCRA allows states to impose standards more stringent than those in the Federal program. For those Federal program changes that are less stringent or reduce the scope of the Federal

program, states are not required to modify their programs. See 40 CFR 271.1(i). This rule is neither less stringent than or a reduction in the scope of the current Federal program and, therefore, states would be required to modify their programs to retain authorization to implement and enforce these regulations.

### B. Effective Date

The effective date of today's rule is August 9, 1995. As discussed above, since today's rule is issued pursuant to HSWA authority, EPA will regulate the management of the newly identified hazardous wastes until states are authorized to regulate these wastes. Thus, EPA will apply Federal regulations to these wastes and to their management in both authorized and unauthorized states.

### C. Section 3010 Notification

Pursuant to RCRA section 3010, the Administrator may require all persons who handle hazardous wastes to notify EPA of their hazardous waste management activities within 90 days after the wastes are identified or listed as hazardous. This requirement may be applied even to those generators, transporters, and treatment, storage, and disposal facilities (TSDFs) that have previously notified EPA with respect to the management of other hazardous wastes. The Agency has decided to waive this notification requirement for persons who handle wastes that are covered by today's listings and have already (1) notified EPA that they manage other hazardous wastes; and (2) received an EPA identification number. The Agency has waived the notification requirement in this case because it believes that most, if not all, persons who manage these wastes have already notified EPA and received an EPA identification number. However, any person who generates, transports, treats, stores, or disposes of these wastes and has not previously received an EPA identification number must obtain an identification number pursuant to 40 CFR 262.12 to generate, transport, treat, store, or dispose of these hazardous wastes by May 10, 1995.

### D. Generators and Transporters

Persons that generate newly identified hazardous wastes may be required to obtain an EPA identification number, if they do not already have one (as discussed in section VI.C. above). In order to be able to generate or transport these wastes after the effective date of this rule, generators of the wastes listed today will be subject to the generator requirements set forth in 40 CFR 262.

These requirements include standards for hazardous waste determination (40 CFR 262.11), compliance with the manifest (40 CFR 262.20 to 262.23), pretransport procedures (40 CFR 262.30 to 262.34), generator accumulation (40 CFR 262.34), recordkeeping and reporting (40 CFR 262.40 to 262.44), and import/export procedures (40 CFR 262.50 to 262.60). It should be noted that the generator accumulation provisions of 40 CFR 262.34 allow generators to accumulate hazardous wastes without obtaining interim status or a permit only in units that are container storage units or tank systems; the regulations also place a limit on the maximum amount of time that wastes can be accumulated in these units. If these wastes are managed in surface impoundments or other units that are not tank systems or containers, these units are subject to the permitting requirements of 40 CFR 264 and 265, and the generator is required to obtain interim status and seek a permit (or modify interim status or a permit, as appropriate). Also, persons who transport newly identified hazardous wastes will be required to obtain an EPA identification number as described above and will be subject to the transporter requirements set forth in 40 CFR part 263.

#### *E. Facilities Subject to Permitting*

##### 1. Facilities Newly Subject to RCRA Permit Requirements

Facilities that treat, store, or dispose of wastes that are subject to RCRA regulation for the first time by this rule (that is, facilities that have not previously received a permit pursuant to section 3005 of RCRA and are not currently operating pursuant to interim status, might be eligible for interim status (see section 3005(e)(1)(A)(ii) of RCRA, as amended). In order to obtain interim status based on treatment, storage or disposal of such newly identified wastes, eligible facilities are required to provide notice under section 3010 and to submit a Part A permit application no later than August 9, 1995. Such facilities are subject to regulation under 40 CFR Part 265 until a permit is issued.

In addition, under section 3005(e)(3), not later than August 9, 1995, land disposal facilities newly qualifying for interim status under section 3005(e)(1)(A)(ii) also must submit a Part B permit application and certify that the facility is in compliance with all applicable groundwater monitoring and financial responsibility requirements. If the facility fails to submit these certifications and a permit application,

interim status will terminate on August 9, 1995.

##### 2. Existing Interim Status Facilities

Pursuant to 40 CFR 270.72(a)(1), all existing hazardous waste management facilities (as defined in 40 CFR 270.2) that treat, store, or dispose of the newly identified hazardous wastes and are currently operating pursuant to interim status under section 3005(e) of RCRA must file an amended Part A permit application with EPA no later than August 9, 1995. By doing this, the facility may continue managing the newly listed wastes. If the facility fails to file an amended Part A application by August 9, 1995, the facility will not receive interim status for management of the newly listed wastes, and may not manage newly identified hazardous wastes until the facility receives either a permit or a change in interim status allowing such activity (40 CFR 270.10(g)).

##### 3. Permitted Facilities

Under regulations promulgated by EPA on September 28, 1988, (see 53 FR 37912), a hazardous waste management facility that has received a permit pursuant to section 3005 of RCRA and is "in existence" as a hazardous waste facility on the date for the newly listed wastes are first subject to regulation, may be eligible to continue managing the new wastes under 40 CFR 270.42(g) while steps necessary to obtain a permit modification to allow the facility to manage the wastes are taken. To continue to manage the newly listed hazardous wastes, eligible facilities must be in compliance with 40 CFR Part 265 requirements with respect to management of the newly listed wastes and submit a Class 1 modification request no later than August 9, 1995. This modification is essentially a notification to the Agency that the facility is handling the waste. As part of the procedure, the permittee must also notify the public within 90 days of submittal to the Agency. See 40 CFR 270.42(a).

The permittee must then submit a Class 2 or 3 permit modification to the Agency by 180 days after the effective date of the listing. A Class 2 modification is required if the newly listed wastes will be managed in existing permitted units or in newly regulated tank or container units and will not require additional or different management practices than those authorized in the permit. A Class 2 modification requires the facility owner to provide public notice of the modification request, a 60 day public comment period, and an informal

meeting between the owner and the public within the 60-day period. The Class 2 process includes a "default provision," which provides that if the Agency does not reach a decision within 120 days, the modification is automatically authorized for 180 days. If the Agency does not reach a decision by the end of that period, the modification is permanently authorized. See 40 CFR 270.42(b).

A Class 3 modification is required if management of the newly listed wastes requires additional or different management practices than those authorized in the permit or if newly regulated land-based units are involved. The initial public notification and public meeting requirements are the same as for Class 2 modifications. However, after the end of the 60-day public comment period, the Agency will develop a draft permit modification, open a public comment period of 45 days, and hold a public hearing if requested. There is no default provision for Class 3 modifications. See 40 CFR 270.42(c).

Under 40 CFR 270.42(g)(1)(v), for newly regulated land disposal units, permitted facilities must certify that the facility is in compliance with all applicable 40 CFR Part 265 groundwater monitoring and financial responsibility requirements no later than August 9, 1995. If the facility fails to submit these certifications, authority to manage the newly listed wastes under 40 CFR 270.42(g) will terminate on that date.

##### 4. Units

Units in which newly identified hazardous wastes are generated or managed will be subject to all applicable requirements of 40 CFR 264 for permitted facilities or 40 CFR 265 for interim status facilities, unless the unit is excluded from such permitting by other provisions such as the wastewater treatment tank exclusions (40 CFR 264.1(g)(6) and 265.1(c)(10)), and the product storage tank exclusion (40 CFR 261.4(c)). Examples of units to which these exclusions could never apply include landfills, land treatment units, waste piles, incinerators, and any other miscellaneous units in which these wastes may be generated or managed.

##### 5. Closure

All units in which newly identified hazardous wastes are treated, stored, or disposed after the effective date of this regulation that are not excluded from the requirements of 40 CFR 264 and 265 are subject to both the general closure and post-closure requirements of subpart G of 40 CFR 264 and 265, and

the unit-specific closure requirements set forth in the applicable unit technical standards subpart of 40 CFR 264 or 265 (e.g., subpart N for landfill units). Additionally, EPA recently promulgated a final rule that allows, under limited circumstances, regulated landfills, surface impoundments, or land treatment units to cease managing hazardous waste but to delay Subtitle C closure to allow the unit to continue to manage non-hazardous waste for a period of time prior to closure of the unit (see 54 FR 33376, August 14, 1989). Units for which closure is delayed continue to be subject to all applicable 40 CFR 264 and 265 requirements. Dates and procedures for submittal of necessary demonstrations, permit applications, and revised applications are detailed in 40 CFR 264.113 (c) through (e) and 265.113 (c) through (e).

**VI. CERCLA Designation and Reportable Quantities**

All hazardous wastes listed under RCRA and codified in 40 CFR 261.31 through 261.33, as well as any solid waste that exhibits one or more of the characteristics of a RCRA hazardous waste (as defined in Sections 261.21 through 261.24), are hazardous substances under the Comprehensive Environmental Response, Compensation, and Liability Act of 1980 (CERCLA), as amended. See CERCLA Section 101(14)(C). CERCLA hazardous substances are listed in Table 302.4 at 40 CFR 302.4 along with their reportable quantities (RQs). RQs are the minimum quantity of a hazardous substance that, if released, must be reported to the National Response Center (NRC)

pursuant to CERCLA § 103. In this rule, the Agency is listing the wastes in this action as CERCLA hazardous substances in Table 302.4 of 40 CFR 302.4. The RQ for each substance will be one pound as provided by statute for all newly designated hazardous substances until adjustment is made by regulation.

