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ENVIRONMENTAL PROTECTION AGENCY

40 CFR Parts 260, 261, 264, 265, and 266

[SWH-FRL 2116-3]

Hazardous Waste Management System: General; Identification and Listing of Hazardous Waste; Standards Applicable to Owners and Operators of Hazardous Waste Treatment, Storage, and Disposal Facilities; Interim Status Standards for Owners and Operators of Hazardous Waste Treatment, Storage, and Disposal Facilities; and Standards for the Management of Specific Wastes and Management Standards for Specific Types of Facilities

AGENCY: Environmental Protection Agency.

ACTION: Proposed Rule and Request for Comment.

SUMMARY: On May 19, 1980, as part of its final and interim final regulations implementing Section 3001 of the Resource Conservation and Recovery Act of 1976 (RCRA), the U.S. Environmental Protection Agency (EPA) promulgated a definition of solid waste which, among other things, specifies the materials that are solid wastes when recycled. The Agency is today proposing to amend this definition in response to public comments. The proposed amendment will target the regulations more directly at those hazardous waste recycling operations which the Agency believes pose environmental and human health concerns.

In addition, the Agency is proposing general management standards for persons managing recycled hazardous waste and, in some cases, is tailoring the management standards for specific wastes and specific types of facilities or activities. The effect of these changes will be to encourage recycling of hazardous wastes while at the same time protecting human health and the environment from the improper management of recycled hazardous wastes.

DATES: EPA will accept public comments on this proposed amendment until August 2, 1983.

ADDRESSES: Comments on this proposal are welcome and may be mailed to the Docket Clerk, Office of Solid Waste (WH-562), U.S. Environmental Protection Agency, 401 M Street, S.W., Washington, D.C. 20460. Communications should identify the regulatory docket number "Section 3001/Definition of Solid Waste."

The official record for this rule making is located in Room S-269C, U.S. Environmental Protection Agency, 401 M Street, S.W., Washington, D.C. 20460 and is available for viewing from 9:00 a.m. to 4:00 p.m., Monday through Friday, excluding holidays.

HEARINGS: Three public hearings—one in Washington, D.C., one in Chicago, Illinois, and one in San Francisco, California—will be held on this proposal. The schedule and location for the hearings are as follows:

June 16, 1983—Department of Health and Human Services, Auditorium, 230 Independence Avenue, S.W., Washington, D.C.

June 21, 1983—The Westin Hotel, Michigan Avenue at Delaware, Chicago, Illinois.

June 23, 1983—Golden Gate University, Auditorium—2nd floor, 536 Mission Street, San Francisco, California.

The hearings will be held in each location between 9:00 a.m. and 4:00 p.m. unless concluded earlier, with registration at 8:30 a.m. Anyone wishing to make an oral statement at the hearing should notify, in writing: Mrs. Geraldine Wyer, Office of Solid Waste (WH-562), U.S. EPA, 401 M Street, S.W., Washington, D.C. 20460.

Please indicate at which hearing (location) you wish to make your oral statement. You must restrict your oral statement to ten minutes and should have written copies of your complete comments for inclusion in the official record. You may also submit your written comments at the public hearings.

FOR FURTHER INFORMATION CONTACT: RCRA Hotline, toll free, at (800) 424-9346 or at (202) 382-3000. For technical information, contact Matthew A. Straus, Office of Solid Waste (WH-565B), U.S. Environmental Protection Agency, 401 M Street, S.W., Washington, D.C. 20460, (202) 382-4770.

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In implementing the hazardous waste management subtitle of RCRA, the Agency has found that "recycled" hazardous wastes pose a special problem. (Throughout this preamble, "recylcing" refers generally to using, reusing, or reclaiming a waste. This term is not used in the proposed regulation itself.

We describe later on the differences between "use", "reuse", and "reclamation." On one hand, through RCRA, Congress authorized the Agency to regulate hazardous wastes that are being recycled. When improperly managed, such wastes have caused many damage incidents. On the other, RCRA is intended to encourage resource conservation and recovery, and any regulatory regime should take this goal into account to the extent that adequate control of hazardous waste management is not jeopardized. The interim final rules published on May 19, 1980, attempted to meet both of these often conflicting objectives (see 40 CFR 261.2 and 261.6). However, the Agency now believes that this attempt was not completely satisfactory, and accordingly is proposing the revision described in this preamble.

Part I:

- Summarizes the Agency's legal authority to regulate recycled materials as hazardous wastes under Subtitle C;
- Explains why we are exercising this authority;
- Discusses the existing regulation and the reasons for amending it; and
- Describes the proposed definition, first generally, and then provision by provision. The new definition defines which materials are hazardous wastes when recycled—and the types of recycling activities deemed to constitute hazardous waste management. This part of the preamble also explains which hazardous waste recycling activities are subject to regulation, and which are exempt.

Part II:

- Explains the reorganized and revised management standards for persons managing recycled hazardous wastes.

Part III:

- Discusses the proposal's projected regulatory impact;
- Explains why the proposal does not constitute a major rule under Executive Order 12291; and
- Explains our compliance with the Regulatory Flexibility Act and the Paperwork Reduction Act.

Part I: Determining Which Materials Are Hazardous Wastes When Recycled

I. EPA Has Authority Under RCRA To Regulate Hazardous Wastes That Are Recycled

Because no material can be a "hazardous waste" without first being a "solid waste" (Section 1004(5)), a definition of solid waste is the necessary starting point for the hazardous waste management system. Solid waste is defined in Section 1004(27) of RCRA as:

> any garbage, refuse, sludge from a waste treatment plant, water supply treatment plant, or air pollution control facility and other discarded material, including solid, liquid, semisolid, or contained gaseous material, resulting from industrial, commercial, mining, and agricultural operations, and from community activities * * *

This definition does not explicitly state that a material being recycled (or destined for recycling) is a solid waste and, if hazardous, a hazardous waste. However, reading the definition in conjunction with other parts of the statute and with the legislative history (as well as with subsequent expressions of congressional intent) makes it clear that Congress indeed intended that materials being recycled or held for recycling can be wastes and, if hazardous, hazardous wastes.

In this regard, the many statutory definitions dealing with resource recovery are particularly significant. These indicate unequivocally that recycling involves reclaiming material or energy from *"solid waste"*, demonstrating that a material being recycled can be a solid waste within the meaning of Section 1004(27). In addition to this express statutory language, there is already a body of judicial precedent that upholds RCRA hazardous waste jurisdiction over persons engaged in recycling activities (including seventeen cases to date where courts have exercised jurisdiction in actions instituted under Section 7003 of RCRA against recycling facilities).

Not only can materials destined for recycling or being recycled be solid and hazardous wastes, but the Agency clearly has the authority to regulate recycling activities as hazardous management. EPA possesses the authority to regulate under Subtitle C the storage, treatment, and disposal of hazardous waste. Hazardous waste recycling and ancillary activities are within the statutory meanings of these terms. RCRA's legislative history likewise shows that Congress specifically intended Subtitle C regulations to control unsafe recycling of hazardous waste. In any case, it would make little sense to allow that recycled materials can be hazardous wastes under RCRA (as shown in the paragraph above) but then to deny that Congress intended these wastes to be regulated under the Subtitle C regulations.

These points are developed fully in Appendix A to this preamble. We have concluded that recycled materials can be hazardous wastes under RCRA and can be regulated under the Subtitle C regulations. This conclusion fully agrees with the statute's paramount policy objective: to control the management of hazardous waste from its generation to its final disposition.

II. The Agency's Strategy in Exercising its Authority Over Hazardous Wastes That are Recycled

To determine that recycled materials can be solid and hazardous wastes does not answer the question of precisely which materials are wastes. Sections IV., V., and VI. of the preamble explain our views as to the extent of our authority. Nor does it answer how we are to exercise our authority. We explain in this section the general considerations that shaped our thinking on this question. We also go on to refute the argument that hazardous wastes that are recycled do not require any regulation because they are inherently valuable and do not pose significant environmental risks.

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The Agency is convinced that there is a compelling need to exercise the authority granted by Congress. The paramount policy objective of RCRA is to control the management of hazardous waste fromm point of generation to point of final disposition. Further, wastes destined for recycling can present the same potential for harm as wastes destined for treatment and disposal (see the preamble to Part 261, 45 FR at 33091, May 19, 1980). That is, in many cases, the risk associated with transporting and storing wastes is unlikely to vary whether the waste ultimately is recycled, treated, or disposed of. Similarly, using or reusing wastes by placing them directly on the land or by burning them for energy recovery may present the same sorts of hazards as actually incinerating or disposing of them.

This is not to say that hazardous waste recycling always must be regulated in the same way as other types of hazardous wastes management. There are certain types of hazardous waste recycling that pose diminished environmental risks, for example, where recycled wastes—because they are valuable—are dealt with much like raw materials.

The Agency also acknowledges the strong statutory policy to encourage recycling, and believes this policy applies even when hazardous wastes are involved. This is especially true when a recycling activity provides a reduced potential for harm. In these situations, the Agency is proposing not to regulate particular recycling activities, but to conditionally exempt those recycling activities where existing commercial or marketing incentives appear sufficient to protect against substantial environmental harm. (We explain specifically how we are doing this in sections IV and VI of this part of the preamble.) In this way, we avoid regulations that could discourage recycling without significantly increasing overall environmental protection. At the same time, we believe these proposed regulations fulfill the overriding statutory mandate to regulate hazardous waste management as may be necessary to protect human health and the environment.

Some recycling activities pose a much greater potential for harm than others, and we are proposing regulations, or are developing regulatory controls, to guard against these risks. There are three such activities: (1) Those where wastes are recycled in a manner analogous to disposal or incineration; (2) those where wastes are overaccumulated before recycling; and (3) those where recyclers cannot guarantee an end market for their recycled materials—specifically where wastes are regenerated or recovered by reclaimers who did not generate the reclaimed material and are not themselves going to use it. The proposed regulations, for the most part, are targeted at these activities.

Some commenters, however, question whether the Agency should regulate any form of hazardous waste recycling. They maintain that recycled wastes ae inherently valuable because they are not being thrown away, and so will not be mishandled. This argument goes much too far. In fact, recycling operations account for some of the most notorious hazardous waste damage incidents—including nearly one-third of the 61 imminent hazard actions filed to date under Section 7003 of RCRA, and 20 of the first 160 interim priority sites listed under the Comprehensive Environmental Response, Compensation, and Liability Act (Superfund). Appendix B to this preamble summarizes the damage incidents known to the agency involving recycling of hazardous wastes, briefly describing the recycling operations, the types of wastes being recycled, and the types of contamination caused. It is important to note that these incidents did not involve sham operators who merely held themselves out as recyclers but in reality disposed of an intended to dispose of the waste received. Rather, Operators of these damage sites engaged in some recycling and meant to recycle the wastes they received.

Facilities that recycle hazardous wastes have caused serious health and environmental problems by directly placing the wastes on the land and by burning the wastes as fuels or burning waste-derived fuels. Improper storage, overaccumulation of inventory, and unsafe transport before recycling have also been recurring problems where the facilities are indepedent reclaimers—*i.e.*, reclaimers who do not generate the waste and do not use the reclaimed material.[1] The resulting damages include contamination of soil, ground water, surface water, and air. In the case of indiscriminate storage of incompatible wastes (such as oxidizers and flammables, or acids and cyanides) before recycling, fires and explosions have also been a recurring circumstance. In addition, since many of these recyclers have failed to label or otherwise document their incoming materials, later cleanup efforts have been extremely difficult.

A number of these recyclers are located in metropolitan areas, resulting in a risk of immediate exposure to large numbers of people if wastes are mismanaged. Damage incidents caused by independent recycling facilities in Cleveland and Hamilton, Ohio; Gary, Indiana; and Columbia, South Carolina are examples of the Agency's concern.[2]

Perhaps the archetypal damage case involving an independent hazardous waste recycler is the incident involving the Chem-Dyne Corporation. Located in Hamilton, Ohio, Chem-Dyne was in the business of obtaining organic wastes and blending them to form "Chem-Fuel", a fuel substitute. Chem-Dyne also engaged in waste reclamation. The company overaccumulated huge amounts of these materials. The site constituted a dangerous fire hazard due to the improper storage of flammable organic materials, and there were in fact a number of fires at the plant. In addition, many of the accumulated drums leaked excessively. As a result, some of the chemical wastes present (including benzene, 1,2-dichloroethane, trichloroethane, and other toxic and carcinogenic wastes) contaminated both surrounding soils and the ground water. Volatilizing toxicants have polluted the air. Surface cleanup costs are estimated at $3.5 million; ground water cleanup costs have not yet been estimated. The company is in receivership.

The cleanup costs for other incidents also are very high. Although reliable cost estimates are not yet generally available for most of the sites, costs at a number of sites already have proven considerable: $30 million for cleanup of the Seymour site; over $1 million at the Midco site for surface cleanup, with an unknown amount needed to complete the cleanup; $2.9 million to date at the Silresim site; and $1.7 million to date at the Ottati and Goss/Great Lakes Container Corp. sites. At the Laskin Greenhouse site, approximately $1.7 million has already been spent; additional work is anticipated. Most of

[1] The sources for these damage incidents are found in appendix B unless otherwise noted. In addition, certain statements are taken from allegations in the government's verified complaints in RCRA Section 7003 actions. The agency recognizes that the courts must decide ultimately whether these allegations have been proven, and we stress that in citing these allegations we are not seeking in any way to prejudice the outcome of these actions. At the same time, these statements are based upon the Agency's investigations of the sites in question, and the agency believes them to be factually accurate. In any case, we are citing these allegations to demonstrate that there is a need for regulation in this area, not to ascertain the potential liability of particular facilities.

[2] Damages and Threats Caused by Hazardous Materials Sites, U.S. Environmental Protection Agency, EPA/430/9-80/004, January 1980.

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the recyclers involved in these incidents are either bankrupt or have insufficient funds to meet cleanup expenses.

We consequently have determined that some exercise of our authority is necessary to protect human health and the environment. Before explaining how we are proposing to craft these standards, however, we discuss briefly the Agency's current regulations defining which recycled materials are solid wastes, and how these materials are to be regulated.

III. The Agency's Existing Definition of Solid Waste

The key feature of the existing definition of solid waste states that certain materials are always solid wastes, *irrespective of whether they are disposed of or are destined for recycling.* These materials are garbage, refuse, sludge, materials that have served their original intended use and "sometimes (are) discarded," and manufacturing or mining by-products that "sometimes (are) discarded." (See 40 CFR 261.2 (a) and (b); see also the preamble to Part 261, 45 FR, at 33093, May 19, 1980.)

Thus, the existing regulations establish broad jurisdiction over recycled materials and recycling operations, although this is tempered by regulating quite narrowly (see 40 CFR 261.6). There are several problems with this approach.

First, materials within the terms of the existing definition are considered to be solid waste, even if they are being recycled in a manner not ordinarily thought of as waste management. For example, bottom ash from utility boilers (a by-product) being used as an ingredient in concrete is considered to be a solid waste because it is "sometimes discarded". A sludge used similarly also would be a waste because all sludges are defined without exception as solid wastes.

Second, the "sometimes discarded" test sweeps many product-like materials into the solid waste net—unless the material is never thrown away. Although the Agency never intended to call these "legitimate by-products" solid wastes, a zealous but literal reading of the regulation yields this result.

Some critics took this point even further; since all materials are eventually thrown away, everything is "sometimes discarded" and potentially a solid waste. Another criticism was that under this standard generators may have to find out how all other generators are managing the same material—an often difficult or even impossible undertaking.

Commenters also argued against regulating materials that are reused or reclaimed by their generator. The generator, they argued, can ensure that such materials are handled safely, because he will have a definite plan to use the materials productively, and can control their disposition. Unrelated parties, by contrast, cannot guarantee a final use or disposition for their reclaimed materials (such as a buyer for their reclaimed solvents) and so are more prone to overaccumulate or mishandle the wastes they take in. This argument finds empirical support in the damage cases, since most known incidents were caused by independent recyclers who accepted secondary materials for reuse or reclamation, rather than by generators accumulating secondary materials for their own reuse (although generators remain capable of overaccumulating these materials).