**Reporting Requirements**

Under section 102(b) of CERCLA, all hazardous substances newly designated under CERCLA will have a statutory RQ of one pound unless and until adjusted by EPA regulation. Under CERCLA section 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 NRC of the release as soon as that person has knowledge thereof. The toll free number of the NRC is 1-800-424-8802; in the Washington, DC metropolitan area, the number is (202) 426-2675. In addition to this reporting requirement under CERCLA, section 304 of the Emergency Planning and Community Right-to-Know Act of 1986 (EPCRA) requires owners or operators of certain facilities to report the release of a CERCLA hazardous substance to State and local authorities. EPCRA section 304 notification must be given immediately after the release of a RQ or more 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 response commission of any State likely to be affected by the release.

Releases equal to or greater than the one-pound statutory RQ are subject to

the reporting requirements described above, unless and until the Agency adjusts the RQs for these substances in a future rulemaking.

The Agency is currently working on a proposed rule to adjust the RQ values for the constituents in this rule. This rulemaking is on an expedited schedule in order to minimize the time between the effective date of this listing and the publication of the adjusted RQs. The Agency anticipates that the adjusted RQs for many of the hazardous constituents in this rule will be higher than the statutory one-pound RQ. Once the RQ adjustment rule is proposed the Agency will take the proposed adjusted RQs into consideration when contemplating an enforcement action. It is important to note that while the Agency does not generally focus its enforcement resources on cases that involve statutory RQs where adjusted RQs are being promulgated, the Agency may pursue an enforcement action based on the specific facts of a situation in a case where an RQ for a hazardous constituent has been exceeded. In deciding upon an enforcement action under CERCLA for failure to report a release that equals or exceeds an RQ, the Agency generally considers the following factors: The quantity and relative toxicity of the released substance, the actual or threatened human health hazard or environmental damage, the egregious nature of the responsible party, the impact of the type of violation upon the regulatory program, the expected deterrent effort of prosecution, and the status of the proposed RQ adjustment rulemaking.

TABLE 3.—ONE-POUND STATUTORY RQS FOR K, P, AND U WASTES

Waste code	Constituent of concern	Statutory RQ (pounds)
K156	benomyl, carbaryl, carbendazim, carbofuran, carbosulfan, formaldehyde, methylene chloride, triethylamine	1
K157	carbon tetrachloride, chloroform, formaldehyde, methyl ethyl ketone, methyl chloride, methylene chloride, pyridine, triethylamine.	1
K158	benomyl, carbendazim, carbofuran, carbosulfan, methylene chloride	1
K159	benzene, butylate, eptc, molinate, pebulate, vernolate	1
K160	benzene, butylate, eptc, molinate, pebulate, vernolate	1
K161	arsenic, antimony, cadmium, metam-sodium, ziram	1
P185	1,3-Dithiolane-2-carboxaldehyde, 2,4-dimethyl-, O-[(methylamino)carbonyl]oxime (Tirpate)	1
U278	1,3-Benzodioxol-4-ol, 2,2-dimethyl-, methyl carbamate (Bendiocarb)	1
P188	Benzoic acid, 2-hydroxy-, compd. with (3as-cis)-1,2,3,3a,8,8a-hexahydro-1,3a,8-trimethylpyrrolo[2,3-b]indol-5-yl methylcarbamate ester (1:1) (Physostigmine salicylate).	1
P189	Carbamic acid, [(dibutylamino)thio]methyl-, 2,3-dihydro-2,2-dimethyl-7-benzofuranyl ester (Carbosulfan)	1
P190	Carbamic acid, methyl-, 3-methylphenyl ester (Metolcarb)	1
P191	Carbamic acid, dimethyl-,1-[(dimethylamino)carbonyl]-5-methyl-1H-pyrazol-3-yl ester (Dimetilán)	1
P192	Carbamic acid, dimethyl-, 3-methyl-1-(1-methylethyl)-1H-pyrazol-5-yl ester (Isolan)	1
U409	Carbamic acid, [1,2-phenylenebis(iminocarbonothioyl)]bis-, dimethyl ester (Thiophanate-methyl)	1
P194	Ethanimidothioic acid, 2-(dimethylamino)-N-[[[(methylamino)carbonyl]oxy]-2-oxo-, methyl ester (Oxamyl)	1
U410	Ethanimidothioic acid, N,N'-[thiobis[(methylimino)carbonyloxy]]bis-, dimethyl ester (Thiodicarb)	1
P196	Manganese, bis(dimethylcarbamodithioato-S,S')- (Manganese dimethyldithiocarbamate)	1
P197	Methanimidamide, N,N-dimethyl-N'-[2-methyl-4[[[(methylamino)carbonyl]oxy]phenyl]- (Formparanate)	1
P198	Methanimidamide, N,N-dimethyl-N'-[3-[[[(methylamino)carbonyl]oxy]phenyl]-, monohydrochloride (Formetanate hydrochloride).	1

TABLE 3.—ONE-POUND STATUTORY RQS FOR K, P, AND U WASTES—Continued

Waste code	Constituent of concern	Statutory RQ (pounds)
P201	Phenol, 3-methyl-5-(1-methylethyl)-, methyl carbamate (Promecarb)	1
P202	Phenol, 3-(1-methylethyl)-, methyl carbamate (m-Cumenyl methylcarbamate)	1
P203	Propanal, 2-methyl-2-(methylsulfonyl)-, O-[(methylamino)carbonyl] oxime (Aldicarb sulfone)	1
P204	Pyrrrolo[2,3-b]indol-5-ol, 1,2,3,3a,8,8a-hexahydro-1,3a,8-trimethyl-, methylcarbamate (ester), (3aS-cis)- (Physostigmine)	1
P205	Zinc, bis(dimethylcarbomodithioato-S,S')-, (T-4)- (Ziram)	1
U364	1,3-Benzodioxol-4-ol, 2,2-dimethyl- (Bendiocarb phenol)	1
U365	1H-Azepine-1-carbothioic acid, hexahydro-, S-ethyl ester (Molinate)	1
U366	2H-1,3,5-Thiadiazine-2-thione, tetrahydro-3,5-dimethyl- (Dazomet)	1
U367	7-Benzofuranol, 2,3-dihydro-2,2-dimethyl- (Carbofuran phenol)	1
U280	Carbamic acid, (3-chlorophenyl)-, 4-chloro-2-butynyl ester (Barban)	1
U372	Carbamic acid, 1H-benzimidazol-2-yl, methyl ester (Carbendazim)	1
U373	Carbamic acid, phenyl-, 1-methylethyl ester (Propham)	1
U271	Carbamic acid, [1-[(butylamino)carbonyl]-1H-benzimidazol-2-yl]-, methyl ester (Benomyl)	1
U375	Carbamic acid, butyl-, 3-iodo-2-propynyl ester (3-iodo-2-propynyl n-butylcarbamate)	1
U376	Carbamodithioic acid, dimethyl-, tetraanhydrosulfide with orthothioselenious acid (Selenium, tetrakis(dimethylthiocarbamate)).	1
U377	Carbamodithioic acid, methyl-, monopotassium salt (Potassium n-methyldithiocarbamate)	1
U378	Carbamodithioic acid, (hydroxymethyl)methyl-, monopotassium salt (Potassium n-hydroxymethyl-n-methyldithiocarbamate).	1
U379	Carbamodithioic acid, dibutyl, sodium salt (Sodium dibutyldithiocarbamate)	1
U381	Carbamodithioic acid, diethyl-, sodium salt (Sodium diethyldithiocarbamate)	1
U277	Carbamodithioic acid, diethyl-, 2-chloro-2-propenyl ester (Sulfallate)	1
U382	Carbamodithioic acid, dimethyl-, sodium salt (Sodium dimethyldithiocarbamate)	1
U383	Carbamodithioic acid, dimethyl, potassium salt (Potassium dimethyl dithiocarbamate)	1
U384	Carbamodithioic acid, methyl-, monosodium salt (Metam Sodium)	1
U385	Carbamothioic acid, dipropyl-, S-propyl ester (Vernolate)	1
U386	Carbamothioic acid, cyclohexylethyl-, S-ethyl ester (Cycloate)	1
U387	Carbamothioic acid, dipropyl-, S-(phenylmethyl) ester (Prosulfocarb)	1
U389	Carbamothioic acid, bis(1-methylethyl)-, S-(2,3,3-trichloro-2-propenyl) ester (Triallate)	1
U390	Carbamothioic acid, dipropyl-, S-ethyl ester (EPTC)	1
U391	Carbamothioic acid, butylethyl-, S-propyl ester (Pebulate)	1
U392	Carbamothioic acid, bis(2-methylpropyl)-, S-ethyl ester (Butylate)	1
U393	Copper, bis(dimethylcarbomodithioato-S,S')- (Copper dimethyldithiocarbamate)	1
U394	Ethanimidithioic acid, 2-(dimethylamino)-N-hydroxy-2-oxo-, methyl ester (A2213)	1
U395	Ethanol, 2,2'-oxybis-, dicarbamate (Diethylene glycol, dicarbamate)	1
U396	Iron, tris(dimethylcarbomodithioato-S,S')-, (Ferbam)	1
U400	Piperidine, 1,1'-(tetrathiodicarbonothioyl)-bis- (Bis(pentamethylene)thiuram tetrasulfide)	1
U401	bis(dimethylthiocarbamoyl) sulfide (Tetramethylthiuram monosulfide)	1
U402	Thioperoxydicarbonic diamide, tetrabutyl (Tetrabutylthiuram disulfide)	1
U403	Thioperoxydicarbonic diamide, tetraethyl (Disulfiram)	1
U407	Zinc, bis(diethylcarbomodithioato-S,S')- (Ethyl Ziram)	1

### VIII. Executive Order 12866

Under Executive Order 12866 Regulatory Planning and Review (58 FR 51735, October 4, 1993), the Agency must determine whether the regulatory action is "significant" and therefore subject to OMB review and the requirements of the Executive Order. The Order defines "significant regulatory action" as one that is likely to result in a rule that may:

(1) Have an annual effect on the economy of \$100 million or more or adversely affects in a material way the economy, a sector of the economy, productivity, competition, jobs, the environment, public health or safety, or State, local, or tribal governments or communities;

(2) Create a serious inconsistency or otherwise interferes with an action taken or planned by another agency;

(3) Materially alter the budgetary impact of entitlements, grants, user fees, or loan

programs or the rights and obligations of recipients thereof; or

(4) Raise novel legal or policy issues arising out of legal mandates, the President's priorities, or the principles set forth in this Executive order.

Pursuant to the terms of Executive Order 12866, it has been determined that this rule is a "significant regulatory action" because of policy issues arising out of legal mandates. As such, this action was submitted to OMB for review. Changes made in response to OMB suggestions or recommendations are documented in the public record.

### IX. Economic Impact Analysis

This section of the preamble summarizes the costs and the economic impact analysis (EIA) for the carbamate hazardous waste listings. Based upon the EIA, the Agency estimates that the listing of the six carbamate production

wastes discussed above may result in nationwide annualized costs of at least \$900,000. The previous EIA is available in the regulatory docket entitled "Economic Impact Analysis of the Identification and Listing of Carbamate Production Waste," January 27, 1994, (F-94-S0002). The EIA revised in response to comment is available in the regulatory docket and is entitled "Economic Impact Analysis of the Identification and Listing of Carbamate Production Wastes," October 26, 1994.

#### A. Compliance Costs for Listings

The remainder of this section briefly describes (1) the universe of carbamate production facilities and volumes of carbamate production wastes in the 6 waste groups listed, (2) the methodology for determining incremental cost and economic impacts to regulated entities,

and (3) the regulatory flexibility analysis.

1. Universe of Carbamate Production Facilities and Waste Volumes

In order to estimate costs for the EIA, it was first necessary to estimate total annual generation of carbamate production wastes. The domestic carbamate production industry is composed of 64 chemical products produced by 20 manufacturers at 24 facilities. Total annual waste quantities generated by these facilities were derived from a 1990 survey of the carbamate production industry.

2. Method for Determining Cost and Economic Impacts

This section details EPA's approach for estimating the incremental compliance cost and the economic impacts attributable to the listing of carbamate production waste. Because the carbamate production industry is relatively small (only 20 manufacturers at 24 facilities in 1990), EPA was able to collect facility-specific information and estimate incremental costs at the waste stream level. The information used in this analysis was collected in 1990 under the authority of a RCRA section 3007 survey; the survey included engineering site visits, and sampling and analysis of waste streams.

Approach to the Cost Analysis

EPA's approach to the cost analysis for this rule was to compare the cost of current management practices, as reported in the 3007 survey of carbamate production facilities, with the projected cost of management to comply with the RCRA Subtitle C hazardous waste program. This difference in cost, when annualized,<sup>3</sup> represents the incremental annual compliance cost attributable to the rule.

Baseline or Current Management Scenario

Relying on survey responses and engineering site visits, EPA was able to determine the current (i.e., 1990) management practices for the handling and disposal of carbamate production wastes. Current management practices varied among facilities and waste streams, and included such practices as off-site incineration, deep-well disposal, on-site destruction in boilers, and off-site landfilling. These current management practices at each facility represent the baseline scenario of the analysis.

As part of the 3007 survey, EPA asked each facility to identify current costs for the management of carbamate production wastes. For this analysis, EPA has relied on and has not changed

the industry's own waste-specific estimates concerning the cost of current management. EPA realizes that future events such as waste minimization efforts or increased demand for carbamate products may change waste generation volumes and, thus, future waste management costs.

Post-Regulatory Management Scenarios

In predicting how industry would comply with the listing of carbamate production waste as RCRA hazardous waste, EPA developed nine post-regulatory management scenarios, described below, that represent reasonable management reactions on the part of industry. EPA developed these post-regulatory management categories based on its knowledge of current waste management and the physical and chemical properties of the waste.

Unit costs for Subtitle C treatment (i.e., incineration) or land disposal, waste transportation between facilities, permit modifications, maintenance of contingency plans, manifesting and biannual reporting system (BRS) reporting are contained in Table 4 below. The total volume of waste affected by each waste management category described above are presented below in Table 5.

TABLE 4.—POST-REGULATORY WASTE MANAGEMENT UNIT COST ESTIMATES

	Cost (1992 \$)	Source
Commercial hazardous waste incineration .....	\$1,600 per metric ton .....	SAIC/ICF analysis.
Commercial hazardous waste landfill .....	\$200 per metric ton .....	SAIC/ICF analysis.
Hazardous waste transportation .....	\$0.27 per metric ton per mile if under 200 miles. \$0.24 per metric ton per mile if over 200 miles.	SAIC analysis.
Class II on-site hazardous waste landfill permit modification <sup>4</sup> .....	\$80,102 .....	ICF analysis.
Class II on-site hazardous waste incinerator permit modification <sup>5</sup> .....	\$40,585 .....	ICF analysis.
Other class II on-site hazardous waste treatment permit modification ..	\$7,476 .....	ICF analysis.
Segregation of industrial Subtitle D waste .....	\$10 per metric ton .....	EPA estimate.
Maintenance of contingency plan .....	\$200 per facility per year .....	Source a.
Manifesting <sup>5</sup> .....	\$36 per shipment .....	Sources b, c.
BRS reporting .....	\$428 per facility per year .....	Sources c, d.

<sup>4</sup> Permit modification costs were assumed to be incurred no more than once for each type of treatment at each facility. These costs were annualized over 20 years using a discount rate of 7 percent.

<sup>5</sup> Manifest completion costs were assumed to be incurred once a year for each waste shipped off site. One shipment was assumed to equal one truckload of 20 tons.

Sources: a. "Estimating Costs for the Economic Benefits of RCRA Non-compliance," Draft Report prepared by DPRA for Office of Waste Programs Enforcement, U.S. Environmental Protection Agency, May 1993.

b. ICF No. 801 "Requirements for Generators, Transporters, and Waste Management Facilities Under the RCRA Hazardous Waste Manifest System," June 15, 1992.

c. Employment and Earnings, Bureau of Labor Statistics, March 1993.

d. "1991 Hazardous Waste Report," U.S. Environmental Protection Agency.

<sup>3</sup> Costs are discounted at a rate of 7 percent over a 20 year period.

TABLE 5.—TOTAL CARBAMATE PRODUCTION WASTE QUANTITIES AND TOTAL INCREMENTAL ANNUAL COST INCURRED BY EACH POST-REGULATORY WASTE MANAGEMENT CATEGORY

Post-regulatory waste management scenario	Total quantity of carbamate production waste affected (in metric tons)	Total annualized incremental cost incurred
MC 1 .....	234,000	\$25,600
MC 2 .....	6,400	8,200
MC 3 .....	1	700
MC 4 .....	809,900	776,700
MC 5 and 6 .....	2,700	200
MC 7 .....	0	20
MC 8 and 9 .....	240	68,100
MC 10 .....	4,100	41,000
Total <sup>a</sup> .....	840,000	910,000

<sup>a</sup> Numbers may not add due to rounding.

**Specific Analysis of K157 Wastewaters**

EPA examined two scenarios for the post-regulatory management of K157 wastewaters that do not meet the concentration-based exemption. The first scenario assumed that K157 wastewaters would continue to be sent through NPDES-permitted discharges or to POTWs, but that (1) sludge would be managed as hazardous waste, and (2) surface impoundments would be closed and converted to tanks. The second scenario assumed that wastewaters would be treated by steam stripping before discharge into centralized wastewater treatment systems.

For the first K157 wastewater scenario, EPA reviewed the information collected as part of the RCRA section 3007 survey. The facility-specific information shows that only two facilities employ operational surface impoundments (as of 1990). EPA calculated the costs associated with the closure of the surface impoundments and conversion to tanks. The EIA technical background document contains details of these cost calculations. EPA estimated that the costs associated with the first scenario to be approximately \$760,000 per year.