The Agency was aware of a number of these problems when it adopted the May 19 definition. To mitigate them, we regulated quite narrowly. (See 45 FR at 33094.) Under 40 CFR 261.6, persons engaging in recycling operations are subject to regulation as hazardous waste generators, transporters, or storage facilities only if they are handling a hazardous sludge or a material listed as hazardous in 40 CFR 261.31 or 261.32.[3] At the time of promulgation, the Agency believed that all such materials were waste-like and should be regulated accordingly when recycled in any way. (*Id.*)

We were less confident, however, about materials that are hazardous wastes only by virtue of exhibiting a characteristic. The rule therefore excludes from regulation such materials (other than sludges) when they are beneficially recycled. (See 40 CFR 261.6(a).) In addition, listed wastes and sludges are regulated up to, but not including, the point of recycling. Thus, when these wastes are destined for recycling, their transportation and storage is regulated, and generators of these materials must meet the Part 262 generator standards. (See 40 CFR 261.6(b).)

Despite these mitigating features in the current regulations, the Agency would like to amend the definition of solid waste. We wish to remove materials being reused as ingredients in production processes and product-like sludges and by-products from the solid waste category. We also wish to target the regulations more directly at the class of recycling operations that, so far as we know, present substantial environmental risks. At the same time, we wish to regulate both characteristic and listed hazardous wastes to the extent that they are recycled in a way likely to present substantial environmental concerns. As noted above, the distinction in the present § 261.6 exists only to mitigate the sweep of the current defintion, not because wastes that exhibit a characteristic present less of a hazard than listed wastes or sludges.

The next sections of this preamble describe in broad outline and in detail the approach developed by the Agency to achieve these objectives.[4]

IV. The proposed Amendment to the Definition of Solid Waste

A. Changes in Overall Approach Between the Proposed and the Existing Defintions

The proposed amendment would make several important changes in the defintion or solid waste. First—and perhaps most fundamental—the amended defintion would no longer base a material's status as solid waste on whether it is "sometimes discarded". Instead, a recycled material's regulatory status would depend upon both what the material is and how it actually is managed—and the status could vary with the means of recycling. For example, and electroplating wastewater treatment sludge used as an ingredient in a manufacturing process would not be a solid waste, whereas the same sludge being applied directly to the land for land reclamation would be. This change in regulatory approach meets one of the chief criticisms raised in the comments.

Second, we have tailored the accompanying management standards so as to regulate only those recycling activites—or those particular aspects of recycling activities—that pose a significant potential for environmental harm. The principal example is reclamation where this activity is conducted by the generator[5] of the

[3] Of course, any waste from the recycling operation is an ordinary RCRA waste, and if hazardous, is subject to regulation under all of the Subtitle C regulations. In such a case, the recycler is at least a generator, and may be a storage, treatment, or disposal facility, depending upon the disposition of its waste.

[4] The Agency has been assisted greatly in its efforts by petitioners and their counsel in settlement negotiations in *Shell Oil v. EPA* (D.C. Cir, No. 80-1532) (litigation challenging EPA's May 19, 1980, hazardous waste regulations). Factual material obtained during settlement discussions has been placed in the public docket.

[5] For the sake of convenience, EPA is using the term "generator" throughout this preamble to mean the person generating the waste in question. Term is not used in its regulatory sense (see § 260.10(a)).

The Regulation itself does not speak of "generators" because it applies to "persons" not merely to individual sites. "Person" is defined in 40

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waste, or by a person who subsequently uses the reclaimed material in his own operation.

B. An Overview of the Proposed Definition.

1. Materials That Are Solid Wastes. The revised definition of solid waste sets out the Agency's view of its jurisdiction over the recycling of hazardous waste. The definition, of course, continues to define as solid wastes those materials that are disposed of, burned, or incinerated—or stored, treated, or accumulated before or in lieu of these activities. Proposed § 261.6 then contains exemptions from regulation for those hazardous waste recycling activities that we do not think require regulation.

As discussed above, the revised definition of solid waste indicated that particular materials being recycled are solid wastes if recycled in specified ways. In other words, to know if a material being recycled is a solid waste, one must know both what it is and how it is being recycled.

The definition states that five types of recycling activities are within EPA's jurisdiction:

- Use constituting disposal; this activity involves the direct placement of wastes onto the land.
- Burning waste or waste-derived fuels for energy recovery, or using wastes to produce a fuel.
- Reclamation; this activity involves regeneration of wastes or recovery of material from wastes.
- Speculative accumulation; this activity involves accumulation of wastes that are potentially recyclable, but for which no recycling market (or on feasible recycling market) exists.
- Accumulation without sufficient amounts of stored material being recycled; this activity involves accumulation of secondary materials for one year without 75% being recycled during that time.

These categories then are divided further according to the type of waste involved—spent materials, sludges, by-products, or commercial chemical products.

"Spent materials" (proposed § 261.2(b)(1)) are materials that have been used and are no longer fit for use without being regenerated, reclaimed, or otherwise re-processed. Examples are spent solvents, spent activated carbon, spent catalysts, and spend acids.[6]

"Sludges" are defined in RCRA and the implementing regulations as residues from pollution-control processes. (See RCRA Section 1004(26A) and 40 CFR § 260.10.) The statute further indicates that sludges include not only these materials but "other such waste having similar characteristics and effects." The Agency interprets this language as covering pollution-control residues other than those types listed specifically in the statutory definition.

"By-products" are defined essentially the same way as in the existing definition to encompass those residual materials resulting from industrial, commercial, mining, and agricultural operations that are not primary products and not produced separately (proposed § 261.2(b)(3)). As used in the definition, the term is a catch-all, and includes most wastes that are not spent materials or sludges. Examples are process residues from manufacturing or mining processes, such as distillation column residues or mining slags.

"Commercial chemical products" are the commercial chemical products and intermediates, off-specification variants, spill residues, and container residues listed in 40 CFR 261.33. As explained more fully below in Section VI. A. and B. in this part of the preamble, although these materials ordinarily are not wastes when recycled (see 45 FR at 78540–541, November 25, 1980), we are proposing to include them as wastes when they are recycled in ways that differ from their normal use.

One difficulty in characterizing these types of waste is that certain sludges and by-products are more product-like than waste-like. Examples are hydrofluorosilicic acid from manufacture of phosphoric acid (a sludge commonly used to fluoridate drinking water), by-product turpentine from paper manufacture, and various by-product metals from primary copper manufacture. These product-like sludges and by-products are potentially subject to regulation under the reclamation provision in the definition because they cannot be put to direct use but first must be regenerated or recovered. Similarly, certain commercial fuels that technically are by-products remain potentially subject to regulation under the definition's burning-as-fuel provision.

The Agency so far has been unable to devise a narrative standard that convincingly distinguishes between reclamation of product-like and waste-like sludges and by-products, or a standard that adequately distinguishes between legitimate by-product and waste by-product fuels.[7] To solve this dilemma, the Agency has structured the regulation so that not all sludges and by-products are wastes when reclaimed, and not all by-products are wastes when burned as fuels or used to produce fuels. Rather, we will list those sludges and by-products that are solid wastes when reclaimed, and those by-products that are solid wastes when burned as fuels or used to produce fuels. The list, at least for the time being, will be co-extensive with the hazardous sludges and by-products listed in 40 CFR 261.31 and 261.32 of the regulations. The Agency has examined each of these materials, and is convinced that they typically are wastes when reclaimed or when burned as fuels (see the preamble to Part 261, 45 FR at 33094, May 19, 1980).

Putting all of this together, spent materials, sludges, byproducts, and commercial chemical products are considered to be solid wastes when they are recycled in any one of the following ways:

(1) Used or reused in a manner constituting disposal via direct placement onto the land; this provision applies to all spent materials, sludges, and by-products. It also applies to

CFR 260.10 to include corporations (among other entities). Thus, an entity with a single corporate structure but multiple sites is a single person for purposes of this regulation. Conversely, an entity with a separately incorporated affiliate is not single person. (This distinction is particularly significant in the provision conditionally exempting from regulation materials reclaimed by the *person* generating them and materials reclaimed by a *person* for that person's own subsequent use.)

The defintion of "person" also icludes all Federal Agencies. A number of agencies, particularly the Department of Defense, have numerous and highly diverse operations located nationwide. RCRA enunciates a strong Congressional policy that hazardous waste management conducted by federal facilities comply with all federal, State, interstate, and local requriements respecting hazardous waste management (RCRA, Section 6001). Wholesale exemption of federal agencies because they are "persons" thus may be inappropriate. EPA is investigating alternative approaches, and solicits comment on this point.

[6] Refuse and garbage likewise are spent materials (although they rarely, if ever, would be hazardous wastes). In any case, refuse and garbage ordinarily are not subject to regulation under Subtitle C of RCRA because they are household wastes (see 40 CFR 261.4(b)(1)).

[7] The problem is to distinguish between materials of a residual character that habitually have been disposed of and secondary materials that the industrial community ordinarily uses as commodities in commerce. Any regulation using this type of standard, however, is probably too judgmental to be generally applicable. Further, as noted already, a standard based upon whether secondary materials are put to direct commercial use also is unlikely to work, because most materials must be processed or reclaimed before use. However, the Agency solicits comments as to an appropriate narrative standard. We request specifically that commenters address a possible standard which would indicate that secondary materials are wastes when (i) they contain significant levels of non-recyclable toxic constituents, and (ii) these constitutents are not customarily found in raw materials or products for which the secondary materials are used as substitutes.

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commercial chemical products (and related materials) applied to the land in lieu of their intended use;

(2) Burned for energy recovery (including when burned as a component of a waste-derived fuel), or used to produce a fuel; this provision applies to all spent materials, sludges, and listed by-products. It also applies to commercial chemical products (and related materials) burned as fuels in lieu of their intended use;

(3) Reclaimed; this provision applies to all spent materials, and to the sludges and by-products that are listed in 40 CFR 261.31 or 261.32.

(4) Accumulated for recycling without a specific market existing for the material (speculative accumulation); this provision applies to all spent materials, sludges, and by-products; and

(5) Accumulated for recycling without sufficient amounts being recycled; this provision also applies to all spent materials, sludges, and by-products.

2. Materials That Are Not Solid Wastes. Not all recycling activities potentially involve waste management. The definition excludes from the concept of reclamation three activities involving direct use or reuse of secondary materials. These activities ordinarily will not be considered to involve waste management. In addition, we state specifically that one type of reclamation operation is an activity outside the Agency's jurisdiction over recycling. These activities are:

(1) *Using or reusing secondary materials as ingredients or feedstocks in production processes.* Examples are using fly ash as a constituent in cement, [8] or using distillation bottoms from carbon tetrachloride manufacture as a feedstock in producing tetrachloroethylene. The Agency is convinced that in these and similiar circumstances, the recycled materials are usually functioning as raw materials, and therefore ordinarily should not be regulated under Subtitle C.

(2) *Using secondary materials as substitutes for raw materials in recovery processes that usually use raw materials as feedstocks*—even though material values are recovered from the secondary materials as an end-product of the process (for example, when secondary materials are smelted at primary smelting facilities). Because the secondary materials are merely substitutes for the primary material ordinarily used in an essentially primary material-based process, the Agency does not regard such processes as involving waste management.

(3) *Using or reusing secondary materials as substitutes for commercial products.* Examples mentioned in the public comments are spent solvents used as roofing materials and by-product hydrochloric acid from chemical manufacture used in steel pickling. In these examples, the recycled materials are substituting for other commerical products, and material values are not being recovered from them.

(4) *Reclamation conducted at a single plant site when the reclaimed material is reused within the original process in which it was generated.* In this situation, secondary materials are not used or reused directly, but are reclaimed first.

However, where reclamation occurs at the plant site and the reclaimed materials are returned to the original process in which they were generated, the entire set of operations is really a closed-loop type of process. Regulating the reclamation step thus could amount to regulating an on-going production process.

3. Exemptions for Certain Recycling Activities. We also have chosen to conditionally exempt from regulation certain recycling activities that *do* constitute waste management. The most important of these exemptions are regulations governing storage and transportation [9] of wastes in the following situations:

- When wastes are reclaimed by their generator;
- When wastes are reclaimed by a reclaimer who subsequently uses the reclaimed material;
- When non-listed spent materials are burned as fuels (either by their generator or by another person). [10]

In these situations, there appears to be a significantly reduced risk of waste mismanagement, because the generator or ultimate user has decided to retain control of the recycled waste and, thus, can assure a market for the recycled materials. Our investigation of hazardous waste recycling activities indicates that improper storage, overaccumulation, and subsequent damage have been associated with reclamation where the market for the recycled material is uncertain or where the recycling technology is unproven. Overaccumulation is a particular risk where reclaimers are paid to take wastes they don't intend to use themselves, since this creates an incentive to keep accepting wastes that may prove unsalable after recycling. The most severe damage incidents, such as Chem-Dyne and Silresim, all fit this pattern. These circumstances are least likely to be present when a generator or ultimate user reclaims because of the continued exercise of control and ability to assure the wastes' end disposition. We consequently are proposing conditional exemptions for these situations. The conditions are designed primarily to guard against overaccumulation which (based on existing data), is the chief danger in these operations.

We note, however, that we are continuing to investigate the potential of these facilities to store wastes improperly. (We are doing this particularly in the course of conducting a Regulatory Impact Analysis of our storage regulations.) In devising the conditional exemptions proposed today, our premise (based on the known data) is that overaccumulation of wastes is the chief danger to guard against. The conditions attached to these proposed exemptions serve as adequate safeguards to overaccumulation, in our view. It may be that the risks of improper storage by these facilities—prior to prolonged waste accumulation—are greater than they appear. In this regard, we are examining not only storage at recycling operations but also the incidence and severity of spills and leaks from raw material and product storage, since this type of storage is analogous to storage prior to recycling. These further investigations thus may lead to a regulatory approach with some immediate controls on storage for those recycling operations that would be conditionally exempt under today's proposal.

The following charts illustrate the principles discussed in this section. The matrix in Figure 1 indicates which types of secondary materials are proposed to be solid wastes when recycled in particular ways. The flow charts in Figures 2 and 3 indicate which materials are solid wastes and which materials (if hazardous) are regulated as hazardous wastes under the proposed definition. The table in Figure 4 summarizes which recycled materials are or are not considered to be solid and hazardous wastes and which solid and hazardous wastes will be regulated when they are recycled under the proposed rules.

[8] Fly ash at present is not subject to Subtitle C regulation as a result of the 1980 amendment to RCRA (amended section 3001 (b)(3)(A)(i)). It is included in the text only as an example.

[9] Some of these exemptions also encompass activities subject to regulation under Parts 262 and 263. Furthermore, as explained in Sections V1. B. and C. in this part of the preamble, these exemptions are also conditioned to guard against overaccumulation.

[10] Actual burning of wastes also is exempt from regulation, although we intend that this exemption be temporary (see Section (IV. D. in this part of the premable).

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C. The Agency's Decision to Reject a Standard Based on the Value of the Recycled Material

The Agency seriously considered a standard that would count a recycled material as a solid waste when a person other than the generator is paid to recycle it. The corollary also would apply: when a recycler pays to obtain the material it is not a solid waste.[11] The logic here was that recyclers who pay for their materials must recycle them to stay in business; in addition, the materials they buy have demonstrated economic value and so are less waste like. Conversely, when a recycler must be paid to take material, the material may not be recycled, since its mere receipt generates cash flow.

[11] This "value" standard was not the sole test for determining if a material is a solid waste. It would replace the provision on reclamation (proposed § 261.2(a)(2)(iii) in the proposed definition.

FIGURE 1.—PROPOSED MATRIX OF WHICH TYPES OF SECONDARY MATERIALS WILL BE DEFINED AS SOLID WASTES WHEN USED, REUSED, AND RECLAIMED AND WHICH TYPES OF RECYCLING ACTIVITIES CONSTITUTE WASTE MANAGEMENT

	Use constituting disposal[1] (§ 261.2(a)(2)(i))	Burning for energy recovery, or use to produce a fuel[2] (§ 261.2(a)(2)(ii))	Reclamation[3] (§ 261.2(a)(2)(iii))	Speculative accumulation[4] (§ 261.2(a)(2)(iv))	Accumulation without sufficient amounts being recycled[5] (§ 261.2(a)(2)(v))
Spent Materials (both listed and nonlisted/characteristic)	Yes	Yes	Yes	Yes	Yes.
Sludges (listed)	Yes	Yes	Yes	Yes	Yes.
Sludges (non-listed/characteristic)	Yes	Yes	No	Yes	Yes.
By-products (listed)	Yes	Yes	Yes	Yes	Yes.
By-products (non-listed/characteristic)	Yes	No	No	Yes	Yes.
Commercial chemical products listed in 40 CFR 261.33 that are not ordinarily applied to the land or burned as fuels.	Yes	Yes	No	No	No.