For the second K157 wastewater scenario, EPA explored the possibility of off-site steam stripping as well as constructing on-site steam stripping units. EPA calculated rough engineering cost estimates for the on-site systems, both for capital costs and annual operation and maintenance. For volumes generated by these facilities (approximately 400 tons), EPA estimated the total annualized cost of

off-site steam stripping<sup>6</sup>. The total estimated annualized cost for scenario two is \$6.4 million.

Because the K157 incremental annualized cost of scenario two is more than eight times that of scenario one, EPA assumed that industry would minimize its cost by adopting the lower-cost management<sup>7</sup>. The costs estimated for scenario one have been used in the total costs for K157 wastes reported below.

**3. P and U List Wastes**

EPA has obtained its estimate of the amount of P and U wastes generated annually by the carbamate producers from the 1990 RCRA Section 3007 Survey. The \$10,000 cost associated with managing the 40 metric tons reported in the survey represents a lower-bound cost because it does not include wastes generated by pesticide formulators or distributors.

**4. Potential Remedial Action Costs**

In addition to carbamate process wastes, the carbamate hazardous waste listing could affect the management of soils, ground water, and other remedial materials. The Agency's "contained in" policy defines certain remediation wastes "containing" a listed hazardous waste as a RCRA hazardous waste (See *Chemical Waste Management v. EPA*, 869 F.2d 1526, D.C.C., 1989). Sites, where in newly identified hazardous wastes have been managed prior to the effective date of the new listings, may still have contaminant concentrations which exceed "contained in" levels. A person who actively manages such material could become a generator of RCRA hazardous waste. The likelihood of this imposing a significant additional burden is low since at least 22 of 24 carbamate production facilities are already permitted TSDFs. Releases from all solid waste management units at these TSDFs, including those that in the future would be found to contain a waste meeting the carbamate listing descriptions, are already covered by facility-wide corrective action under 40 CFR 264.101. These associated costs e.g., RCRA Facility Assessment have already been accounted for in the regulatory impact analysis of the corrective action rule.

<sup>6</sup>Recent vendor quotes of off-site steam-stripping showed a cost of \$0.75 per gallon (approximately \$200 per metric ton).

<sup>7</sup>EPA also considered facility specific comparisons between scenarios one and two. It should be noted that, under scenario one, given the worst possible case (conversion of three surface impoundments, one tank cover and sludge disposal) costs were still favorable to those that would be incurred by the same facility under scenario two.

One corrective action-related cost that should be accounted for is the possible clean up cost associated with the out-of-service surface impoundment that become solid waste management units following their replacement with tanks. In the worst-case, facilities generating K157 wastewaters will meet the concentration-based exemption and will abandon their surface impoundments following this listing. To calculate the corrective action costs, EPA has assumed clean closure in year one, with costs annualized over 20 years. To the clean closure costs, EPA has added the value of the abandoned land. Under these assumptions, annualized corrective action costs associated with this rule making total \$472,000. If, however, the K157 wastewaters and all wastewaters derived from the treatment of K156 and comanaged with K157 wastes qualify for the concentration-based exemption, the corrective action costs are reduced to \$12,000 annually.

**5. Summary of Results**

Table 6 presents a summary of estimated national incremental annualized compliance costs, by newly identified hazardous waste number, associated with this rule.

TABLE 6.—ANNUALIZED INCREMENTAL COMPLIANCE COST FOR THE LISTING OF CARBAMATE PRODUCTION WASTES LISTED BY CORRESPONDING RCRA CODES

RCRA waste code	Annual incremental compliance cost
K156 .....	\$14,000
K157 .....	10,000–770,000
K158 .....	37,000
K159 .....	1,200
K160 .....	2,100
K161 .....	61,000
P & U .....	10,000
Total .....	140,000–900,000 <sup>a</sup>

<sup>a</sup>Figures may not sum exactly because of rounding. Corrective action may add \$12,000 to the lower bound costs and \$472,000 to the upper bound costs.

**X. Regulatory Flexibility Act**

The Regulatory Flexibility Act (RFA) of 1980 requires federal agencies to consider "small entities" throughout the regulatory process. Section 603 of the RFA requires an initial screening analysis to be performed to determine whether small entities will be affected by the regulation. If affected small entities are identified, regulatory alternatives must be considered which mitigate the potential impacts. Small entities as described in the Act are only those "businesses, organizations and



governmental jurisdictions subject to regulation.”

If, however, the head of the Agency certifies that the rule will not have a significant impact on a substantial number of small entities, no regulatory flexibility analysis is required.

Table 7 presents the estimated annualized incremental compliance costs borne by the five small businesses<sup>8</sup> in the carbamate production industry. The annual incremental cost of the rule for the five facilities ranged from \$628 to \$772. The greatest ratio of compliance cost to sales is 0.01%, thus, EPA concluded that no small businesses are significantly affected by this rule.

TABLE 7.—RESULTS OF THE REGULATORY FLEXIBILITY ANALYSIS

Facility	Annual incremental cost of rule	Annual sales (millions)	Annual cost of compliance/annual sales (percent)
1 .....	\$772	\$17.8	<0.01
2 .....	628	110	<0.01
3 .....	664	6.6	0.01
4 .....	628	45	<0.01
5 .....	736	19	<0.01

Of the 24 entities which are directly subject to this rule, 18 entities would incur incremental compliance costs. Of the 18 affected facilities, 4 entities fit the definition of a “small entity” as defined by the Regulatory Flexibility Act.<sup>9</sup> The annual incremental cost impact to these 4 entities ranges from \$600 to \$800. For each of the 4 facilities impacted, these annual costs constitute less than 1 percent of total annual sales. EPA believes that these costs do not represent a significant impact. Hence, pursuant to section 605(b) of the Regulatory Flexibility Act, 5 U.S.C. 605(b), “the Administrator certifies that this rule will not have a significant economic impact on a substantial number of entities.”

**XI. Paperwork Reduction Act**

This rule does not contain any new information collection requirements subject to OMB review under the Paperwork Reduction Act of 1980, 44 U.S.C. 3501 *et seq.* Facilities will have

<sup>8</sup> A small business is defined by the Small Business Size Regulations (13 CFR part 121) as one with under 500 employees.

<sup>9</sup> According to “EPA Guidelines for Implementing the Regulatory Flexibility Act” (April, 1992), any producer of pesticides and agricultural chemicals (SIC 2879) with less than 500 employees constitutes a “small entity.” None of the entities which would incur incremental compliance costs as a result of this proposal have less than 500 employees.

to comply with the existing Subtitle C recordkeeping and reporting requirements for the newly listed wastestreams.

To the extent that this rule imposes any information collection requirements under existing RCRA regulations promulgated in previous rulemakings, those requirements have been approved by the Office of Management and Budget (OMB) under the Paperwork Reduction Act, 44 U.S.C. 3501 *et seq.*, and have been assigned OMB control numbers 2050–120 (ICR no. 1573, Part B Permit Application); 2050–120 (ICR 1571, General Facility Standards); 2050–0028 (ICR 261, Notification to Obtain an EPA ID); 2050–0034 (ICR 262, Part A Permit Application); 2050–0039 (ICR 801, Hazardous Waste Manifest); 2050–0035 (ICR 820, Generator Standards); and 2050–0024 (ICR 976, Biennial Report).

Release reporting required as a result of listing 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 (ICR 1049, Notification of Episodic Release of Oil and Hazardous Substances).

**List of Subjects**

40 CFR Part 261

Environmental protection, Hazardous materials, Waste treatment and disposal, Recycling.

40 CFR Part 271

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

40 CFR Part 302

Environmental protection, Air pollution control, Chemicals, Emergency Planning and Community Right-to-Know Act, Extremely hazardous substances, Hazardous chemicals, Hazardous materials, Hazardous materials transportation, Hazardous substances, Hazardous wastes, Intergovernmental relations, Natural resources, Pesticides and pests, Reporting and recordkeeping requirements, Superfund, Waste treatment and disposal, Water pollution control, Water supply.

Dated: January 31, 1995.

**Carol M. Browner,**  
Administrator.

For the reasons set out in the preamble, amend title 40 of the Code of Federal Regulations 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. Section 261.3 is amended by removing the period at the end of paragraph (a)(2)(iv)(E) and adding a semi-colon and the word “or” and by adding paragraphs (a)(2)(iv)(F), (a)(2)(iv)(G) and (c)(2)(ii)(D) to read as follows.

**§ 261.3 Definition of hazardous waste.**

- (a) \* \* \*
- (2) \* \* \*
- (iv) \* \* \*
- (E) \* \* \*; or

(F) One or more of the following wastes listed in § 261.32—wastewaters from the production of carbamates and carbamoyl oximes (EPA Hazardous Waste No. K157)—Provided that the maximum weekly usage of formaldehyde, methyl chloride, methylene chloride, and triethylamine (including all amounts that can not be demonstrated to be reacted in the process, destroyed through treatment, or is recovered, i.e., what is discharged or volatilized) divided by the average weekly flow of process wastewater prior to any dilutions into the headworks of the facility’s wastewater treatment system does not exceed a total of 5 parts per million by weight; or

(G) Wastewaters derived from the treatment of one or more of the following wastes listed in § 261.32—organic waste (including heavy ends, still bottoms, light ends, spent solvents, filtrates, and decantates) from the production of carbamates and carbamoyl oximes (EPA Hazardous Waste No. K156).—Provided, that the maximum concentration of formaldehyde, methyl chloride, methylene chloride, and triethylamine prior to any dilutions into the headworks of the facility’s wastewater treatment system does not exceed a total of 5 milligrams per liter.

\* \* \* \* \*

- (c) \* \* \*
- (2) \* \* \*
- (ii) \* \* \*

(D) Biological treatment sludge from the treatment of one of the following wastes listed in § 261.32—organic waste

(including heavy ends, still bottoms, light ends, spent solvents, filtrates, and decantates) from the production of carbamates and carbamoyl oximes (EPA Hazardous Waste No. K156), and wastewaters from the production of

carbamates and carbamoyl oximes (EPA Hazardous Waste No. K157).  
\* \* \* \* \*  
3. Section 261.32 is amended by adding in alphanumeric order (by the first column) the following waste

streams to the subgroup 'Organic chemicals' to read as follows.

**§ 261.32 Hazardous waste from specific sources.**  
\* \* \* \* \*

Industry and EPA hazardous waste No.	Hazardous waste	Hazard code
* * * * *		
Organic Chemicals:		
* * * * *		
K156 .....	Organic waste (including heavy ends, still bottoms, light ends, spent solvents, filtrates, and decantates) from the production of carbamates and carbamoyl oximes.	(T)
K157 .....	Wastewaters (including scrubber waters, condenser waters, washwaters, and separation waters) from the production of carbamates and carbamoyl oximes.	(T)
K158 .....	Bag house dusts and filter/separation solids from the production of carbamates and carbamoyl oximes .....	(T)
K159 .....	Organics from the treatment of thiocarbamate wastes .....	(T)
K160 .....	Solids (including filter wastes, separation solids, and spent catalysts) from the production of thiocarbamates and solids from the treatment of thiocarbamate wastes.	(T)
K161 .....	Purification solids (including filtration, evaporation, and centrifugation solids), bag house dust and floor sweepings from the production of dithiocarbamate acids and their salts. (This listing does not include K125 or K126.)	(R,T)

4. The tables in § 261.33(e) and (f) are amended by adding in alphabetic order (by the third column) the following substances to read as follows:

**§ 261.33 Discarded commercial chemical products, off-specification species, container residues, and spill residues thereof.**

(e) \* \* \*

Hazardous waste No.	Chemical abstracts No.	Substance
* * * * *		
P203 .....	1646-88-4	Aldicarb sulfone.
* * * * *		
P127 .....	1563-66-2	7-Benzofuranol, 2,3-dihydro-2,2-dimethyl-, methylcarbamate.
P188 .....	57-64-7	Benzoic acid, 2-hydroxy-, compd. with (3aS-cis)-1,2,3,3a,8,8a-hexahydro-1,3a,8-trimethylpyrrolo[2,3-b]indol-5-yl methylcarbamate ester (1:1).
* * * * *		
P189 .....	55285-14-8	Carbamic acid, [(dibutylamino)- thio]methyl-, 2,3-dihydro-2,2-dimethyl- 7-benzofuranyl ester.
P191 .....	644-64-4	Carbamic acid, dimethyl-, 1-[(dimethyl-amino)carbonyl]- 5-methyl-1H- pyrazol-3-yl ester.
P192 .....	119-38-0	Carbamic acid, dimethyl-, 3-methyl-1- (1-methylethyl)-1H- pyrazol-5-yl ester.
P190 .....	1129-41-5	Carbamic acid, methyl-, 3-methylphenyl ester.
P127 .....	1563-66-2	Carbofuran.
* * * * *		
P189 .....	55285-14-8	Carbosulfan.
* * * * *		
P202 .....	64-00-6	m-Cumenyl methylcarbamate.
* * * * *		
P191 .....	644-64-4	Dimetilan.
* * * * *		
P185 .....	26419-73-8	1,3-Dithiolane-2-carboxaldehyde, 2,4-dimethyl-, O- [(methylamino)- carbonyl]oxime.
* * * * *		
P194 .....	23135-22-0	Ethanimidothioc acid, 2-(dimethylamino)-N-[[[(methylamino) carbonyl]oxy]-2-oxo-, methyl ester.
* * * * *		
P198 .....	23422-53-9	Formetanate hydrochloride.

Hazardous waste No.	Chemical abstracts No.	Substance
P197 .....	17702-57-7	Formparanate.
*	*	*
P192 .....	119-38-0	Isolan.
P202 .....	64-00-6	3-Isopropylphenyl N-methylcarbamate.
*	*	*
P196 .....	15339-36-3	Manganese, bis(dimethylcarbamodithioato-S,S')-
P196 .....	15339-36-3	Manganese dimethyldithiocarbamate.
*	23422-53-9	Methanimidamide, N,N-dimethyl-N'-[3-[[[(methylamino)carbonyl]oxy]phenyl]-, morphohydrochloride.
P197 .....	17702-57-7	Methanimidamide, N,N-dimethyl-N'-[2-methyl-4-[[[(methylamino)carbonyl]oxy]phenyl]-
P199 .....	2032-65-7	Methiocarb.
*	*	*
P190 .....	1129-41-5	Metolcarb.
*	*	*
P199 .....	2032-65-7	Mexacarbate.
*	*	*
P194 .....	23135-22-0	Oxamyl.
*	*	*
P128 .....	315-18-4	Phenol, 4-(dimethylamino)-3,5-dimethyl-, methylcarbamate (ester).
P199 .....	2032-65-7	Phenol, (3,5-dimethyl-4-(methylthio)-, methylcarbamate
*	*	*
P202 .....	64-00-6	Phenol, 3-(1-methylethyl)-, methyl carbamate.
*	*	*
P201 .....	2631-37-0	Phenol, 3-methyl-5-(1-methylethyl)-, methyl carbamate.
*	*	*
P204 .....	57-47-6	Physostigmine.
P188 .....	57-64-7	Physostigmine salicylate.
*	*	*
P201 .....	2631-37-0	Promecarb
P203 .....	1646-88-4	Propanal, 2-methyl-2-(methyl-sulfonyl)-, O-[(methylamino)carbonyl] oxime.
*	*	*
P204 .....	57-47-6	Pyrrolo[2,3-b]indol-5-ol, 1,2,3,3a,8,8a-hexahydro-1,3a,8-trimethyl-, methylcarbamate (ester), (3aS-cis)-.
*	*	*
P185 .....	26419-73-8	Tirpate.
*	*	*
P205 .....	137-30-4	Zinc, bis(dimethylcarbamodithioato-S,S')-
*	*	*
P205 .....	137-30-4	Ziram.

(f) \* \* \*

Hazardous waste No.	Chemical abstracts No.	Substance
U394 .....	30558-43-1	A2213.
*	*	*
U365 .....	2212-67-1	H-Azepine-1-carbothioic acid, hexahydro-, S-ethyl ester.
*	*	*
U280 .....	101-27-9	Barban.
U278 .....	22781-23-3	Bendiocarb.
U364 .....	22961-82-6	Bendiocarb phenol.
U271 .....	17804-35-2	Benomyl.
*	*	*
U278 .....	22781-23-3	1,3-Benzodioxol-4-ol, 2,2-dimethyl-, methyl carbamate.