[1] This waste management activity involves the direct placement of recycled materials onto the land (e.g., use of recycled materials for land reclamation, as dust suppressants, etc.)

[2] It should be noted that the actual burning of these wastes in boilers and industrial furnaces is proposed to be exempt from regulation (§ 261.6(b)(1)(v)). These wastes also are proposed to be exempt from regulation when they are used to produce a fuel by a facility for their own subsequent use of by facilities that ultimately burn these wastes from non-sludge wastes that are hazardous solely because they exhibit a characteristic (*i.e.*, from non-listed spent materials).

[3] Reclamation is defined in proposed § 261.2(c)(1) to constitute either the processing of wastes to recover usable products or the regeneration of wastes (e.g., removal of contaminants or impurities so that the waste can be put to further use). This provision does not apply, however, to materials reclaimed at the plant site and then reused within the original process in which they were generated. In addition, reclamation conducted by a person generating the waste, or reclamation conducted by a person other than the generator for that person's subsequent use ordinarily is proposed to be exempt from regulation (§ 261.6(b)(1)(i) and (ii)). The principal exception is when wastes are stored or otherwise processed in surface impoundments. Spent batteries being reclaimed likewise remain subject to regulation.

[4] This waste management activity is defined in proposed § 261.2(c)(2) to include wastes that are potentially usable, reusable, or reclaimable but are held without having any known market or disposition while hoping a market will develop.

[5] This waste management activity is defined in proposed § 261.2(c)(3) to include those materials which are accumulated for over one year without 75 percent being recycled during that time. Thus, these materials' status as wastes is not determined until one year has past. A person who fails to recycle at least 75 percent of materials accumulated may petition the Regional Administrator for a determination that the materials are not solid wastes (§ 261.2(c)(3)(ii)); the materials are solid wastes, however, unless the Regional Administrator grants the petition.

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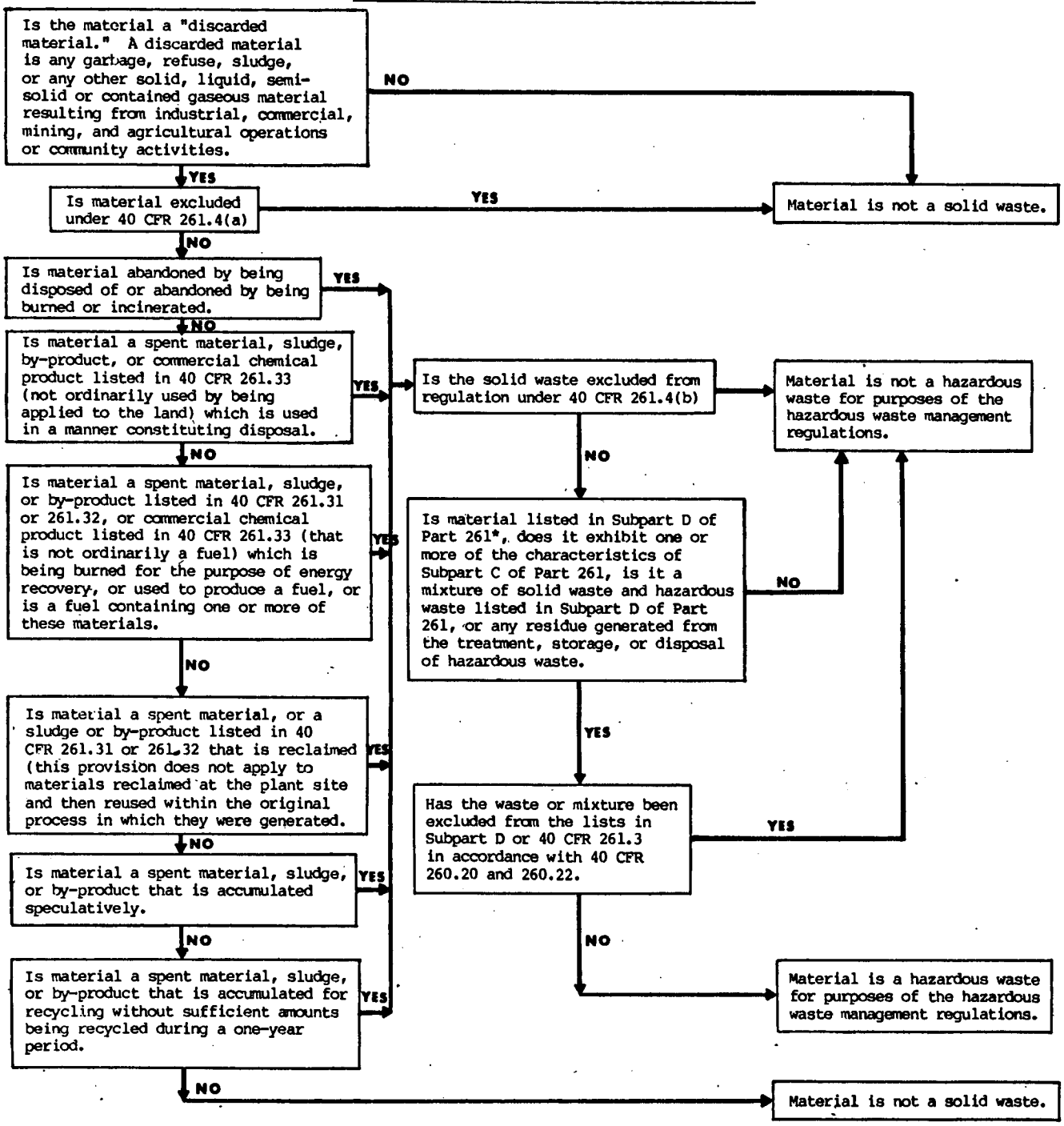
FIGURE 2
MATERIALS DEFINED AS BOTH SOLID AND HAZARDOUS WASTE UNDER THE PROPOSED HAZARDOUS WASTE MANAGEMENT SYSTEM



*/ Commercial chemical products listed in 40 CFR 261.33 are regulated as hazardous wastes when they are abandoned by being disposed of or when burned or incinerated. In addition they are proposed to be regulated when used in a manner constituting disposal or when burned for energy recovery when these activities are not their ordinary use.

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FIGURE 3
HAZARDOUS WASTES THAT ARE RECYCLED AND ARE REGULATED UNDER THE PROPOSED HAZARDOUS WASTE MANAGEMENT SYSTEM

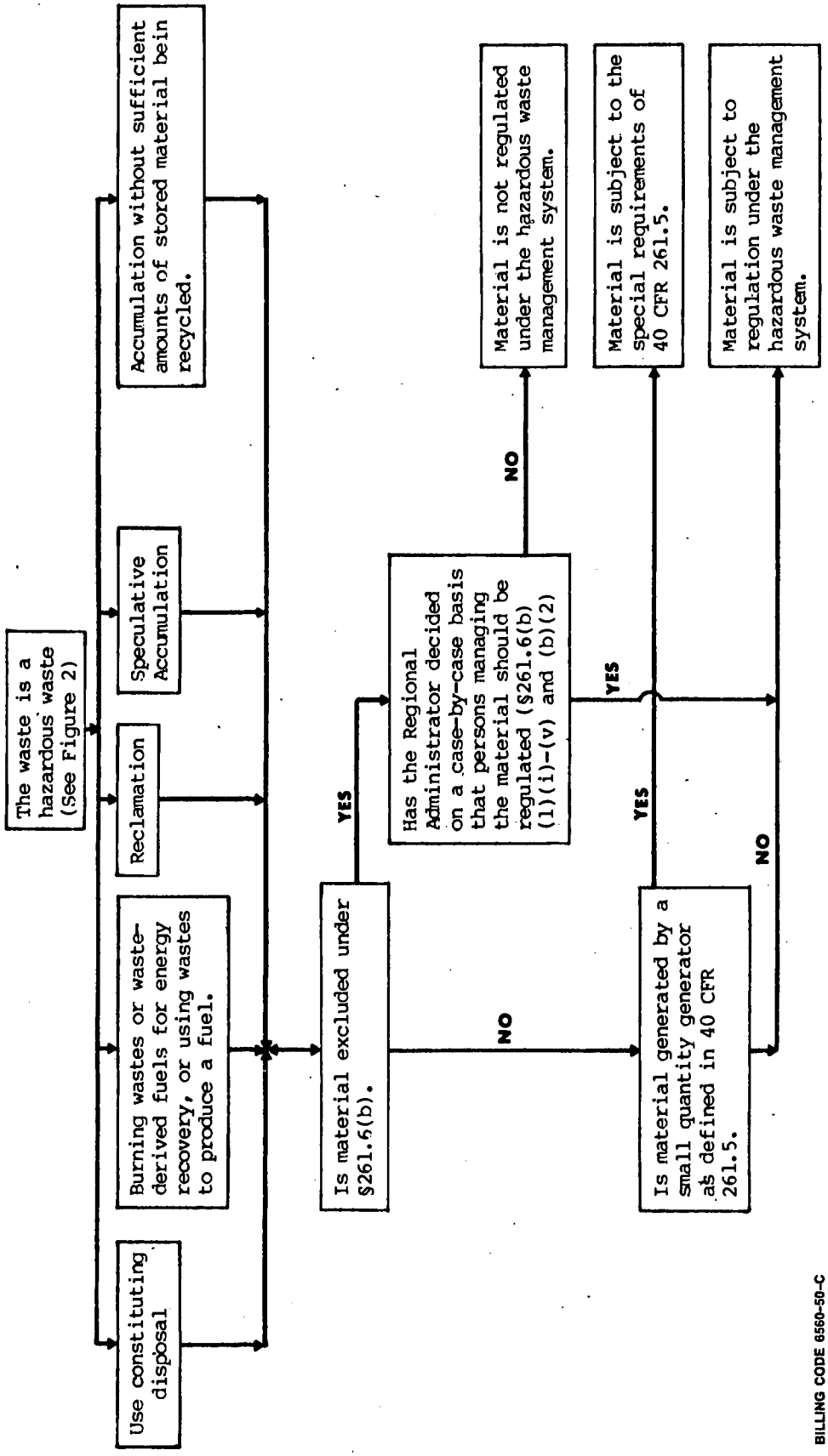

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FIGURE 4.—PROPOSED MATRIX OF TYPES OF RECYCLED MATERIALS DEFINED AS SOLID AND HAZARDOUS WASTES THAT ARE REGULATED, TYPES OF RECYCLED MATERIALS DEFINED AS SOLID AND HAZARDOUS WASTES THAT WILL NOT BE REGULATED, AND TYPES OF RECYCLED MATERIALS NOT CONSIDERED TO BE SOLID WASTES

	Recycled materials regulated as solid and hazardous wastes	Recycled materials defined as solid and hazardous wastes but not regulated	Recycled materials not considered to be solid wastes
Use constituting disposal	All spent materials, sludges, by-products, and commercial chemical products listed in 40 CFR 261.33 that are not ordinarily used by being applied to the land.		
Burning wastes or waste-derived fuels for energy recovery or using wastes to produce fuels.[1]	Spent materials, sludges, by-products listed in 40 CFR 261.31 or 261.32, and commercial chemical products (listed in 40 CFR 261.33 that are not ordinarily used as a fuel) that are stored at fuel blending facilities and when generated and transported prior thereto when the facility is not also the person generating the waste or is not burning the waste-derived fuel containing these materials. Sludges and hazardous wastes listed in 40 CFR 261.31 and 261.32 when they are to be burned or used to produce fuels by facilities producing fuels from these wastes for their own subsequent use, or by facilities that ultimately burn these wastes.	Spent materials, sludges, by-products listed in 40 CFR 261.31 or 261.32, and commercial chemical products (listed in 40 CFR 261.33 that are not ordinarily used as a fuel) that are burned for energy recovery in boilers and industrial furnaces.[2] Non-sludge wastes that are hazardous solely because they exhibit a characteristic (*i.e.*, from non-listed spent materials) that are stored at facilities producing fuels for their own subsequent use and by facilities that ultimately burn these wastes or waste-derived fuels containing these wastes.	By-products not listed in 40 CFR 261.31 or 261.32.
Reclamation	Spent materials, and sludges and by-products listed in 40 CFR 261.31 or 261.32, that are: —Reclaimed by a person other than the generator and the reclaimed material will be used ultimately by a person other than the reclaimer; —Reclaimed or otherwise processed in surface impoundments or stored in surface impoundments prior to reclamation elsewhere; —Spent lead-acid batteries being reclaimed	Spent materials, and sludges and by-products listed in 40 CFR 261.31 or 261.32, that are: —Reclaimed by the person generating them, or reclaimed by a person other than the generator for that person's subsequent use (except for storage or reclamation in surface impoundments or reclamation of spent batteries (see previous column)). —Utilized for precious metal recovery[2] —Reclaimed pursuant to batch tolling agreements.[3]	Sludges and by-products not listed in 40 CFR 261.31 or 261.32 that are reclaimed. Spent materials, and sludges and by-products listed in 40 CFR 261.31 or 261.32 that are reclaimed at the plant site and then reused within the original process in which they were generated. Commercial chemical products listed in 40 CFR 261.33.
Speculative accumulation	All spent materials, sludges, and by-products		Commercial chemical products listed in 40 CFR 261.33.
Accumulation without sufficient amounts of stored material being recycled.	All spent materials, sludges, and by-products		Commercial chemical products listed in 40 CFR 261.33.
Use and reuse[4]			Spent materials, sludges, and by-products that are used reused.[2] Commercial chemical products listed in 40 CFR 261.33.

[1] The Agency is currently conducting a number of studies to determine what controls are necessary to regulate the burning for energy recovery; in addition, we are also studying whether there should be interim controls—that is, controls prior to the time we propose a comprehensive regulatory regime for actual burning—on other aspects of hazardous waste fuel management. Therefore, we expect to change this part of today's proposal prior to final promulgation.

[2] These materials may still be regulated as hazardous wastes if the person does not recycle at least 75 percent over a one year period or if the Regional Administrator determines on a case-by-case basis that the material should be subject to regulation under otherwise applicable provisions of § 261.6 or Subpart O of Part 264.

[3] The materials may still be regulated as hazardous wastes if the Regional Administrator determines on a case-by-case basis that the material should be subject to regulation under otherwise applicable provisions of § 261.6 or Subpart O of 264.

[4] The use and reuse of these materials include: (1) use or reuse of secondary materials as ingredients or feedstocks in production processes, (2) use of secondary materials as substitutes for raw materials in processes which usually use raw materials as feedstocks, and (3) use or reuse of secondary materials as substitutes for commercial products.

Despite its intuitive appeal, this type of provision is open to several serious objections. First, it is not clear whether "sold for value" would cover situations where the recycler incurs certain out-of-pocket costs to obtain materials (such as transportation or marketing costs) and then is recompensed—or where materials are sold for a price that reflects the value of only some of them.

Second, this provision would fail to ensure that the purchased materials would be recycled and would lead to dissimilar regulatory coverage of the identical material at a single facility. The proof is that in many of the damage incidents involving recyclers, the recycling facility had purchased waste materials. In addition, in some cases, the facility was also given—or was paid to accept—the very same kind of material that it had also purchased (for example, a spent solvent).

Third, the value provision may in some cases discourage recycling. On occasion, recyclers accept quantities of material that are too small to be recycled economically unless they are accompanied by some payment. (This is another example of how the provision does not always reflect marketplace realities.) Recyclers may not profit greatly by these arrangements, and will discontinue them if they incur the value provision's regulatory penalty for being paid to accept these small lots.

The fourth and most telling objection to the value provision is the difficulty of enforcement. The provision would require the Agency to evaluate the bona fides of complicated, numerous, and diverse financial transactions—which may intrude significantly into companies' legitimate business affairs. The Agency is not equipped to do this. In addition, it is easy to disguise whether payments are being made, and the unscrupulous may well be tempted to evade regulation in this way.

For all these reasons, the Agency has decided to reject an approach based on whether a material is sold for value. We do, however, solicit comments on this approach, particularly on whether this kind of scheme could be implemented and enforced successfully.

D. Materials Burned To Recover Energy

The Agency has concluded that the statute gives EPA the authority to regulate burning of hazardous waste to recover energy, and that we should exercise this authority. In most cases, such burning is environmentally identical to burning the same material in an incinerator and could pose a parallel or greater risk of environmental dispersal of hazardous waste

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constituents and products of incomplete combustion.[12]

Furthermore, by allowing burning to go uncontrolled, the Agency's existing regulations create a loophole in the RCRA regulatory structure, as more and more wastes that can be burned are channelled to boilers or heat-recovery units to avoid disposal or incineration costs. It is estimated that 20 million metric tons of hazardous waste are currently burned in boilers. (See H.R. Rep. No. 97-570, 97th Cong., 2d sess. at 4 (1982).)

Furthermore, a number of facilities blend hazardous wastes into fuels and then sell these fuels to unsuspecting residential and other municipal users who burn them under conditions which may harm humans and the environment.

Two of the most notorious of these facilities—Quanta, Inc., and B & L Oil Corp. (the latter company pleaded guilty to criminal violations of New Jersey's hazardous waste regulations)—produced fuels containing PCBs, phenolic compounds, chlorinated solvents, and other chlorinated hydrocarbons. These compounds not only are very toxic and hard to destroy, but when burned at low temperatures for short residence times (as in residential boilers) can form chlorinated dioxins and dibenzofurans, phosgene, and hydrochloric acid.

EPA's existing regulations require that sludges and wastes listed in 40 CFR 261.31 and 261.32 that are to be burned as fuels or used to produce fuels be accumulated, manifested, transported, and stored under the applicable requirements of Parts 262 through 265.[13] These regulations do not control the actual burning of these materials, however.

Today's proposal, insofar as it relates to waste-derived fuels, is intended principally to establish jurisdiction for eventual regulation; it does not seek to establish all aspects of an ultimate regulatory regime. We are, for example, proposing to continue the present exemption for actual burning of hazardous wastes in boilers for legitimate energy recovery until we complete on going analyses of the environmental consequences of burning hazardous wastes in boilers. Once we have completed these studies, we plan to substantively regulate burning for energy recovery in those areas that appear to present a potential for substantial hazard to human health and the environment.

Presently, we are studying whether there should be interim controls—that is, controls before we propose a comprehensive regulatory regime for actual burning—on other aspects of hazardous waste-derived fuel management. Possible options under active consideration include requiring blenders, marketers, and certain users of hazardous waste-derived fuels to notify EPA of their activities, to keep records of the amounts and types of hazardous waste-derived fuels they are producing or burning, and (for blenders) to affix a label to all hazardous waste-derived fuels they produce, indicating that the fuel contains a hazardous wastes. A manifest for certain transactions involving hazardous waste-derived fuels is another possibility. These actions are not part of the present proposal, but may be taken as separate regulatory actions.

We are also proposing to regulate, under certain circumstances, the storage and ancillary management of hazardous wastes before the wastes are burned. We are convinced controls are needed for hazardous wastes sent to fuel blenders who do not ultimately burn the wastes. This is the recycling situation posing the greatest risk of improper storage, overaccumulation, faulty tracking, and the like, as already explained. Consequently, we are proposing that hazardous spent materials, sludges, and listed byproducts, and nonfuel commercial chemical products, sent to these blenders be subject to Subtitle C regulation, and the blenders be subject to regulation as storage facilities.

We are less sure of whether storage standards are needed for hazardous wastes being burned by the person generating them, or being sent directly from a generator to an ultimate user. Although we are proposing to exempt conditionally other recycling practices fitting this pattern because of the reduced risk of overaccumulation or faulty tracking, fuels may present a special case due, for example, to additional concerns that ultimate users be notified of what they are burning. We also are concerned that proper records be kept for federal and state regulatory authorities, and for concerned citizens.

In light of our uncertainty, we are proposing today to leave essentially unchanged the current regulatory regime for hazardous wastes burned by their generator, or sent from a generator to a person who ultimately burns them. This scheme calls for regulation of sludges and wastes listed in 40 CFR 261.31 and 261.32 (see 40 CFR 261.6(b)). While we may alter this part of the proposal later, we think maintaining the status quo is the least confusing way to proceed until we decide on a comprehensive regulatory strategy to control burning hazardous waste-derived fuels.

EPA is therefore proposing today to assert jurisdiction over spent materials, sludges, listed byproducts, and commercial chemical products (and related materials) listed in 40 CFR 261.33 where any of these materials are burned as fuels, used to produce fuels, or contained in fuels—the jurisdictional prerequisite to eventual regulation in this area (see Section V1. D. of this part of the preamble). We are also proposing for the time being to continue to exempt the actual burning of these materials from regulation. We also are proposing to regulate most storage of spent materials, sludges, listed by-products, and commercial chemical products that are not themselves fuels and are listed in 40 CFR 261.33, where any of these materials are used to produce fuels. The only exception will be where the person who operates the storage facility also generates the material, or burns the waste-derived fuel itself. In these cases, we are proposing provisionally to maintain the status quo by regulating only sludges and wastes listed in 40 CFR 261.31 and 261.32.

V. New Definitions Relating To Burning of Hazardous Waste

The identity of the combustion unit in which secondary materials are burned is highly relevant in EPA's developing regulatory regime for burning of hazardous secondary materials. We are proposing in 40 CFR 260.10 to amend the definition of "incinerator", and to add definitions of "boiler" and "industrial furnace", to distinguish among these devices.

A word of background as to why we are amending and adding these terms. EPA's existing rules establish a class of facilities subject to regulation under Subpart O of Parts 264 and 265—thermal treatment devices—of which incinerators are a subset. Incinerators are currently defined on the basis of their purpose—if the primary purpose of a device is thermal destruction of hazardous waste, the device is an incinerator (see 40 CFR 260.10, definition of "incinerator"). We meant for this definition to provide the distinction between regulated facilities (thermal treatment devices, principally incinerators) and heat recovery units (primarily boilers).

[12] In fact, there is a parallel here with the class of waste whose reuse constitutes disposal in the sense of direct land placement. In that case, the reuse is the functional equivalent of landfilling. Similarly, burning wastes as fuels is functionally identical to incinerating them.

[13] See 40 CFR 261.2 (a) and (b) and 261.6(b). Sludges, and spent materials and by-products that are sometimes discarded and are listed in 40 CFR 261.31 and 261.32, are subject to regulation from their point of generation until recycling begins.

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Although the existing definition of incinerator focuses on the purpose for which a device is used, the Agency did not intend to classify facilities solely on the basis of purpose. Rather, we intended that incinerators be distinguishable from boilers in order that the class of facilities subject to the standards for incineration be identifiable. The purpose for which a device is operated was used to indicate whether the device is an incinerator or a boiler. This distinction, however, has proven difficult to implement because the reference to "purpose" in the regulation introduced an unintended element of subjectivity.

We accordingly are proposing a revised definition of incinerator that avoids the use of purpose to identify incinerators—so that facilities will no longer be able to escape regulation by claiming to have a primary purpose of recovery. The regulations do this by focusing on the physical character of the unit and not on its claimed purpose.

Thus, the proposal defines an incinerator as a controlled-flame combustion device in which the combustion chamber and any heat recovery section are *not* of "integral design", *i.e.*, formed into a single manufactured unit such that there occurs significant radiant as opposed to convective heat recovery. This occurs, for example, when the combustion chamber and heat recovery section are joined by ducts that carry the flue gas to heat recovery sections. Thus, waste heat recovery units added to an incinerator cannot exempt it from regulation as a hazardous waste treatment facility. Incinerators—including those burning secondary materials and recovering energy or material—are normally subject to regulation under Subpart O of Part 264 and 265. (The major exception is for incinerators that are "industrial furnaces", a term explained below.)

Boilers, in contrast, ordinarily are not subject to regulation under Subpart O, but rather may be regulated under today's proposed regulations applying to recycling facilities. "Boilers" also are defined on the basis of design instead of purpose. Under the proposed definition, they must have: (1) provision for heat recovery, and (2) combustion chamber and heat recovery sections that are of "integral design", *i.e.*, that are formed physically into one manufactured or assembled unit. In addition, the unit must accomplish significant heat recovery in the combustion chamber section by means of radiant heat transfer.

The key distinction between boilers and incinerators is that boilers achieve heat transfer within the combustion chamber itself, generally by exposing the heat recovery surface to the flame. In contrast, heat transfer does not ordinarily occur in the combustion chamber of an incinerator. Rather, combustion gases are transferred elsewhere in the device, where heat transfer may occur.

There may be situations where incinerator operators design or retrofit their devices to avoid regulation by achieving minimal heat transfer in the combustion chamber. The regulation consequently requires that a "significant" percentage of the thermal input to the unit be recovered in the combustion chamber by radiant heat transfer.

In determining what constitutes "significant" radiant heat transfer, the Agency considered the design of boilers that have only one surface (or side) of the combustion chamber with boiler tubes that "see the flame," *i.e.*, that experience radiant heat transfer. This is essentially the minimum design that would meet the integrated design criterion and represent a bona fide boiler. (The Agency is aware of typical "package boilers" that meet this design.)

In such a boiler, one may assume for purposes of simplification that the one boiler wall with exposed boiler tubes receives from one sixth to one fourth of the heat released. A typical heat recovery efficiency for such a boiler might be 75 percent (*i.e.*, 75 percent of the heat content of fuels fed to the boiler is actually recovered). Thus, viewed as a percentage of total heat recovered, the radiant portion represents 21 to 33 percent of the total. Since radiant heat recovery is, in fact, the more efficient portion of the total recovery, it probably represents a slightly higher portion of the total.

Thus, the benchmark the Agency intends to use in judging "significant" radiant heat transfer in the combustion chamber is 25 to 35 percent of the total heat recovered in the unit. This is consistent with industry estimates of the lower range of radiant heat transfer that occurs in typical boilers. We specifically solicit comments, however, as to the accurancy and appropriateness of this benchmark.

The proposed regulations make one further distinction among combustion devices. There are combustion devices designed as incinerators or boilers that are used as integral components of manufacturing processes to recover materials or energy, not to destroy wastes. Examples are smelting furnaces, cement kilns, and blast furnaces. These units—termed "industrial furnaces" in the proposal—are normally considered to be engaged in recycling activities when burning secondary materials, so will not be regulated as incinerators (even if they are not of integral design).

The proposed definition of industrial furnace specifically designates certain devices as industrial furnaces, namely cement kilns, aggregate kilns, lime kilns, phosphate kilns, blast furnaces, smelting furnaces, combustion devices used in the recovery of sulfur values from spent sulfuric acid, methanol reforming furnaces, and pulping liquor recovery furnaces.[14] The proposal also allows for the Agency to add devices to the list, by rulemaking, on the basis of considering several criteria. When adding to the list of industrial furnaces, we will consider these criteria together. Therefore, a particular device need not satisfy all of the criteria to be designated an industrial furnace if it satisfies one or more of them.

These criteria have been selected because they describe those aspects of industrial furnaces that distinguish them from hazardous waste incinerators. Thus, a flame combustion device may be designated as an industrial furnace if it is designed and used primarily to accomplish recovery of material or energy, such as a secondary smelting furance that recovers usable metal from scrap, or methanol reforming units. A device also may be designated an industrial furnace if it is used to burn spent materials, sludges, or by-products as ingredients in a production process. Similarly, where these secondary materials are used as effective substitutes for raw materials in a device that uses raw materials as principal feedstocks, the device could be an industrial furnace. These last two criteria are used to describe materials that serve essentially as raw materials and therefore are not appropriately subject to regulation under RCRA (See Section VI. E. of Part I of the preamble).

A device that burns raw materials to make a material product (such as a cement kiln or aggregate kiln) may also be designated as an industrial furnace. Finally, in determining whether a device should be listed as an industrial furnace, the Agency will consider whether the device is commonly used in a manufacturing process.

[14] The Agency is continuing to investigate the design of these latter three devices, as well as their precise role in the sulfuric acid, methanol, and pulping manufacturing processes in order to assure that they are properly classified as industrial furnaces.

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VI. Discussion of Specific Provisions of the Revised Definition of Solid Waste

A. Proposed § 261.1(b): Purpose and Scope

It is necessary to define solid waste because of statutory draftsmanship ("hazardous waste" being a subset of "solid waste" (see RCRA Sections 1004(5) and 1004(27)). However, the proposed new § 261.1(b)(1) indicates clearly that the definition of solid waste proposed today is intended to apply only to materials that would also be hazardous wastes. It does not apply to recycled non-hazardous materials (for example, most scrap metal), although we do not commit ourselves as to when such materials are wastes, and see no reason to do so in this rulemaking.

Our intention is to emphasize that we do not mean the proposed definition to be applied in contexts other than the Subtitle C hazardous waste management regulations.

We also are clarifying (in proposed § 261.1(b)(2)) that the proposed definition of solid waste in § 261.2 does not limit the Agency's jurisdiction under Sections 3007, 3013, and 7003 of RCRA. The Agency's jurisdiction under these provisions is not limited to "hazardous wastes indentified or listed under Subtitle C", whereas the proposed definition is part of the process of identifying hazardous wastes for purposes of Subtitle C and has no other applicability. Consequently, these other statutory provisions need not be limited to the materials covered by this definition. (See generally 45 FR at 33090, May 19, 1980.)

B. Proposed § 261.2(a)(1)

This provision is nearly identical to § 261.2 (b)(1) and (c) in the existing definition. It indicates that materials abandoned by being disposed of, burned, or incinerated, or otherwise accumulated, stored, or treated in lieu of or before such activities are solid wastes. This includes materials actually or intended to be discarded.

However, this proposal does differ from the existing provision in two significant respects. First, proposed § 261.2(a)(1)(ii) removes the qualification that burning materials to recover energy does not consititute discarding (existing 40 CFR 261.2(c)(2)). This clause no longer is appropriate because we are restructuring the definition to indicate explicitly that this activity is subject to our jurisdiction. (As explained in Section IV. D. above, most secondary materials burned for energy recovery are solid wastes under the Agency's existing regulations because they are sludges, or are spent materials or by-products that are sometimes discarded.)

Second, we wish to clarify that materials being burned in incinerators or other thermal treatment devices, other than boilers and industrial furnaces, are considered to be "abondoned by being burned or incinerated" under § 261.2(a)(1)(ii), whether or not energy or material recovery also occurs. (The meanings of these terms were explained in Section V. above). (The regulatory provision also applies, of course, to devices in which materials are burned or thermally decomposed for destruction without any recycling purpose.) In our view, any such burning (other than in boilers and industrial furnaces) is waste destruction subject to regulation either under Subpart O of Part 264 or Subpart O and P of Part 265. If energy or material recovery occurs, it is ancillary to the purpose of the unit—to destroy wastes by means of thermal treatment—and so does not alter the regulatory status of the device or the activity. Thus, a hazardous waste incinerator burning chlorinated hydrocarbon wastes and recovering hydrochloric acid remains a Part 264 incinerator and the chlorinated hydrocarbon wastes are being incinerated, not recycled.

We intend shortly to propose a set of regulations clarifying the status of incenerators, boilers, and industrial furnaces for purposes of regulation as incinerators under Part 264. The Agency intends to explain these definitions in more detail at that time, and to provide further opportunity for comment. For purposes of this discussion, however, the key concept is that materials fed to incinerators that are not boilers or industrial furnaces are deemed to be solid wastes, and the unit is subject to regulation under Part 264, Subpart O, regardless of whether material or energy also is recovered from the unit.[15]

C. Proposed § 261.2(a)(2)(i): Wastes That Are Used in a Manner Constituting Disposal

The first category of secondary materials considered to be solid wastes when recycled and when destined for recycling are secondary materials used or reused in a manner involving direct placement on the land. Examples are the direct use of recycled materials for land reclamation, as dust suppressants, as fertilizers, and as fill material. In the Agency's view, these practices are virtually the equivalent of unsupervised land disposal, a situation RCRA is designed to prevent.[16] In fact, the Agency regards the direct use of these materials as fertilizers to be a form of land treatment subject to the standards of Subpart M of Parts 264 and 265. (See Background Document for Permitting Standards for Land Disposal Facilities, Response to Comments, July 26, 1982, p. 158.)

The many damage incidents resulting form wastes being used in a manner constituting disposal bear out the Agency's concern. This type of recycling activity has also been a particular concern of the Congress. The September 1979 report of the Subcommittee on Interstate and Foreign Commerce on hazardous waste disposal (Committee Print 96–1FC 31, 96th Cong., 1st sess., 1979) describes three damage incidents involving wastes used in a manner constituting disposal (*id.* at 4, 12–13, 17, 24, 41, and 53–54). This report indicated that these uses should be subject to regulatory control and criticized the Agency's proposed regulations for not adequately tracking this type of recycled material (*id.* at 41–42, 53–54).