Hazardous waste No.	Chemical abstracts No.	Substance
U364 .....	22961-82-6	1,3-Benzodioxol-4-ol, 2,2-dimethyl-
U367 .....	1563-38-8	7-Benzofuranol, 2,3-dihydro-2,2-dimethyl-
*	*	*
U401 .....	97-74-5	Bis(dimethylthiocarbamoyl) sulfide.
U400 .....	120-54-7	Bis(pentamethylene)thiuram tetrasulfide.
*	*	*
U392 .....	2008-41-5	Butylate.
*	*	*
U372 .....	10605-21-7	Carbamic acid, 1H-benzimidazol-2-yl, methyl ester.
U271 .....	17804-35-2	Carbamic acid, [1-[(butylamino)carbonyl]-1H-benzimidazol-2-yl]-, methyl ester.
U375 .....	55406-53-6	Carbamic acid, butyl-, 3-iodo-2-propynyl ester.
U280 .....	101-27-9	Carbamic acid, (3-chlorophenyl)-, 4-chloro-2-butynyl ester.
U373 .....	122-42-9	Carbamic acid, phenyl-, 1-methylethyl ester.
U409 .....	23564-05-8	Carbamic acid, [1,2-phenylenebis (iminocarbonothioyl)]bis-, dimethyl ester.
*	*	*
U379 .....	136-30-1	Carbamodithioic acid, dibutyl, sodium salt.
U277 .....	95-06-7	Carbamodithioic acid, diethyl-, 2-chloro-2-propenyl ester.
U381 .....	148-18-5	Carbamodithioic acid, diethyl-, sodium salt.
U383 .....	128-03-0	Carbamodithioic acid, dimethyl, potassium salt.
U382 .....	128-04-1	Carbamodithioic acid, dimethyl-, sodium salt.
U376 .....	144-34-3	Carbamodithioic acid, dimethyl-, tetraanhydrosulfide with orthothioselenious acid.
*	*	*
U378 .....	51026-28-9	Carbamodithioic acid, (hydroxymethyl)methyl-, monopotassium salt.
U384 .....	137-42-8	Carbamodithioic acid, methyl-, monosodium salt.
U377 .....	137-41-7	Carbamodithioic acid, methyl-, monopotassium salt.
*	*	*
U389 .....	2303-17-5	Carbamothioic acid, bis(1-methylethyl)-, S-(2,3,3-trichloro-2-propenyl) ester.
U392 .....	2008-41-5	Carbamothioic acid, bis(2-methylpropyl)-, S-ethyl ester.
U391 .....	1114-71-2	Carbamothioic acid, butylethyl-, S-propyl ester.
U386 .....	1134-23-2	Carbamothioic acid, cyclohexylethyl-, S-ethyl ester.
U390 .....	759-94-4	Carbamothioic acid, dipropyl-, S-ethyl ester.
U387 .....	52888-80-9	Carbamothioic acid, dipropyl-, S-(phenylmethyl) ester.
U385 .....	1929-77-7	Carbamothioic acid, dipropyl-, S-propyl ester.
U279 .....	63-25-2	Carbaryl.
U372 .....	10605-21-7	Carbendazim.
U367 .....	1563-38-8	Carbofuran phenol.
*	*	*
U393 .....	137-29-1	Copper, bis(dimethylcarbamodithioato-S,S')-,
U393 .....	137-29-1	Copper dimethyldithiocarbamate.
*	*	*
U386 .....	1134-23-2	Cycloate.
*	*	*
U366 .....	533-74-4	Dazomet.
*	*	*
U395 .....	5952-26-1	Diethylene glycol, dicarbamate.
*	*	*
U403 .....	97-77-8	Disulfiram.
*	*	*
U390 .....	759-94-4	EPTC.
*	*	*
U404 .....	101-44-8	Ethanamine, N,N-diethyl-
*	*	*
U410 .....	59669-26-0	Ethanimidothioic acid, N,N'- [thiobis[(methylimino)carbonyloxy]]bis-, dimethyl ester
U394 .....	30558-43-1	Ethanimidothioic acid, 2-(dimethylamino)-N-hydroxy-2-oxo-, methyl ester.
*	*	*
U395 .....	5952-26-1	Ethanol, 2,2'-oxybis-, dicarbamate.

Hazardous waste No.	Chemical abstracts No.	Substance
* U407	* 14324-55-1	* Ethyl Ziram.
* U396	* 14484-64-1	* Ferbam.
* U375	* 55406-53-6	* 3-Iodo-2-propynyl n-butylcarbamate.
* U396	* 14484-64-1	* Iron, tris(dimethylcarbamodithioato-S,S')-
* U384	* 137-42-8	* Metam Sodium.
* U365	* 2212-67-1	* Molinate.
* U279	* 63-25-2	* 1-Naphthalenol, methylcarbamate.
* U391	* 1114-71-2	* Pebulate.
* U411	* 114-26-1	* Phenol, 2-(1-methylethoxy)-, methylcarbamate.
* U400	* 120-54-7	* Piperidine, 1,1'-(tetrathiodicarbonothioyl)-bis-
* U383	* 128-03-0	* Potassium dimethyldithiocarbamate.
* U378	* 51026-28-9	* Potassium n-hydroxymethyl- n-methyl-di-thiocarbamate.
* U377	* 137-41-7	* Potassium n-methyldithiocarbamate.
* U373	* 112-42-9	* Propham.
* U411	* 114-26-1	* Propoxur.
* U387	* 52888-80-9	* Prosulfocarb.
* U376	* 144-34-3	* Selenium, tetrakis(dimethyldithiocarbamate).
* U379	* 136-30-1	* Sodium dibutyldithiocarbamate.
* U381	* 148-18-5	* Sodium diethyldithiocarbamate.
* U382	* 128-04-1	* Sodium dimethyldithiocarbamate.
* U277	* 95-06-7	* Sulfallate.
* U402	* 1634-02-2	* Tetrabutylthiuram disulfide.
* U401	* 97-74-5	* Tetramethylthiuram monosulfide.
* U366	* 533-74-4	* 2H-1,3,5-Thiadiazine- 2-thione, tetrahydro-3,5-dimethyl-
* U410	* 59669-26-0	* Thiodicarb.
* U402	* 1634-02-2	* Thioperoxydicarbonic diamide, tetrabutyl.
* U403	* 97-77-8	* Thioperoxydicarbonic diamide, tetraethyl.
* U409	* 23564-05-8	* Thiophanate-methyl.
* U389	* 2303-17-5	* Triallate.
* U404	* 101-44-8	* Triethylamine.

Hazardous waste No.	Chemical abstracts No.	Substance
* U385 .....	* 1929-77-7	* Vernolate.
* U407 .....	* 14324-55-1	* Zinc, bis(diethylcarbomodithioato-S,S')-

5. Appendix VII to Part 261 is amended by adding the following waste streams in alphanumeric order (by the first column) to read as follows.

**Appendix VII to Part 261—Basis for Listing Hazardous Waste**

EPA hazardous waste No.	Hazardous constituents for which listed
* K156 .....	* Benomyl, carbaryl, carbendazim, carbofuran, carbosulfan, formaldehyde, methylene chloride, triethylamine.
* K157 .....	* Carbon tetrachloride, formaldehyde, methyl chloride, methylene chloride, pyridine, triethylamine.
* K158 .....	* Benomyl, carbendazim, carbofuran, carbosulfan, chloroform, methylene chloride.
* K159 .....	* Benzene, butylate, eptc, molinate, pebulate, vernolate.
* K160 .....	* Benzene, butylate, eptc, molinate, pebulate, vernolate.
* K161 .....	* Antimony, arsenic, metam-sodium, ziram.

6. Appendix VIII of Part 261 is amended by adding the following hazardous constituents in alphabetical order to read as follows: The appropriate footnotes to Appendix VIII are republished without change.

**APPENDIX VIII TO PART 261—HAZARDOUS CONSTITUENTS**

Common name	Chemical abstracts name	Chemical abstracts No.	Hazardous waste No.
* A2213 .....	* Ethanimidothioic acid, 2- (dimethylamino) -N-hydroxy-2-oxo-, methyl ester ..	* 30558-43-1	* U394
* Aldicarb sulfone .....	* Propanal, 2-methyl-2- (methylsulfonyl) -, O-[(methylamino) carbonyl] oxime .	* 1646-88-4	* P203
* Barban .....	* Carbamic acid, (3-chlorophenyl) -, 4-chloro-2-butynyl ester .....	* 101-27-9	* U280
* Bendiocarb .....	* 1,3-Benzodioxol-4-ol, 2,2-dimethyl-, methyl carbamate .....	* 22781-23-3	* U278
* Bendiocarb phenol .....	* 1,3-Benzodioxol-4-ol, 2,2-dimethyl-, .....	* 22961-82-6	* U364
* Benomyl .....	* Carbamic acid, [1- [(butylamino) carbonyl]- 1H-benzimidazol-2-yl] -, methyl ester.	* 17804-35-2	* U271
* Bis (dibutylcarbamoithioa to) dioxodimolydenum sulfurized.	* Molybdenum, bis (dibutylcarbamoithioato) dioxodi-, sulfurized .....	* 68412-26-0	* U389
* Bis (pentamethylene)-thiuram tetrasulfide.	* Piperidine, 1,1'-(tetrathiodicarbonothioyl)-bis- .....	* 120-54-7	* U400
* Butylate .....	* Carbamoithioic acid, bis (2-methylpropyl)-, S-ethyl ester .....	* 2008-41-5	* U392
* Carbaryl .....	* 1-Naphthalenol, methylcarbamate .....	* 63-25-2	* U279
* Carbendazim .....	* Carbamic acid, 1H-benzimidazol-2-yl, methyl ester .....	* 10605-21-7	* U372
* Carbofuran .....	* 7-Benzofuranol, 2,3-dihydro-2,2-dimethyl-, methylcarbamate .....	* 1563-66-2	* P127
* Carbofuran phenol .....	* 7-Benzofuranol, 2,3-dihydro-2,2-dimethyl- .....	* 1563-38-8	* U367
* Carbosulfan .....	* Carbamic acid, [(dibutylamino) thio] methyl-, 2,3-dihydro-2,2-dimethyl-7-benzofuranyl ester.	* 55285-14-8	* P189
* Copper dimethyldithiocarbamate .....	* Copper, bis(dimethylcarbomodithioato-S,S')-, .....	* 137-29-1	* U393

## APPENDIX VIII TO PART 261—HAZARDOUS CONSTITUENTS—Continued

Common name	Chemical abstracts name	Chemical abstracts No.	Hazardous waste No.
m-Cumenyl methylcarbamate	Phenol, 3-(methylethyl)-, methyl carbamate	64-00-6	P202
Cycloate	Carbamothioic acid, cyclohexylethyl-, S-ethyl ester	1134-23-2	U386
Dazomet	2H-1,3,5-thiadiazine-2-thione, tetrahydro-3,5-dimethyl	533-74-4	U366
Diethylene glycol, dicarbamate	Ethanol, 2,2'-oxybis-, dicarbamate	5952-26-1	U395
Dimetilan	Carbamic acid, dimethyl-, 1- [(dimethylamino) carbonyl]-5-methyl-1H-pyrazol-3-yl ester.	644-64-4	P191
Disulfiram	Thioperoxydicarbonic diamide, tetraethyl	97-77-8	U403
EPTC	Carbamothioic acid, dipropyl-, S-ethyl ester	759-94-4	U390
Ethyl Ziram	Zinc, bis(diethylcarbomodithioato-S,S')-	14324-55-1	U407
Ferbam	Iron, tris(dimethylcarbomodithioat-S,S')-,	14484-64-1	U396
Formetanate hydrochloride	Methanimidamide, N,N-dimethyl-N'-[3-[(methylamino) carbonyl]oxy]phenyl]-, monohydrochloride.	23422-53-9	P198
Formparanate	Methanimidamide, N,N-dimethyl-N'-[2-methyl-4-[(methylamino) carbonyl]oxy]phenyl]-.	17702-57-7	P197
3-Iodo-2-propynyl n-butylcarbamate	Carbamic acid, butyl-, 3-iodo-2-propynyl ester	55406-53-6	U375
Isolan	Carbamic acid, dimethyl-, 3-methyl-1-(1-methylethyl)-1H-pyrazol-5-yl ester ..	119-38-0	P192
Manganese dimethyldithiocarbamate	Manganese, bis(dimethylcarbomodithioato-S,S')-,	15339-36-3	P196
Metam Sodium	Carbamodithioic acid, methyl-, monosodium salt	137-42-8	U384
Methiocarb	Phenol, (3,5-dimethyl-4-(methylthio)-, methylcarbamate	2032-65-7	P199
Metolcarb	Carbamic acid, methyl-, 3-methylphenyl ester	1129-41-5	P190
Mexacarbate	Phenol, 4-(dimethylamino)-3,5-dimethyl-, methylcarbamate (ester)	315-18-4	P128
Molinate	1H-Azepine-1-carbothioic acid, hexahydro-, S-ethyl ester	2212-67-1	U365
Oxamyl	Ethanimidothioic acid, 2-(dimethylamino)-N-[(methylamino)carbonyl]oxy]-2-oxo-, methyl ester.	23135-22-0	P194
Pebulate	Carbamothioic acid, butylethyl-, S-propyl ester	1114-71-2	U391

## APPENDIX VIII TO PART 261—HAZARDOUS CONSTITUENTS—Continued

Common name	Chemical abstracts name	Chemical abstracts No.	Hazardous waste No.
Physostigmine	Pyrrolo[2,3-b]indol-5-01, 1,2,3,3a,8,8a-hexahydro-1,3a,8-trimethyl-, methylcarbamate (ester), (3aS-cis)-	57-47-6	P204
Physostigmine	Benzoic acid, 2-hydroxy-, compd. with (3aS-cis) -1,2,3,3a,8,8a-hexahydro-1,3a,8-trimethylpyrrolo [2,3-b]indol-5-yl methylcarbamate ester (1:1).	57-64-7	P188
Potassium dimethyldithiocarbamate	Carbamodithioc acid, dimethyl, potassium salt	128-03-0	U383
Potassium hydroxymethyl-n-methyldithiocarbamate.	Carbamodithioc acid, (hydroxymethyl)methyl-, monopotassium salt	51026-28-9	U378
Potassium n-methyldithiocarbamate	Carbamodithioc acid, methyl-monopotassium salt	137-41-7	U377
Promecarb	Phenol, 3-methyl-5-(1-methylethyl)-, methyl carbamate	2631-37-0	P201
Propham	Carbamic acid, phenyl-, 1-methylethyl ester	122-42-9	U373
Propoxur	Phenol, 2-(1-methylethoxy)-, methylcarbamate	114-26-1	U411
Prosulfocarb	Carbamothioic acid, dipropyl-, S-(phenylmethyl) ester	52888-80-9	U387
Selenium, tetrakis (dimethyldithiocarbamate).	Carbamodithioic acid, dimethyl-, tetraanhydrosulfide with orthothioselenious acid.	144-34-3	U376
Sodium dibutyldithiocarbamate	Carbamodithioic acid, dibutyl, sodium salt	136-30-1	U379
Sodium diethyldithiocarbamate	Carbamodithioic acid, diethyl-, sodium salt	148-18-5	U381
Sodium dimethyldithiocarbamate	Carbamodithioic acid, dimethyl-, sodium salt	128-04-1	U382
Sulfallate	Carbamodithioic acid, diethyl-, 2-chloro-2-propenyl ester	95-06-7	U277
Tetrabutylthiuram disulfide	Thioperoxydicarbonic diamide, tetrabutyl	1634-02-2	U402
Tetrabutylthiuram monosulfide	Bis (dimethylthiocarbamoyl) sulfide	97-74-5	U401
Thiodicarb	Ethanimidothioic acid, N,N'-[thiobis [(methylimino) carbonyloxy]] bis-, dimethyl ester.	59669-26-0	U410
Thiophanate-methyl	Carbamic acid, [1,2-phenylenebis (iminocarbonothioyl)] bis-, dimethyl ester	23564-05-8	U409
Tirpate	1,3-Dithiolane-2-carboxaldehyde, 2,4-dimethyl-, O-[(methylamino) carbonyl] oxime.	26419-73-8	P185
Triallate	Carbamothioic acid, bis(1-methylethyl)-, S-(2,3,3-trichloro-2-propenyl) ester	2303-17-5	U389
Triethylamine	Ethanamine, N,N-diethyl-	121-44-8	U404
Vernolate	Carbamothioic acid, dipropyl-, S-propyl ester	1929-77-7	U385
Ziram	ZInc, bis(dimethylcarbamodithioato-S,S')-, (T-4)-	137-30-4	P205

<sup>1</sup> The abbreviation N.O.S. (not otherwise specified) signifies those members of the general class not specifically listed by name in this appendix.



**PART 271—REQUIREMENTS FOR AUTHORIZATION OF STATE HAZARDOUS WASTE PROGRAMS**

**Authority:** 42 U.S.C. 6902; 33 U.S.C. 1321 and 1361.

chronological order by date of publication to read as follows.

7. The authority citation for part 271 continues to read as follows:

8. Section 271.1(j) is amended by adding the following entry to Table 1 in

**§ 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
Feb. 9, 1995	Listing Wastes from the Production of Carbamates	[Insert Federal Register page numbers].	Aug. 9, 1995

**PART 302—DESIGNATION, REPORTABLE QUANTITIES, AND NOTIFICATION**

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

Table 302.4 are republished without change.

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

10. Section 302.4 is amended by adding the following entries in alphabetical order to Table 302.4 to read as follows. The appropriate footnotes to

**§ 302.4 Designation of hazardous substances.**  
\* \* \* \* \*

TABLE 302.4.—LIST OF HAZARDOUS SUBSTANCES AND REPORTABLE QUANTITIES

Hazardous substance	CASRN	Regulatory synonyms	Statutory		Final RQ	
			RQ	Code <sup>+</sup>	RCRA waste No.	Cat-egory
1H-Azepine-1-carbothioic acid, hexahydro-, S-ethyl ester (Molinatate).	2212671		1*	4	U365	# #
1,3-Benzodioxol-4-ol, 2,2-dimethyl-, (Bendiocarb phenol) ....	22961826		1*	4	U364	# #
1,3-Benzodioxol-4-ol, 2,2-dimethyl-, methyl carbamate (Bendiocarb).	22781233		1*	4	U278	# #
7-Benzofuranol, 2,3-dihydro-2,2-dimethyl- (Carbofuran phenol).	1563388		1*	4	U367	# #
Benzoic acid, 2-hydroxy-, compd. with (3aS-cis)-1,2,3,3a,8,8a-hexahydro-1,3a,8-trimethylpyrrolo[2,3-b]indol-5-yl methylcarbamate ester (1:1) (Physostigmine salicylate).	57647		1*	4	P188	# #
Bis(dimethylthiocarbamoyl) sulfide (Tetramethylthiuram monosulfide).	97745		1*	4	U401	# #
Carbamic acid, butyl-, 3-iodo-2-propynyl ester (3-iodo-2-propynyl n-butylcarbamate).	55406536		1*	4	U375	# #
Carbamic acid, [1-[(butylamino)carbonyl]-1H-benzimidazol-2-yl, methyl ester (Benomy)].	17804352		1*	4	U271	# #
Carbamic acid, 1H-benzimidazol-2-yl, methyl ester (Carbendazim).	10605217		1*	4	U372	# #
Carbamic acid, (3-chlorophenyl)-, 4-chloro-2-butynyl ester (Barban).	101279		1*	4	U280	# #
Carbamic acid, [(dibutylamino)thio]methyl-, 2,3-dihydro-2,2-dimethyl-7-benzofuranyl ester (Carbosulfan).	55285148		1*	4	P189	# #
Carbamic acid, dimethyl-,1- [(dimethylamino)carbonyl]-5-methyl-1H-pyrazol-3-yl ester (Dimetilan).	644644		1*	4	P191	# #
Carbamic acid, dimethyl-, 3-methyl-1-(1-methylethyl)-1H-pyrazol-5-yl ester (Isolan).	119380		1*	4	P192	# #