These references to damage incidents reflect not only Congress' concern but its intent that EPA's Subtitle C regulations cover this type of activity.[17] The recent report of the House Committee on Energy and Commerce likewise voices special concern about this type of recycling and would mandate Agency action in this area. (*See* H.R. Rep. No. 97–570 at 22–23.) A provision mandating Agency action was later adopted by the full House.

The proposed provision applies when a material is used essentially "as-is" (for example, a sludge used directly as fill material) or where the material is mixed with another substance without any appreciable chemical change ("simple mixing"). An example of the latter is the notorious incident where waste containing dioxin (TCDD) was mixed with waste oil and then used as a dust suppressant at a Missouri horse arena,

[15] We add that if a boiler or an industrial furnace is used to destroy wastes, that unit is being used as an incinerator and is subject to regulation as such.

[16] See 43 FR 58946, 58950, and 58954 (December 18, 1978) where the Agency initially proposed the concept of use constituting disposal.

[17] A number of industiral commenters likewise conceded the legitimacy of Subtitle C jurisdiction over uses constituting disposal, or indicated that if the Agency indeed possesses Subtitle C jurisdiction over recycling, then jurisdiction appropriately can be exercised over uses constituting disposal. See comments of the American Paper Institute, August 18, 1980, p. 9; of Stauffer Chemical Co., August 18, 1980, pp. 12–15, 19, and 21; and of the Chemical Manufacturers Association, August 15, 1980, pp. 34–35, and 51. The Environmental Defense Fund, in its comments, likewise generally supported regulating this type of recycling activity. We think these comments contain some acknowledgment that activities virtually tantamount to unsupervised land disposal of hazardous wastes are within our proper jurisdictional purview.

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killing livestock, and seriously injuring an exposed child.

On the other hand, a material blended so that it is significantly changed chemically or biologically (*i.e.*, the new material is chemically or biologically distinct from the original material being blended) does not count as a waste—and the recycling activity would not be regulated—even if the product then is placed on the land. An example is fly ash used as an ingredient in cement.[18]

The Agency believes this outcome is satisfactory in most cases but is concerned about not regulating fertilizers made from toxic metal-containing sludges and by-products (where these materials are significantly changed in the process). (Fertilizers using such materials as the sole or virtually sole ingredient, or using such materials in virtually unaltered chemical form would, however, be regulated under the proposal.) The Agency is gatering information on waste-derived fertilizers and may alter this part of the proposal after assessing this information.

The regulation, however, does cover residues of waste treatment processes applied to the land (even though the wastes may have undergone a chemical change as a result of treatment). Examples are waste stabilization processes where the stabilized material is then used as fill. Assuming the stabilized material is a hazardous waste, the reuse remains subject to regulation. The Agency is convinced that these waste treatment operations are not production processes and can therefore be regulated as waste management, and that the treated material remains subject to regulation as a solid waste.

Finally, the regulation applies to commercial chemical products (and related materials) listed in 40 CFR 261.33 that are not ordinarily used by being applied to the land. This provision is intended to close an unintended gap in regulatory coverage. Under the existing regulations, commercial chemical products must be "discarded" (or intended for discard) before they can be wastes, and use in a manner constituting disposal is not deemed to be a form of discard (see 40 CFR 261.2 (c)). The Agency does not normally intend to regulate the recycling of these materials, since such recycling simply restores these materials to usable condition, and in a large sense simply continues their normal use (see 45 FR 78540–541, November 25, 1980). However, use of these materials in a manner constituting disposal is not analogous to their normal use, unless they ordinarily are meant to be used by being applied to the land. We consequently are proposing to define these materials as wastes when they are recycled in this way.

D. Proposed §§ 261.2(a)(2)(ii) and 261.6(b)(1)(v): Wastes That Are Burned to Recover Energy, Are Used to Produce Fuels, or Are Contained in Fuels

This provision indicates that spent materials, sludges, listed by-products, and any commerical chemical products (and related materials, such as off-specification variants and spill residues) listed in 40 CFR 261.33 that are not themselves fuels, are solid wastes when they are burned as fuels, used to produce fuels, or contained in fuels. EPA's reasons for asserting jurisdiction over these materials have been described in Section IV. D. above.[19]

To see the actual extent of proposed regulatory coverage, this provision should be read together with proposed § 261.6 (b)(1)(v). We are proposing to continue temporarily the present exemption for actual burning for energy recovery (proposed § 261.6 (b)(1)(v)) pending completion of the studies described in Section IV. D, above. We also reiterate that burning in incinerators (that are not industrial furnaces) is considered to be incineration and is regulated under Subpart O of Parts 264 or 265, whether or not energy or materials also are recovered. Such incineration is not affected by the exemption in proposed § 261.6(b)(1)(v).

The exemption *does* cover burning for energy recovery in units whose principal purpose is energy or material recovery, rather than waste destruction—namely boilers and industrial furnaces. (These terms were explained in Section V. above.) For certain wastes, the exemption also applies to storing and transporting these materials before burning. These wastes are those that are hazardous only by reason of exhibiting a characteristic and are not sludges, and are used as a fuel or used to produce a fuel(a) by the person generating the wastes, (b) by a fuel blender who burns the fuel it blends, or (c) by a person ultimately burning a waste-derived fuel. Thus, anyone who—prior to their burning or blending—manages sludges or hazardous wastes listed in 40 CFR 261.31 or 261.32 would be subject to the Subtitle C regulations.

As we stated in Section IV.D. above, the scope of this exemption is designed to preserve the status quo, pending a further proposal for regulatory controls on hazardous wastes prior to their being burned as fuels. It thus is likely that this provision will change to some extent before promulgation. In light of our current uncertainty, however, we do not feel it appropriate to propose changes in the regulatory status of these wastes.

We also note that otherwise-exempt fuel-producing facilities (*i.e.*, those burning or blending non-sludge wastes that are hazardous only by reason of exhibiting a characteristic) are subject to regulation as storage facilities on a case-by-case basis (see Section III.B. of Part II of the preamble). They also remain subject to the turnover notification provision described below.

Processing or blending facilities producing fuels from other persons' spent materials, sludges, listed by-products, and § 261.33 commercial chemical products that are not themselves fuels is also subject to regulation as storage facilities when they do not use these fuels themselves. Generators sending hazardous wastes to these facilities must comply with the requirements of 40 CFR Part 262, and transporters carrying wastes to these facilities are subject to the requirements of 40 CFR Part 263. As we explained earlier, the risk of improper storage—epecially overaccumulation—before fuel production or burning is significant at facilities producing fuels from other persons' materials for someone else's use, and we therefore are proposing to regulate under these circumstances.

Only *listed* by-products burned as fuels are considered to be solid wastes in proposed § 261.2(a)(2)(ii). This is designed to avoid regulating certain commercial fuels that may technically be by-products and which exhibit a characteristic of hazardous waste. The Agency would prefer to include all by-products, except those that are clearly commercial fuels. Therefore, the Agency solicits comments identifying by-products that are legitimate commercial fuels and questions specifically whether we could include all other by-products (such as distillation bottoms) burned as fuels as wastes once we excluded these

[18] Another example where the provision similarly does not apply is when spent materials, sludges, or by-products are used as water conditioners or for water treatment. An example would be spent pickle liquor used to treat wastewater (see 46 FR 44970, September 8, 1981). In this case, although the material technically may be applied to the land, it is chemically combined as part of a conditioning process and is subsumed as an ingredient in the conditioned water.

[19] In interpreting this provision, the Agency does not consider materials to be burned as fuels when both material values and energy are recovered from burning a single material, and material recovery is an important part of the recovery operation. For example, furnaces burning secondary materials to recover economically significant amounts of contained chemicals, and that also recover energy from the same materials, are not considered to be burning the materials as fuels.

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named commercial fuels. Spent materials and sludges, on the other hand, appear to be waste-like whenever used to produce fuels, and are so classified.

The inclusion of commercial chemical products and other materials listed in 40 CFR 261.33 that are not themselves fuels closes an unintended gap in EPA's current regulations, and parallels the similar inclusion in this proposal of commercial chemical products used in a manner constituting disposal. Burning of these materials as fuels and using them to produce fuels is not at all analogous to these materials' normal use. We consequently are proposing to define these materials recycled in these ways as solid wastes. We intend to regulate their storage at a facility using them to produce fuels (as well as their prior generation and transport) when that facility is not also the generator or is not burning the waste-derived fuel containing these materials. These materials were present at many of the damage sites involving improper storage by producers of waste-derived fuel, pointing up the need to exercise regulatory authority.

To give an example, Generator A generates several unlisted ignitible spent organic chemicals that it blends and burns in its boilers as a fuel. These chemicals are hazardous wastes but are not subject to regulation before blending because they are being blended by the original generator, and are not listed in 40 CFR 261.31 or 261.32. The actual burning also is exempt, since it occurs in a boiler.

E. Proposed §§ 261.2(a)(2)(iii), 261.2(c)(1), and 261.6(b)(1) (i) and (ii): Wastes That Are Reclaimed

1. *The Proposed Provisions.* These provisions are among the most important in the proposed regulations. Read together, they say that spent materials, listed sludges, and listed by-products that are reclaimed are solid wastes, except where these materials are reclaimed at the plant site and returned to the original process in which they were generated. (See proposed § 261.2(a)(2)(iii).) However, these materials are subject to regulation during storage and transportation only:

- Where reclaimed by a person other than the generator and when the reclaimed material will be used ultimately by a person other than the reclaimer; [20] or
- Where reclaimed or otherwise processed in surface impoundments, or stored in surface impoundments before reclamation elsewhere; [21] or
- Where accumulated for over a year without sufficient amounts being reclaimed (see proposed § 261.2(a)(2)(v) explained in Section VI.G. of this part of this preamble); [22] and or
- Where regulated on a case-by-case basis (see proposed § 261.6(b)(2), explained in Section III. B. of Part II of this preamble).

These provisions are directed at the type of operation that has caused most of the recycling damage incidents—the unrelated reclaimer (*i.e.*, a reclaimer who is not the generator of the material) reclaiming material for another perons's use. This type of operation cannot guarantee an end market for its reclaimed materials, and so runs the most risk of overaccumulating waste inventory. This risk has been borne out again and again in the damage cases, the most well-known being the Chem-Dyne and Silresim facilities, which accepted solvents and other spent organic chemicals for reclamation (and fuel production) with disastrous consequences. Indeed, all of the 20 Superfund interim priority sites involving recyclers were unrelated reclaimers reclaiming materials or blending them as fuels for a different person's use.

These provisions apply to all spent materials, but only to listed sludges and listed by-products—to avoid including sludges and byproducts routinely processed to recover usable products as part of normal commercial practice. Although some of those materials may be wastes, the Agency wishes to consider them individually before asserting jurisdiction, since many of them also have product-like aspects.

The basis for exempting (conditionally) hazardous wastes reclaimed by their generator or reclaimed for the reclaimer's subsequent use is that by exerting continuing control over these materials, the generator or reclaimer/user is treating them in a way that ensures their end disposition. In fact, our investigation of recycling activities confirms that such operations have not caused the harms associated with the risk of overaccumulation. [23]

These reasons do not apply, however, when hazardous wastes are reclaimed or processed in surface impoundments or are stored in surface impoundments before being reclaimed. Surface impoundments containing hazardous waste pose a particular threat of contaminating ground water and have always been one of the chief concerns of the hazardous waste management program. (See generally, the Background Document tro Subpart K Interim Status Standards, April 28, 1980.) Not only is containment without a liner system usually impossible, but wastes are present as liquids or are constantly in the presence of liquids. This creates the situation most conducive to forming leachate. In addition, the collected liquids in an impoundment will form a pressure head, causing downward dispersion of the leached contaminants. Since most impoundments are unlined, and because many are underlain by permeable soils, the potential for downward seepage of contaminated fluids into ground water is high. [24] In fact, incidents of ground water contamination from impoundments have been reported in nearly all states. [25] Thirty-eight of the first 160 Superfund interim priority list sites involve leaching from unsecured surface impoundments.

Surface impoundments also can contaminate surrounding soil and surface water by directly releasing the contaminated liquid via washout, overtopping, or dike breakage. [26] Volatilization of organic contaminants also can pollute air in areas surrounding the impoundment. [27]

[20] Proposed §§ 261.6(b)(1) (i) and (ii) consequently exempt from regulation hazardous wastes reclaimed by the person who generates them, or reclaimed by a person who ultimately uses the reclaimed material itself.

There is one exception to this principle, namely when spent lead-acid batteries are reclaimed. We are proposing to regulate these wastes whether or not the reclaimed material is used ultimately by the reclaimer. Our basis for this distinction, and the regulatory scheme we are proposing for spent lead-acid batteries, is explained in Section III.D.3. of Part II of the preamble.

[21] The exemption in §§ 261.6(b)(1) (i) and (ii) does not apply to hazardous wastes that are reclaimed in surface impoundments, or that are stored in surface impoundments prior to being reclaimed elsewhere. Our basis for this approach is explained below in this section.

[22] The exemptions in §§ 261.6(b)(1) (i) and (ii) likewise do not apply to hazardous wastes that accumulate for over a year without sufficient amounts being reclaimed.

[23] The State of California's statutory definition of solid waste, which is quite similar in approach to that proposed today, in fact excludes materials reclaimed by the original generator. See California Hazardous Waste Control Act, Article 2 § 25122.5 (California Health and Safety Code Division 20, Chapter 6.5) (definition of "recyclable material").

[24] See U.S. EPA, Report to Congress, *Surface Impoundments and Their Effects) on Ground Water Quality in the United States—A Preliminary Survey*, EPA § 7019-78-004 (1978); *see also* U.S. EPA, *The Prevalence of Subsurface Migration of Hazardous Chemical Substances at Selected Industrial Woste Disposal Sites*, EPA/5301 SE 6341 (October 1977).

[25] See the Brackground Document cited earlier at pp. 9–29, collecting dozens of incidents of ground water contaimination caused by leaking surface impoundments.

[26] See id. at pp. 9–17 again detailing numerous damage incidents.

[27] *Id.* at 26–29.

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These potential dangers are all present when wastes are reclaimed in surface impoundments or stored in impoundments before reclamation. In fact, reclamation in surface impoundments is very similar to a use or reuse constituting disposal: both involve direct, uncontrolled placement of waste in the land. We thus are not exempting this activity from regulation. (However, since the concern here is waste management in surface impoundments, the hazardous wastes are not automatically subject to regulation when they are removed from the impoundment to be used, reused, or reclaimed.)

By using the language "reclaimed or otherwise processed" in proposed § 261.6(b)(1) (i) and (ii), the Agency means to cover virtually all management activities occurring in surface impoundments involving material recovery for subsequent use, reuse, or additional reclamation, or involving processing designed to make the impounded material amenable for recovery.

The following examples show how the provisions operate with respect to surface impoundments:

• Generator A has a listed wet emission control sludge that is dewatered in a surface impoundment. The settled sludge is then dredged and used as an ingredient in manufacturing cement.

The sludge is a solid waste and is subject to regulation when it is dewatered in the impoundment. The recovery and processing of the sludge in the impoundment meets the "reclaimed or otherwise processed" standard of the proposed regulation. This result conform well with the language of RCRA, since dewatering is conducted to recover the entrained solids for future use—*i.e.,* to make the sludge "amenable for recovery", in the language of the statutory definition of treatment.

The sludge is not a solid waste once it is removed from the impoundment because it is being used as an ingredient, not reclaimed. (This concept is explained in the following subsection.) This sludge could be a waste, however, if it accumulates, after being removed from the impoundment, for over a year without a sufficient amount being used (see proposed § 261.2(a)(2)(v), described in Section G, below).

• Generator B generates a listed wastewater treatment sludge by precipitating metals from wastewater collected in a surface impoundment. The sludge is then dredged and shipped to a secondary smelter for metal recovery. The smelter is not smelting for its own subsequent use.

The sludge is a solid waste and is subject to regulation when in the impoundment for the same reason as the previous example. In addition, the sludge remains a solid waste when sent to the secondary smelter because it is being reclaimed by a person other than the generator for use by a person other than the reclaimer.

2. *The Meaning of "Reclamation".* The Agency has defined "reclamation" in proposed §261.2(c)(1) to constitute either regenerating waste materials or processing waste materials to recover usable products. Regeneration processes involve removing of contaminants or impurities so that the material can be put to further use. Examples are spent solvent and other spent organic chemical reclamation (ordinarily a regeneration process), spent catalyst regeneration, and most secondary metal reclamation, including secondary smelting (recovery of usable metal from otherwise unusable material).[28]

In thus defining reclamation operations to involve solid wastes, the Agency is following closely the various statutory definitions that indicate unequivocally that recovering usable material from otherwise unusable material constitutes solid waste management, and that the materials from which resources are recovered are solid wastes. Thus, one aspect of solid waste management is "resource recovery," which involves "the recovery of material or energy from *solid waste"* (Sections 1004(30) and 1004(22), emphasis added). Similarly, a "recovered material" (Section 1004(19)) includes material or by-products that "have been recovered or diverted from solid waste * * *." To the same effect, see Sections 1004(7), (18), (23), (24), and (29).

This provision is perhaps not as encompassing as it may appear. First, as described in the next subsections, activities involving use or reuse of the materials are not deemed to constitute reclamation. Second, reclamation conducted at the plant site where the reclaimed material is returned to the original process also is outside the scope of the definition. Operations where a generator reclaims his own materials, or when a reclaimer reclaims for his own use, also are ordinarily exempt from regulation. In addition, most reclamation activities do not involve hazardous wastes and so are unaffected by this provision.[29]

The limitation of the regulation to listed sludges and listed by-products also reduces the scope of the reclamation provision. By examining whether a particular type of sludge or by-product is a waste when reclaimed, the Agency will have an opportunity to determine if reclamation of the individual sludge or by-product should be viewed as a waste management process. At the same time, the Agency believes it important to have the means to regulate particular sludges and by-products that are to be reclaimed.

3. *The Distinction Between "Use" and "Reclamation".* Proposed § 261.2(c)(1) contains an important clarifying clause indicating that three types of activity involving the use or reuse of spent materials, sludges, or by-products do not constitute reclamation:

• First, using materials as ingredients to make new products, without distinct components of the materials being recovered as end-products. Examples are zinc-containing sludges used as ingredients in fertilizer manufacture, and chemical intermediates (for instance, distillation residues from one process used as feedstocks for a second process).[30] This exception does not apply when the spent material, sludge, or by-product is itself recovered or when its contained material values are recovered as an end-product. For example, if a metal containing sludge is

[28] The Agency believes that blending or combining materials to form fuels also is similar to reclamation, and within the Agency's jurisdictional purview, since otherwise unusable materials are being restored to usable condition so that energy can be recovered. (See Section 1004(22) of RCRA defining "resource recovery" as "the recovery of material *or energy* from solid waste" (emphasis added); see also Section 6002(c)(2), which refers to "systems that have the technical capability of using energy or fuels derived from solid waste. . . ." The House Report to RCRA likewise indicates that both raw materials and energy can be recovered from solid waste (see H. Rep. No. 94-1491 at 11 and 13).) We are exerting regulatory control over this activity by means of separate regulatory language in the interest of definitional clarity.

[29] Metal-containing scrap comprises the great majority of reclaimed materials. See National Association of Recycling Industries, *Recycling Resources: Priorities for the 1980's,* indicating that over 80 percent of the materials recycled by its members are scrap metal. Scrap is not usually considered hazardous. Generators can determine this on the basis of their knowledge of the material (see § 262.11(c)(2)). Thus, most secondary metal reclamation is not affected by this provision.

[30] Another example, which occurs often in the chemical industry, is using spent sulfuric acid as an ingredient in producing sulfuric acid. In this operation, spent sulfuric acid is introduced as a feedstock where it is burned to derive sulfur as SO_2. As part of the same process, this SO_2 is then purified, catalytically converted, and absorbed into existing sulfuric acid. This process does not constitute reclamation because the spent sulfuric acid is neither regenerated (impurities are not removed from the spent sulfuric acid to make it reusable) nor recovered (acid values are not recovered (acid values are not recovered from the spent acid). It is being used as an ingredient.

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processed to recover its contained metal values, the process constitutes reclamation, and the sludge, if listed, is a hazardous waste.

• Second, using the materials as substitutes for raw materials in processes that normally use raw materials as principal feedstocks; this exception does include those situations where material values are recovered from these substitute materials. Examples are sludges or spent materials used as substitutes for ore concentrate in primary smelting. The Agency does not believe these processes constitute reclamation, in spite of the recovery or regeneration step, because the materials literally are being used as alternative feedstocks.[31] This is not the case when the same materials are recovered in secondary processes (such as secondary smelting). These processes are waste-based, so that the materials being recovered are not substituting for raw materials. Indeed, this distinction is reflected in the clear delineation of primary and secondary processes. Secondary processes involving recovery or regeneration thus are defined as reclamation.

• Third, using the materials as substitutes for commercial products in particular functions or applications. An example is spent pickle liquor used as a phosphorus precipitant and sludge conditioner in wastewater treatment. This does not regenerate or recover the pickle liquors. Rather, the material is being used (actually reused, since pickle liquor is a spent material) to substitute for other commercial products.

In these three cases, the materials are being used essentially as raw materials and so ordinarily are not appropriate candidates for regulatory control. Moreover, when these materials are used to manufacture new products, the processes generally are normal manufacturing operations (although not when these materials are combined into fuels). The Agency is reluctant to read the statute as regulating actual manufacturing processes.

However, we are somewhat concerned that in the first of these cases the proposal leaves unregulated certain processes that could constitute waste management. Processes where secondary materials are the predominant (or even the sole) ingredient are conceivable examples, particularly where the process operator is paid to take the materials. In addition, processes using spent materials may be more logical candidates for regulation because spent materials (having already fulfilled their original use) are more inherently waste-like than by-products and sludges. We have not been able to reduce these ideas to a quantifiable regulatory standard, however, and solicit further comment on this point.

Examples

• Generator A generates an ignitable spent solvent that it sends to reclaimer R who reclaims the solvent for resale to the general public.

The spent solvents are solid wastes in A's hands and in R's and are subject to regulation. Solvent reclamation meets the definition of reclamation since it is a regeneration process, and is subject to regulation since A is not reclaiming its own materials, nor is R reclaiming for its own use.

• Generator B generates a spent solvent that it reclaims itself; the reclaimed solvent is not sent back to the original process from which it was generated.

The spent solvent is a solid waste but is not subject to regulation because B is reclaiming his own materials. The spent solvent could be regulated, however, if it accumulates for over a year without a sufficient amount being reclaimed (see proposed § 261.2(a)(2)(v), described in Section G., below), and also could be regulated on a case-by-case basis (see proposed § 261.6(b)(2), described in Section III. B. of Part II of this preamble).

• Generator C generates an emission control dust (a sludge) that it sends to a secondary smelter for metal recovery. The smelter then sends the recovered metal to anunrelated refiner for processing.

The emission control dust is a solid and hazardous waste if it is listed in §261.31 or 261.32 and would be subject to regulation. The smelting process recovers metals from the dust as an end-product, and the smelter is not engaging in reclamation for its own use.

• Generator D generates the same emission control dust that is sent to a cement manufacturer for use.

The dust is not a waste abecause it is being used as an ingredient to make cement and is not being recovered or regenerated.

4. *Exception for Materials Reclaimed at the Plant Site and Returned to the Original Manufacturing Process.* There is one further exception to the reclamation provision. Reclamation can sometimes be part of a closed-loop recycling step, where reclaimed materials are recycled back into the initial production process. This type of recycling is really an adjunct to the original process, and as such it represents a situation where the recycling activity may not fall within the Agency's jurisdiction. An example is wastewater recycled to the original process after being purified in an impoundment.

To allow for these cases, we do not count spent materials, listed sludges, and listed by-products as solid wastes—even if reclaimed or processed in impoundments—where they are reclaimed at the plant site and then returned to the manufacturing process from which they were generated for further use. Similarly, the same materials are not wastes if they are stored (even if stored in impoundments) and reclaimed at the plant site, and the reclaimed material is then returned to the original manufacturing process. (The exclusion would not apply, however, if the reclaimed material is later used in a different process—even if under the generator's control—since this goes beyond the Agency's conception of closed-loop recycling.) The material need not be returned to the exact production *step* in which it was generated, so long as it is returned to the original process.[32]

The term "plant site" means essentially the same thing as "on-site", namely, the same geographically contiguous property, as well as non-contiguous parcels owned by a single person and connected by a private right-of-way. In addition, the plant site includes contiguous property divided by rights-of-way, whether or not the entrance and exit between parcels is a cross-roads (compare the definition of "on-site" in 40 CFR 260.10). The limitation regarding means of egress in the definition of on-site is not relevant in determining whether a recycling operation is a closed-loop.

The Agency's proposed definition of a closed-loop process hinges essentially on the proximity of location of the reclamation operation, plus return of the material to the original process. There may be better ways to distinguish when reclamation is integrally tied to a production process, such as the length of time materials accumulate before being reclaimed. The Agency solicits

[31] Spent sulfuric acid fits within this exception, as well as the "use as ingredient" exception. The spent acid is usually returned to the original sulfuric acid production process, where it substitutes for raw material customarily used as feedstock.

[32] It should be noted, with respect to surface impoundments, that an impoundment would not be regulated under this provision only if *all* of the material in it that could be a hazardous waste is recycled back to the original production process. Seepage impoundments and impoundments from which wastewaters are both discharged and recycled consequently would remain subject to regulation. In addition, an impoundment still could be regulated if sufficient amounts of material accumulated within it are not recycled within a year of accumulation (see Section G., below).

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comments on the question of alternative approaches in this area.

The following example illustrates how this exclusion applies.

• A pulp and paper manufacturer generates black liquor, a potentially corrosive spent residue from the pulping process. Black liquor is sometimes stored in impoundments before being routed to boilers where it is burned to recover chemicals and energy. The chemicals are then reused in the original pulping process.

The black liquor would not be a waste for this purpose, since it is reclaimed at the plant site and the reclaimed product is reused within the original manufacturing process.

The following example shows how the various provisions dealing with reclamation operate in combination.

• Generator A generates a listed emission control dust that is placed in an on-site excavated ditch for holding until it can be re-smelted. To prevent wind dispersion; the dust is wetted down while in the ditch. The dust then is dried and placed back in the smelting process to recover metal values.

While the dusts are in the surface impoundment they are not being reclaimed and therefore are not necessarily solid wastes. The purpose of the wetting process is to hold the dusts in place, not to recover material values in the dusts or to facilitate later recovery of the metals (since the dusts could be smelted without being wetted first). In contrast, when wet sludges are dewatered in impoundments, recovery is occurring, since the sludges could not be recycled further without the dewatering step.

The dusts may or may not be deemed to be stored in an impoundment (assuming the ditch is an impoundment) before reclamation, depending on their disposition upon being removed from the impoundment. If the dusts are smelted at a primary smelter, they are not being reclaimed since they are substituting for raw material feedstocks. Thus, even though the materials would be stored in an impoundment, they would not be stored before reclamation and so would not be wastes.

On the other hand, if the metal values in the dust are recovered at a secondary smelting facility, the materials would be claimed and so would be wastes when stored in the impoundment. However, if the dust is returned to the original smelting process (primary or secondary), it would not be regulated while in the impoundment because the process is essentially a closed-loop.

5. *The Status of Reclaimed Products.* The Agency also has added language to § 261.3(c)(2) (the "derived from" rule) to indicate that commercial products reclaimed from spent materials, listed sludges, and listed by-products—*e.g.*, a reclaimed solvent—are not wastes and are not subject ot regulation under RCRA. This proposed addition merely clarifies the existing regulations and does not represent a change in regulatory approach. However, this principle does not apply to reclaimed materials that are not ordinarily considered to be commercial products, such as wastewaters. These materials rarely are dealt with as products moving in commerce, and are often discharged, and so reasonably can be considered to remain wastes. In addition, we wish to make clear that waste-derived fuels are not products reclaimed from a hazardous waste and thus remain wastes. Our claim of jurisdiction over these materials is made explicit in proposed § 261.2(a)(2)(ii).

We also caution that waste materials do not become products if they are merely processed minimally—*i.e.*, operations that leave materials unfit for use without further processing. For instance, a hazardous sludge remains a waste when it is dewatered and sent to a metal reclaimer or used in a manner constituting disposal. Similarly, a spent solvent that is processed by removing rocks and other debris, and then sent to be distilled, remains a waste.

F. Proposed §§ 261.2(a)(2)(iv) and 261.2(c): Wastes That Are Accumulated Speculatively

The next category of solid wastes is materials that are accumulated speculatively. Proposed § 261.2(c)(2) defines these as materials with recycling potential, that are accumulating with a legitimate expectation of eventual recycling but have never been recycled or cannot feasibly be recycled. An actual example is a generator that has accumulated emission control dust from steel production (Hazardous Waste KO61) for over eight years without being able to find a feasible means of recyling it, despite legitimate efforts. Over 40,000 tons are now piled in the open in an abandoned quarry near a drinking water source.

The Agency believes strongly that these types of materials are wastes, at least until a means of recyling is found. To hold otherwise simply invites unregulated accumulation of materials under the guise of being held for recycling. For this reason, the provision applies to all spend materials, sludges, and by-products. [33]

The Agency does not mean to include in this category materials actually recycled by other generators, such as fly ash. Because of their known recycling potential, these materials generally are not deemed immediately to be solid wastes, even if a generator is accumulating them without a known market. Instead, these materials will be considered solid wastes if insufficient amounts are recycled (see the following section). A rather narrow qualification to this is that generators must have some feasible way of recycling the material. An example would be an emission control dust used as an ingredient in an industrial process. If a generator is accumulating the dust with no feasible means of sending it to a user and no other immediately feasible means of recycling it, the generator would be deemed to be accumulating the material speculatively.

The regulatory status of § 261.33 commercial chemical products, off-specification variants, spill residues, and container residues under this provision, as well as under the next provision—accumulation without sufficient amounts being used, reused, or reclaimed—requires a bit more explanation. As described earlier, commercial chemical products are presently regulated as hazardous wastes when discarded or intended for discard, and not when recycled or intended for recycling (see 45 *FR* 78540). Commercial chemical products that are being stored with recycling potential and with a legitimate expectation of recycling, therefore, are not intended for discard and thus are not subject to this provision. (As already explained, however, we are proposing to define certain commercial chemical products destined for recycling by burning to recover energy or by direct land placement as solid wastes under other provisions of the revised definition.)

If, however, a recycling market does not develop and one is not expected within a reasonable time period, or if insufficient amounts of these materials are being recycled, we would consider these commercial chemical products as being stored for discard, and thus subject to regulatory control. We are not setting any time period for determining when these commercial chemical

[33] The jurisdictional basis for this provision, as well as the following provision (materials being overaccumulated), rests on a footing different from the earlier provisions. Those provisions apply to materials actually being recycled. In contrast, proposed §§ 261.2(a)(2)(iv) and (v) apply to materials not being recycled, but for which recycling is eventually a possibility. Since the materials are not actually being recycled, and there is only a possibility of eventual recycling, there is no question that these materials are RCRA solid wastes.

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products would become wastes. However, we do expect persons storing these materials to have appropriate documentation or information to support their claim that these materials have recycling potential and that the materials are accumulating for eventual recycling (see Section I. of this part of the preamble on record-keeping provisions).

As indicated above, we are not proposing a time period for determining when these commercial chemical products would become wastes. We instead would retain the existing standard indicating that these materials are wastes when intended for discard. Although a subjective standard of this type does not provide absolute certainty, alternatives appear to have greater problems. For example, if we set a time period that would define when commercial chemical products would become wastes, we believe persons might have to keep records of all commercial chemical products they use or keep in inventory in order to comply with the regulations. The Agency does solicit comment on this point; in particular, we ask commenters to address the following questions: (1) whether a time period should be set for commercial chemical products being stored for recycling before they are defined as wastes; (2) what are the maximum and average lengths of time that commercial chemical products are stored before recycling; (3) how and where (*i.e.*, with normal inventory) are these commercial chemical products stored; and (4) how many hours (on the average) would be required to keep appropriate documentation to ensure that the commercial chemical products are recycled if a time period were set.