TABLE 302.4.—LIST OF HAZARDOUS SUBSTANCES AND REPORTABLE QUANTITIES—Continued

Hazardous substance	CASRN	Regulatory synonyms	Statutory			Final RQ	
			RQ	Code <sup>+</sup>	RCRA waste No.	Cat-egory	Pounds (Kg)
* * *	*	*	*	*	*	*	*
Carbamic acid, methyl-, 3-methylphenyl ester (Metolcarb) ...	1129415		1*	4	P190	# #	# #
Carbamic acid, [1,2- phenylenebis(iminocarbonothioyl)]bis-, dimethyl ester (Thiophanate-methyl).	23564058		1*	4	U409	# #	# #
Carbamic acid, phenyl-, 1-methylethyl ester (Propham) .....	122429		1*	4	U373	# #	# #
* * *	*	*	*	*	*	*	*
Carbamodithioic acid, dibutyl, sodium salt (Sodium dibutyldithiocarbamate).	136301		1*	4	U379	# #	# #
Carbamodithioic acid, diethyl-, 2-chloro-2-propenyl ester (Sulfallate).	95067		1*	4	U277	# #	# #
Carbamodithioic acid, diethyl-, sodium salt (Sodium diethyldithiocarbamate).	148185		1*	4	U381	# #	# #
Carbamodithioic acid, dimethyl, potassium salt (Potassium dimethyldithiocarbamate).	128030		1*	4	U383	# #	# #
Carbamodithioic acid, dimethyl-, sodium salt (Sodium dimethyldithiocarbamate).	128041		1*	4	U382	# #	# #
Carbamodithioic acid, dimethyl-, tetraanhydrosulfide with ortho-thioselenious acid (Selenium, tetrakis(dimethyldithiocarbamate)).	144343		1*	4	U376	# #	# #
Carbamodithioic acid, (hydroxymethyl)methyl-, monopotassium salt (Potassium n-hydroxymethyl-n-methyldithiocarbamate).	51026289		1*	4	U378	# #	# #
Carbamodithioic acid, methyl-, monopotassium salt (Potassium n-methyldithiocarbamate).	137417		1*	4	U377	# #	# #
Carbamodithioic acid, methyl-, monosodium salt (Metam Sodium).	137428		1*	4	U384	# #	# #
* * *	*	*	*	*	*	*	*
Carbamothioic acid, bis(2-methylpropyl)-, S-ethyl ester (Butylate).	2008415		1*	4	U392	# #	# #
* * *	*	*	*	*	*	*	*
Carbamothioic acid, bis(1-methylethyl)-, S-(2,3,3-trichloro-2-propenyl) ester (Triallate).	2303175		1*	4	U389	# #	# #
Carbamothioic acid, butylethyl-, S-propyl ester (Pebulate) ...	1114712		1*	4	U391	# #	# #
Carbamothioic acid, cyclohexylethyl-, S-ethyl ester (Cycloate).	1134232		1*	4	U386	# #	# #
Carbamothioic acid, dipropyl-, S-ethyl ester (EPTC) .....	759944		1*	4	U390	# #	# #
Carbamothioic acid, dipropyl-, S-(phenylmethyl) ester (Prosulfocarb).	52888809		1*	4	U387	# #	# #
Carbamothioic acid, dipropyl-, S-propyl ester (Vernolate) ....	1929777		1*	4	U385	# #	# #
* * *	*	*	*	*	*	*	*
Copper, bis(dimethylcarbamodithioato-S,S')-(Cooper dimethyldithiocarbamate).	137291		1*	4	U393	# #	# #
* * *	*	*	*	*	*	*	*
1,3-Dithiolane-2-carboxaldehyde, 2,4-dimethyl-, O-[(methylamino)carbonyl]oxime (Tirpate).	26419738		1*	4	P185	# #	# #
* * *	*	*	*	*	*	*	*
Ethanimidothioci acid, 2-(dimethylamino-N-hydroxy-2-oxo-, methyl ester (A2213).	30558431		1*	4	U394	# #	# #
* * *	*	*	*	*	*	*	*
Ethanimidothioic acid, 2-(dimethylamino)-N-[[[(methylamino)carbonyl]oxy]-2-oxo-, methyl ester (Oxamyl).	23135220		1*	4	P194	# #	# #
* * *	*	*	*	*	*	*	*
Ethanimidothioic acid, N,N'-[thiobis[(methylimino)carbonyloxy]]bis-, dimethyl ester (Thiodicarb).	59669260		1*	4	U410	# #	# #

TABLE 302.4.—LIST OF HAZARDOUS SUBSTANCES AND REPORTABLE QUANTITIES—Continued

Hazardous substance	CASRN	Regulatory synonyms	Statutory			Final RQ	
			RQ	Code <sup>+</sup>	RCRA waste No.	Cat-egory	Pounds (Kg)
Ethanol, 2,2'-oxybis-, dicarbamate (Diethylene glycol, dicarbamate).	5952261		1*	4	U395	# #	
Iron, tris(dimethylcarbamodithioato-S,S')-(Ferbam) .....	14484641		1*	4	U396	# #	
Manganese, bis(dimethylcarbamodithioato-S,S')-(Manganese dimethyldithiocarbamate).	15339363		1*	4	P196	# #	
Methanimidamide, N,N-dimethyl-N'-[3-[[[(methylamino)carbonyl]oxy]phenyl]-, monohydrochloride (Formetanate hydrochloride).	23422539		1*	4	P198	# #	
Methanimidamide, N,N-dimethyl-N'-[2-methyl-4-[[[(methylamino)carbonyl]oxy]phenyl)-(Formparanate).	17702577		1*	4	P197	# #	
Phenol, 3-(1-methylethyl)-, methyl carbamate (m-Cumenyl methylcarbamate).	64006		1*	4	P202	# #	
Phenol, 3-methyl-5-(1-methylethyl)-, methyl carbamate (Promecarb).	2631370		1*	4	P201	# #	
Piperidine, 1,1'-(tetrathiodicarbonothioyl)-bis-(Bis(pentamethylene)thiuram tetrasulfide).	120547		1*	4	U400	# #	
Propanal, 2-methyl-2-(methylsulfonyl)-, O-[[[(methylamino)carbonyl] oxime (Aldicarb sulfone).	1646884		1*	4	P203	# #	
Pyrrolo[2,3-b] indol-5-ol, 1,2,3,3a,8,8a-hexahydro-1,3a,8-trimethyl-, methylcarbamate (ester), (3aS-cis)-(Physostigmine).	57476		1*	4	P204	# #	
2H-1,3,5-Thiadiazine-2-thione, tetrahydro-3,5-dimethyl-(Dazomet).	533744		1*	4	U366	# #	
Thioperoxydicarbonic diamide, tetrabutyl (Tetrabutylthiuram disulfide).	1634022		1*	4	U402	# #	
Thioperoxydicarbonic diamide, tetraethyl (Disulfiram) .....	97778		1*	4	U403	# #	
Zinc, bis(dimethylcarbomodithioato-S,S')-, (Ziram) .....	137304		1*	4	P205	# #	
Zinc, bis(diethylcarbomodithioato-S,S')-(Ethyl Ziram) .....	14324551		1*	4	U407	# #	
K156 Organic waste (including heavy ends, still bottoms, light ends, spent solvents, filtrates, and decantates) from the production of carbamates and carbamoyl oximes.			1*	4	K156	# #	
K157 Wastewaters (including scrubber waters, condenser waters, washwaters, and separation waters) from the production of carbamates and carbamoyl oximes (This listing does not include sludges derived from the treatment of these wastewaters).			1*	4	K157	# #	
K158 Bag house dusts and filter/separation solids from the production of carbamates and carbamoyl oximes.			1*	4	K158	# #	
K159 Organics from the treatment of thiocarbamate wastes.			1*	4	K159	# #	

TABLE 302.4.—LIST OF HAZARDOUS SUBSTANCES AND REPORTABLE QUANTITIES—Continued

Hazardous substance	CASRN	Regulatory synonyms	Statutory			Final RQ	
			RQ	Code <sup>+</sup>	RCRA waste No.	Cat-egory	Pounds (Kg)
K160 Solids (including filter wastes, separation solids, and spent catalysts) from the production of thiocarbamates and solids from the treatment of thiocarbamate wastes.			1*	4	K160		# #
K160 Purification solids (including filtration, evaporation, and centrifugation solids), bag house dust, and floor sweepings from the production of dithiocarbamate acids and their salts (This listing does not include K125 or K126).			1*	4	K161		# #

+—Indicates the statutory source as defined by 1, 2, 3, and 4 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.

# #—The Agency may adjust the statutory RQ for this hazardous substance in a future rulemaking; until then the statutory RQ applies.

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