G. Proposed §§ 261.2(a)(2)(v) and 261.2(c)(3): Materials That Accumulate Without Sufficient Amounts Being Used, Reused, or Reclaimed

A major recurring circumstance in the damage incidents involving recyclers is the accumulation of materials for extended periods before recycling, leading to eventual overaccumulation and improper storage. Accordingly, proposed § 261.2(a)(2)(2)(v) defines as a solid waste any spent material, sludge, or by-product accumulated over time without sufficient amounts being used, reused, or reclaimed. (See the previous section's discussion of the regulatory status of § 261.33 commercial chemical products that accumulate without sufficient amounts being recycled.) This provision is not limited to listed sludges or listed by-products, since the material's status as a waste turns on the amount recycled over time, not on the material's inherent character. The provision also applies both to a generator's own materials that it plans to recycle itself and to materials accumulated by reclaimers for their own eventual use.

Proposed § 261.2(c)(3) defines materials with known recycling potential to be overaccumulated—and thus solid wastes—when they accumulate at a site for over a year without at least 75 percent (by volume) being recycled. Under this provision, the amount of material turned over in a year is critical, not the total amount accumulated at the end of the year. Thus, if A starts with 100 units, and during the year generates 300 more units, but recycles 75, none of the material is a solid waste even though 325 units remain at the end of the year. Of course, in the following year A would have to recycle (or transfer to a different site for recycling) 75 percent of the 325 units present at the beginning of that year. The time period can be computed according to a calendar, fiscal, or inventory year, whichever is appropriate for the person accumulating. We note that this approach could allow essentially a free year to accumulate where a generator starts a year with little or no waste, since the generator would have to recycle little or no material during the year to meet the test. (We solicit comments as to whether some controls are needed as to when the one-year period begins.)

The Agency has not decided whether the specified percentage of turnover should apply on a material-by-material basis, or on another basis, such as to:

- All materials of the same class (*i.e.*, all solvents, or all still bottoms); or
- All materials to be recycled in the same way (*i.e.*, all materials held for burning to recover energy); or
- All materials of the same class to be recycled in the same way (*i.e.*, all solvents held for burning to recover energy).

Our initial preference is for this last option, but we solicit comments on all of these alternatives, and ask that commenters suggest how these alternatives can be expressed in regulatory language.

The Agency nevertheless recognizes that some persons may be unable to recycle sufficient amounts of material in a given year but could do so if given additional time. Accordingly, the Agency offers a procedure (in § 261.2(c)(3)(ii)) that the person accumulating the material can use to notify the Regional Administrator of the circumstances. Although it need not follow any specified format, the notification would have to describe what kind of material is involved, how much is being stored, how it is being stored, how and when it is expected to be recycled, and why this expectation is reasonable. The Regional Administrator could then decide—on the basis of the submitted information—that the material is not a solid waste, or could request further information from the notifier. Once the material has accumulated for over a year without sufficient turnover, it becomes a waste unless the Regional Administrator decides otherwise.

The ultimate standard for the Regional Administrator's finding is whether a large portion of the accumulated material is reasonably likely to be recycled in the next year. Factors to be considered are the notifier's past history of recycling the material (including any contractual arrangements for recycling), relevant market factors, the character and quantity of material being accumulated, and how it is being stored.

For example, assume generator A has an emission control dust that he ordinarily sells as an ingredient in fertilizer. In a given year, however, he is unable to turn over 75 percent because the fertilizer manufacturer has gone out of business. Generator A believes he can find an alternative user in the next three months. Under these circumstances, the Regional Administrator could find legitimately that the material may be recycled and need not be managed as a waste.

There also may be extreme situations where a material can accumulate for a second year without 75 percent turnover and still possibly not be considered a waste. We thus have allowed (in § 261.2(c)(3)(ii)(B)) the person accumulating to present a second petition to the Regional Administrator containing the same information described above. The Regional Administrator could use this information to determine again whether the material is reasonably likely to be recycled. To submit the petition, however, the person accumulating must have recycled at least 50 percent of the total accumulated material. For example, assume that on day one A has 100 units of potentially recyclable material, recycles 50 percent in the first year, and successfully petitions the Regional Administrator. During the first year, A generates 200 more units of material. Thus, if A fails to recycle 75 percent of the 250 accumulated units, he would have to recycle at least 125 units to petition a second time.

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The Agency believes that a two-year grace period is sufficient. Materials accumulating up to three years without 75 percent turnover are therefore solid wastes, with no further opportunity for petition (proposed § 261.2(c)(3)(i)(C)).

Once materials are considered to be solid wastes under this provision, all of the accumulated materials are wastes. The materials remain wastes in the hands of the accumulator until 75 percent are turned over in a given year. Of course once any part of that accumulation is physically segregated from the rest and sent to recycling, that part is no longer automatically considered to be hazardous waste under this provision. For example, if a recyclable listed distillation residue "overaccumulates" under this provision—so that the total accumulated is a waste—and 10 percent is then sold to an asphalt manufacturer as an ingredient in asphalt production, that 10 percent is not a waste once it is sent to the asphalt manufacturer. (The material would remain a waste, however, if it were eventually sent to a reclaimer, and would be subject to regulation if that reclaimer was reclaiming for another person's use.)

The Agency considered exempting from this provision situations where a generator accumulates its own non-listed by-products in tanks or containers for its own subsequent use or reuse (but not subsequent reclamation).[34] It could be argued that materials a generator retains for its own use differ from materials sent to an unrelated person, since the generator is controlling the material until its end disposition. In addition, the risk of protracted, uncontained accumulation is reduced with materials accumulated in tanks or containers.

We have decided against including this exemption at the present time. These materials pose the potential to cause substantial harm if overaccumulated, and the provision safeguards against this risk. In addition, we do not believe that accounting for the volume of unlisted by-products being used constitutes a substantial administrative burden, since in assessing compliance, we contemplate that tracking can be tied to normal inventory practice.

We request comment, however, as to whether the Agency should include this exemption in its final regulation. Commenters should address which materials are being accumulated by generators for their own use, their intended use, the type of vessels the materials are stored in, duration of storage, and volume of materials being stored.

The Agency acknowledges that the turnover-notification provision is complicated in description. However, it safeguards against overaccumulation of materials without recycling, while creating a strong incentive to turn over accumulated materials. It also ensures that the Regional Office will be alerted to possible problem operations. Persons accumulating materials may incur some expense when accounting for their materials, but the turnover period is tied to normal inventory practice and involves keeping track only of relative in-flow and out-flow, not of each specific unit of material.

The Agency still has a number of questions about this type of provision. The first is whether further controls are necessary to provide regulatory control over facilities accumulating material for their own recycling. Another is whether the one-year time period is too long to allow substantial amounts of material—*e.g.*, a 20,000 ton-pile of a hazardous emission control dust—to accumulate unchecked. The Agency would appreciate comment on these questions, as well as on questions of this provision's enforceability and feasibility.

H. Proposed § 261.2(a)(3): Spent Materials, Sludges, and By-Products To Be Listed as Solid Wastes

As explained above, certain recycling activities are deemed to constitute waste management only if the sludge or by-product being reclaimed, or (in the case of by-products) being burned as a fuel or used to produce a fuel, is also listed. These listed sludges and by-products are the same sludges and by-products listed as hazardous wastes in 40 CFR 261.31 and 261.32.[35]

Proposed §261.2(a)(3) states that the Administrator also may list particular materials as solid wastes without regard to the mode of recycling. Thus, if a material is listed under this provision, it is a solid waste and a hazardous waste no matter how it is recycled, and would be subject to regulation under the provisions of proposed §261.6. The reasons for this provision is to provide a safeguard to cover situations where a secondary material being recycled is inherently waste-like and the recycling activity potentially poses substantial environmental risk, but the material is not otherwise defined as a solid waste.

The most likely examples would be particular secondary materials being used or reused as ingredients or as commercial product substitutes. As we stated above, secondary materials ordinarily function more like raw materials or products than wastes when used or reused in these ways (see Section VI.E.3.), and so are not ordinarily defined as wastes. There are exceptions, however. The listing provision in the revised definition would cover these exceptions by listing the particular material as a solid waste, the listing functioning in essence as a caveat to the general principles regarding use and reuse.

Spent materials, sludges, and by-products could be listed as solid wastes under § 261.2(a)(3) if they meet two conditions. First, the material would have to be waste-like. To be waste-like, the material, on a nationwide basis, would ordinarily have to be disposed of or incinerated, rather than recycled. The justification is that materials that are ordinarily thrown away are inherently waste-like. (See 45 FR at 33093, May 19, 1980, citing legislative history.) Alternatively, the material would be waste-like if (1) it contained toxic constituents listed in Appendix VII of Part 261 not ordinarily found in significant concentrations in the raw materials or products for which it was substituting, and (2) these toxic constituents were not used, reused, or reclaimed during the recycling process.

Second, to be listed, the material would have to pose a potentially substantial threat to human health and the environment when recycled in ways not already defined as waste management. This condition is relevant in determining whether a waste-like material is a solid waste since it sheds light on whether the purpose of recycling is ancilliary to a central purpose of disposal. Potential dangers posed by the practice are also relevant in determining whether there is any need to assert control over the practice.

The Agency is proposing today to list as solid wastes certain dioxin and dibenzofuran-containing wastes that we are also proposing to list as hazardous wastes in another proposed regulation appearing in the Proposed Rule section of today's FR. As we explain there in more detail, these wastes typically are

[34] For this purpose, materials stored before blending, processing, or burning as fuels would be deemed to be stored before use.

[35] For the purpose of paragraph (a)(2)(iii), the listed sludges currently are EPA Hazardous Waste Nos. F006, F012, F019, K001, K002, K003, K004, K005, K006, K007, K032, K035, K037, K040, K041, K044, K046, K048, K051, K061, K069 K084, K106. For the purpose of paragraphs (a)(2)(ii) and (a)(2)(iii) the listed by-products currently are EPA Hazardous Waste Nos. F008, F010, K008, K009, K010, K011, K013, K014, K015, K016, K017, K018, K019, K020, K022, K023, K024, K025, K026, K027, K029, K030, K031, K034, K036, K039, K042, K043, K049, K050, K052, K060, K071, K073, K083, K085, K087, K093, K094, K095, K096, K101, K102, K105.

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disposed of, and are extremely toxic, so that unregulated recycling (including use and reuse) is potentially hazardous. They contain hazardous constitutents that are not ordinarily present in raw materials or products, and are not recyclable. Accordingly, we are proposing to list them as solid as well as hazardous wastes in order to control all means of recycling. (We are including the relevant regulatory language in this rule, rather than in the proposed dioxin waste listing, so that all the proposed regulations on recycling are in one place.)

We note that we do not expect to invoke this provision very often, since ordinarily the recycling situation is of concern (for example, reclamation by a person who did not generate the material), not the type of material involved. We also solicit comment on whether § 261.2(a)(3) should apply when materials are used as chemical intermediates by the generator of the materials at the site where the materials are generated. It can be argued that this type of use is close to use of raw materials in the same production process.

I. Proposed § 261.2(d): Record-keeping Provisions

No formal record-keeping requirements are imposed as part of the definition of solid waste. However, in many cases some type of records will be needed to substantiate that a particular material is not a solid waste under the definition or is a waste not subject to regulation. For example, a generator may need to demonstrate that a material is sent to a different person to be reused rather than reclaimed, or that accumulated materials are being turned over sufficiently during a year.

The Agency accordingly has proposed §261.2(d), requiring persons to keep whatever records (or alternative means of substantiation) are appropriate to document their claims that they are not managing a solid waste or that their wastes are exempt from regulation because they are being recycled in a particular way. The burden of proof rests with the person handling the material, so that failure to provide proof means that the person will be considered to be managing a solid waste or be subject to regulation. An analogous situation is a tax audit, where taxpayers must provide appropriate records or substantiation to support their claimed deductions. (Indeed, the Agency interprets present §261.6 as putting the burden of proof on the entity claiming to be exempt from regulation because of its recycling activities, in accord with the general principle that the party asserting an affirmative defense has the burden of proof.)

The Agency is seriously considering a requirement that persons who recycle 75 percent or more of their accumulated materials send a short annual letter to the Regional Administrator identifying themselves, their accumulated materials, and the percentage and volume recycled during the past year. The Agency is concerned that without such a requirement it will never be able to identify potential problem facilities for follow-up inspection. The Agency solicits comments on whether it should adopt such a requirement.

Part II: Standards for Managing Hazardous Wastes That are Recycled

I. The Agency's Existing Standards for Managing Hazardous Wastes That are Recycled and the Agency's Rationale for the Proposed Revisions

In the Agency's existing regulations, the requirements for recycled hazardous wastes are the same as those that apply to generators, transporters, or storers of any hazardous waste (see 40 CFR 261.6). The rationale is that these wastes present essentially similar hazards when they are transported or stored before their end disposition, whether recycling or disposal. Accordingly, certain hazardous wastes to be recycled are regulated up to, but not including, their recycling.[36]

In rethinking the definition of solid waste, the Agency considered the possibility of less stringent substantive management standards for persons who recycle hazardous wastes. Such materials could be expected to be handled somewhat more responsibly than ordinary wastes, given their value as reusable commodities. In addition, since our policy is to encourage recycling, we would be willing to ease the standards, provided no substantial threat is posed to human health and the environment.

However, the Agency concluded that such relaxation is not now advisable. In the first place, certain types of facilities recycling hazardous wastes repeatedly have mismanaged these wastes, causing extensive damage—thus refuting the argument that these wastes necessarily are handled more responsibly. Second, and more important, the Agency does not now have the technical information necessary to determine which management standards should remain unchanged and which should be streamlined or eliminated. Given these materials' demonstrated potential for harm, as well as legal requirements of an adequate record for rulemaking, we believe that the current substantive standards should remain in place, at least for the present.

Accordingly, the existing substantive standards will continue to apply to persons who generate, transport, and store hazardous wastes before recycling (subject to several exceptions discussed below). Recycling facilities (as opposed to generators and transporters) also will continue to be subject to the notification requirements of Section 3010. In addition, recycling facilities that are ineligible for interim status will have to obtain a storage permit to legally store the wastes they take in. (See Section VI. of this Part of the preamble for a detailed discussion of the eligibility of recycling facilities for interim status.)

However, the Agency is also in the process of gathering additional information to develop modified regulatory standards for hazardous waste storage facilities. Thus, under Executive Order 12291, the Agency is analyzing the RCRA storage standards to determine which management standards are most appropriate for which types of wastes. We expect to complete this analysis soon, and we will begin to repropose these standards as appropriate.

To provide regulatory relief, we are also considering the development of substantive permitting standards for certain classes of facilities that would be essentially self-implementing or would reduce the amount of required interaction with a permit writer. Coupled with these standards would be simpler procedures for obtaining permits for these classes—procedures that would allow all members of an appropriate class that handle similar types of wastes or manage wastes in a particular manner to submit a short permit application to an EPA Regional Office. The application would indicate that a facility is a member of the class and that it will be in compliance with the applicable permitting standards when the permit is issued. The Regional Office would then provide public notice of the permit application, and a hearing would be available, if requested. This procedure would streamline the existing application process for both applicants and the Agency and would still provide for the public participation required by RCRA.

[36] Section 261.6(b) thus provides that these wastes are subject to: (1) notification requirements under Section 3010 of RCRA, (2) 40 CFR Part 262, (3) 40 CFR Part 263, (4) 40 CFR Part 264 Subparts A through L, (5) 40 CFR Part 265 Subparts A through L, and (6) 40 CFR Parts 122 and 124.

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II. An Overview of the Proposed Regulations

Section 261.6 of the existing regulations contains the special requirements for hazardous wastes that are beneficially used, reused, recycled, or reclaimed. Section 261.6(a) of the existing regulations excludes from hazardous waste regulation those recycled wastes (except sludges) that are hazardous only because they exhibit a hazardous waste characteristic. Section 261.6(b) of the existing regulations indicates that persons engaged in recycling operations are subject to regulation if they handle a hazardous sludge or a waste listed as hazardous[37] in 40 CFR 261.31 or 261.32. This paragraph further specifies the management standards those persons are subject to when the wastes are beneficially used, reused, recycled, or reclaimed.

The proposed amendment to § 261.6 eliminates the current distinction between listed wastes and wastes exhibiting a characteristic. Amending the potentially overbroad features of the solid waste definition renders this distinction unnecessary. The substantive standards for generators and transporters of recycled hazardous wastes, which are identical to those in the existing regulation, have been moved to proposed § 261.6(c). The standards for facilities that store wastes that are to be recycled (again, substantially identical to those in the existing regulation) are now found in proposed § 261.6(d).

There also are a number of conceptually new provisions. To avoid possibly stigmatizating the hazardous wastes that are recycled; we are proposing a new § 261.6(a) which redesignates these wastes as "regulated recyclable materials." We also are proposing a new § 261.6(b), which conditionally exempts certain types of regulated recyclable materials from regulation.

As discussed in Section III.D. in this part of the preamble, we are proposing to regulate materials that are used in a manner constituting disposal, including the actual recycling phase. Therefore, the standards for those materials that are used in a manner constituting disposal are found in proposed § 261.6(e).

In addition, certain regulated recyclable materials, and certain types of facilities managing these materials, are subject to regulatory standards different from those contained in Parts 262 through 265 and Parts 122 and 124 of the existing regulations. The regulatory standards for these materials and facilities are contained in various proposed Subparts of Part 266. Proposed § 261.6(f) serves as a cross-reference, listing the various materials and facilities subject to special standards. At present, we are proposing Part 266 standards for materials reclaimed under non-batch tolling agreements and for spent lead-acid batteries being reclaimed.

Finally, § 261.6(g) provides substantive and procedural standards for case-by-case regulation of otherwise exempt regulated recyclable materials.

The following table compares the various provisions of the current and proposed regulations:

Subject	Existing provision	Corresponding provision in proposed rule
Exemption for recycled hazardous wastes exhibiting a characteristic.	§ 261.6(a)	Eliminated.
Regulatory standards for recycled hazardous wastes.	§ 261.6(b)	§ 261.6 (c), (d), and (e).
Redesignation of recycled hazardous wastes.	.....	§ 261.6(a).
Exemption for certain regulated recyclable materials.	.....	§ 261.6(b).
Reference to tailored management standards for regulated recyclable materials.	.....	§ 261.6(f).
Substantive and procedural requirements for case-by-case regulation of otherwise exempt regulated recyclable materials.	.....	§ 261.6(g).[38]

[38] We also are proposing conforming amendments to § 261.5(c), § 264.1(g)(2), and § 265.1(c). The amendment to § 261.5(c) carries over the principle contained in the existing regulation that recycled wastes that are exempt from regulation are not included in the small quantity generator calculation. The amendments to §§ 264.1 and 265.1 indicate that the requirements of Parts 264 and 265 do not apply to certain types of recycling activities—namely, those conditionally exempt under § 261.6(b) and those subject to regulation under Part 266 (unless the Part 266 standards make reference to the Part 264 or 265 standards).

III. Discussion of Specific Povisions of the Proposed Regulation

A. Proposed § 261.6(a): Regulated Recyclable Materials

We added this paragraph to respond to public comments that merely to designate a recycling activity as "hazardous waste management" is immediately to stigmatize it. The Agency is somewhat skeptical that a redesignation will significantly affect the volume of recycling or that public response to hazardous waste recycling necessarily is negative. However, to avoid conceivable stigmatization, we are willing to re-name recycled hazardous wastes "regulated recyclable materials."

However, public announcements—via newspaper and radio—of intent to issue a permit to a recycling facility will continue to mention hazardous waste (for example, a "hazardous waste permit to store regulated recyclable materials"). Eliminating reference to "hazardous waste" in the public notice would substantially undermine the meaningful opportunity for public participation in the RCRA permit-issuing process (under amended Section 7004(b)(2)).

B. Proposed § 261.6(b): Exemptions

This section exempts from regulation certain categories of regulated recyclable materials and persons handling them.

1. *Proposed §§ 261.6(b)(1) (i) and (ii), 261.6(b)(2), and 261.6(g): Exemption of Hazardous Wastes Reclaimed by the Person Who Generates Them, or Reclaimed by a Person Other Than the Generator For That Person's Subsequent Use.* These exemptions already have been discussed in Part I of the preamble. They exempt from regulation regulated recyclable materials (*i.e.*, hazardous wastes) being reclaimed by the person generating them, or reclaimed by a person other than the generator for that person's subsequent use. The exemptions apply from the time the waste is generated until it is reclaimed. Thus, if A generates a hazardous spent solvent and sends it to B who reclaims it and then uses the reclaimed solvent, the waste is not subject to regulation in A's hands or in B's.[39]

As discussed in Section VI.E. of Part I, there are four qualifications to these exemptions. First, these exemptions do not apply when the materials are being reclaimed or otherwise processed in surface impoundments or stored in surface impoundments prior to reclamation. Second, they do not apply when spent batteries are being reclaimed. Third, sufficient amounts of the materials must be reclaimed during a one-year period, as provided in § 261.2(c)(3). This qualification guards against the risk of overaccumulation.

Fourth, and finally, the Regional Administrator may regulate these materials on a case-by-case basis upon discovering that the materials are being stored or accumulated in a manner injurious or potentially injurious to

[37] On November 25, 1980, the Agency clarified that wastes listed in § 261.33 are not at present subject to regulation when recycled (see 45 FR at 78540).

[39] Incidentally, if a material being reclaimed consists of a mixture of listed sludges or by-products, and non-listed materials, or a mixture of spent material and unlisted sludge or by-product, the material is subject to regulation if the portion being reclaimed would be subject to regulation if reclaimed separately. For example, a mixture of a spent solvent and an unlisted product would be considered a spent material being reclaimed if it is being utilized for solvent reclamation.

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public health and safety. (See § 261.6(b)(2).) To meet this standard, the Regional Administrator must find that the materials (or their toxic constituents) are not being contained, or that incompatible materials are being accumulated or stored together. (See § 261.6(g)(1).) Relevant factors in making this determination are the type and quantity of material accumulating, the mode and length of accumulation, and the type of hazard posed by the site. For example, if during an inspection of an otherwise exempt reclamation operation, the Agency's compliance assistance officers find that materials are being stored in large quantities in leaking drums or that a site poses a danger of fire or explosion, these observations could become the basis for a finding that the facility should no longer be exempt from regulation.

The case-by-case regulatory provisions function as a safety valve, allowing the Agency to regulate individual unsafe reclamation operations, while maintaining an otherwise appropriate exemption. Indeed, the Agency routinely conditions general exemptions by providing for regulation of individual operations causing environmental harm.[40]

Proposed § 261.2(g)(3) sets out applicable procedures.[41] Upon deciding that material at a particular location is to be regulated, the Regional Administrator will issue a notice to the person storing the material stating why the material is considered to be improperly contained (for instance, because contaminated runoff from a pile of the material is seeping into surface water or ground water). If the person is accumulating the material as a generator (*i.e.*, the material is reclaimed or blended within 90 days and is being held in tanks or containers), the notice will require compliance with the provisions of § 262.34. The notice becomes final within 30 days, unless the person accumulating requests a hearing, in which case a public (non-evidentiary legislative) hearing will be held. A final order, appealable to the Administrator, will be issued after the hearing.

If the person is storing the material, the notice will require him to apply for a storage permit within 60 days of being notified.[42] Permit applicants normally have six months to submit a Part B permit application. (See 40 CFR 122.22(b)(2).) We are specifying a shorter time period because facilities subject to § 261.6(g) ordinarily will be causing actual harm or have the potential to cause harm. The person can challenge the determination that he is storing a hazardous waste, either in comments filed with his permit application or in the public hearing on either a draft permit or the decision to deny the application.[43]

The Agency believes this provision safeguards against unsafe operation and possible abuses by otherwise exempt facilities. The Agency solicits public comment on these points, as well as on the proposed procedures.

2. Proposed § 261.6(b)(1)(iii): Exemption of Regulated Recyclable Materials Used for Precious Metal Recovery. The Agency also is proposing to exclude from regulation those regulated recyclable materials from which precious metals are reclaimed. These materials also are excluded from regulation when stored and transported before reclamation.

By "precious metal reclamation," we mean to include any reclamation operation recovering gold, silver, iridium, palladium, platinum, rhodium, ruthenium (or any combination of these).[44] Examples are certain electroplating wastewater treatment sludges, solutions and sludges from electroplating and heat-treating operations, and certain silver-bearing scrap and silver-containing photographic films and solutions. Generally, the value of the metal in these materials is so great that they will not be mishandled. Indeed, many of these materials are never disposed of because of their value.[45]

However, the Agency is conditioning this exclusion to allow a case-by-case determination that particular problem facilities storing or accumulating wastes containing precious metals can be regulated before reclamation. The basis for this, and the applicable procedures, are the same as those in proposed § 261.6(g)(1) and (3).[46] To guard against the risk of overaccumulation, we are also subjecting these facilities to the turnover notification requirements of § 261.3(c)(3).

In addition, we are proposing to make a conforming amendment to the listing description of certain wastes listed in 40 CFR 261.31 (Hazardous Wastes F007–F012) to remove the existing exclusion for precious metal solutions and sludges. This exclusion will be redundant in light of the proposed exclusion in § 261.6(b) (and also would not allow case-by-case regulation as discussed above).

Finally, the wastes from precious metal reclamation are considered to be hazardous whenever the material being reclaimed is a hazardous waste (*i.e.*, a regulated recyclable material). (See 40 CFR 261.3(c)(2), the so-called residue rule.) The usual example is precious metal reclamation from spent cyanide solutions or sludges listed as wastes F007–F012. Precious metals also can be reclaimed from electroplating wastewater treatment sludges (Hazardous Waste F006).

This result is soundly based in fact, since all the hazardous constituents (usually cyanides and possibly toxic metals) in the material being reclaimed remain in the waste solutions and sludges after the precious metals are recovered. Thus, waste residues from precious metal reclamation of regulated recyclable materials are presumptively hazardous. If the material being reclaimed is a listed hazardous waste, the waste residues from reclamation remain hazardous unless the Agency has taken action to exclude them under 40 CFR 260.20 and 260.22 (and they do not exhibit a characteristic of hazardous waste). If the material being reclaimed is a waste that exhibits a hazardous characteristic, the waste residues remain hazardous unless they no longer exhibit that characteristic.

3. Proposed § 261.6(b)(1)(iv): Exemption of Regulated Recyclable Materials Being Reclaimed Under Batch Tolling Agreements. A batch tolling

[40] See *e.g.*, 40 CFR 122.54(c): case-by-case permitting of concentrated animal feeding operations that otherwise have a general permit; 122.55(c): case-by-case permitting of concentrated aquatic animal production facilities that otherwise have a general permit; 122.57(c): case-by-case permitting of separate storm sewers that otherwise have a general permit; and 122.59(c)(2): case-by-case permitting of certain facilities otherwise covered by general permits. See also proposed § 122.26(d)(2) (45 FR 76082, November 17, 1980) where an individual permit is required for individual elementary neutralization units or wastewater treatment units otherwise subject to a permit-by-rule.

[41] These procedures are modelled, to some extent, on those in 40 CFR 124.52, a provision similarly dealing with case-by-case permitting of facilities otherwise subject only to general permit standards.

[42] If the facility in question were eligible for interim status, the effect of the notice would be to require submission of a Part B permit application.

[43] No compliance order can be issued against an excluded reclaimer or fuel bender until it has been finally determined that the exemption should not apply since no regulatory standards apply before the time.

[44] These are the metals considered precious in sub-categorizing the electroplating industry for purposes of effluent limitation guidelines (see 40 CFR 413.20). The Agency proposes to use the same definition here.

[45] See 45 *FR* 74884 and 74887 (November 12, 1980), indicating that solutions and sludges from precious metal electroplating are never discarded and so are not solid wastes under the May 19, 1980, definition.

[46] The Chemical Metals Industries facility, a Superfund interim priority site, engaged primarily in precious metal reclamation (under non batch tolling agreements) but still mishandled the materials it received. By conditioning the exclusion, the Agency has a means of bringing such a facility into compliance with regulatory standards.

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agreement is a contractual arrangement between a generator and a reclaimer. While retaining ownership of the material, the generator sends it to another person for reclamation; the reclaimed portion is then returned to the generator/owner.

For such materials to be exempt, the proposed regulation specifies that: (1) they must be sent to the reclaimer within 180 days of generation, (2) the reclaimer must reclaim them and return the reclaimed material within 90 days of receiving them, and (3) the reclaimer may not commingle the materials being reclaimed under a batch tolling agreement with materials generated by any other person. The reclaimer also must be paid according to the amount of reclaimed material returned to the generator/owner and must be paid more as the amount of material returned increases.

Batch tolling agreements satisfy the Agency's concern that materials will be tracked properly and moved safely from the generator to the reclaimer, and that they will be stored safely before reclamation. In addition, discrepancies will be discovered, since failing to deliver a shipment to the reclaimer or delivering a nonconforming shipment is a breach of the agreement. For these reasons, a manifest requirement is unnecessary.

The batch tolling agreement also guarantees that the reclaimed material will have an end market, so that each batch of material sent to a reclaimer will be reclaimed and not allowed to overaccumulate. In this respect, such reclamation is very similar to a generator reclaiming its own material. The regulatory requirements that material be sent to a reclaimer within 180 days of generation and that the reclaimed material be returned to the generator within 90 days after the reclaimer receives the materials likewise safeguard against overaccumulation.

The conditions for payment provide a strong incentive for the reclaimer to store materials properly, since any material lost in storage costs the reclaimer money. The requirements that the generator retain ownership of the material and that the material not be commingled by the reclaimer further ensure safe storage, since the generator will be evincing a strong interest (indeed, creating a legal obligation) in receiving back the reclaimed portion of the material he sends to the reclaimer. (We also expect that a generator who retains ownership will scrutinize the handling practices of reclaimers because his ownership guarantees his continuing legal responsibility for the materials.)

For all of these reasons, therefore, we believe that regulated recyclable materials reclaimed under batch tolling agreements should be exempt from regulation. We also have provided that generators or facilities that mishandle materials being accumulated or stored under batch tolling agreements can be regulated on a case-by-case basis, according to the standards and procedures contained in proposed § 261.6(g) (1) and (3).

Batch tolling agreements, as defined in the proposed regulation, exist now. (Examples are in the public docket.) Thus, the proposed regulation will not disrupt on-going commercial practice. In addition, we do not expect this proposed exclusion to significantly alter the scope of regulatory coverage. Few, if any, reclamation facilities conduct all of their business under such arrangements.[47] Thus, we do not believe that many reclamation facilities will be exempt completely from regulation as a result of this proposed exclusion. We do expect, however, that it will promote these agreements, a desirable result in light of the environmental safeguards they incorporate.

Finally, the Agency is aware of certain arrangements where the reclaimer retains title to the waste being reclaimed, leases the reclaimed material to a user, and then receives back the spent material which it reclaims and releases. This is a batch tolling agreement where the reclaimer rather than the user retains title. The Agency interprets the exemption for batch tolling to cover these arrangements as well, since they provide the same assurances for tracking and handling as the more usual batch arrangement, due to the continued retention of title. (This type of batch tolling arrangement was complimented during the House of Representatives' rebate on H.R. 6307 for providing environmental safeguards. See 128 Cong. Rec. H. 6740 (daily ed. Sept. 8, 1982), remarks of Rep. Florio.)

4. Proposed § 261.6(b)(1)(v); Temporary Exemption of Regulated Recyclable Materials Being Burned as Fuels, Being Used to Produce Fuels, or That Are Contained in Fuels.

This provision has already been described in detail in Sections IV. D. and VI. D. of Part I of the preamble. In essence, it states the following:

(1) Recovering energy by burning spent materials, sludges, and listed by-products (and § 261.33 materials that are not themselves fuels) is exempt from regulation when these materials are burned in unregulated boilers or industrial furnaces. This exemption is temporary and will be amended following completion and assessment of the technical studies described earlier.

(2) Spent materials, sludges, and listed by-products (and § 261.33 materials that are not themselves fuels) are subject to regulation when used to produce fuels by persons who did not generate them and who are not themselves burning the fuels containing these materials. In these situations, the materials are subject to regulations under Parts 262–265. Non-exempt fuel-producing facilities thus are subject to regulations as storage facilities.

(3) Sludges and hazardous wastes listed in 40 CFR 261.31 or 261.32 would be subject to regulations when they are to be burned or used to produce fuels, as they are under the existing regulations. These wastes would be subject to regulation whether or not they are managed by facilities producing fuels from them for their own subsequent use, or by facilities that ultimately burn these wastes. We may re-propose and alter this part of the proposal.

(4) Storage and ancillary activities by facilities would be provisionally exempt if: (1) facilities produce fuels for their own subsequent use from non-sludge wastes that are hazardous solely because they exhibit a characteristic (*i.e.*, from non-listed spent materials), or (ii) facilities ultimately burn these wastes or waste-derived fuels containing these wastes. These facilities remain subject to the turnover-notification requirements of § 261.2(c)(3), however. In addition, they can be regulated on a case-by-case basis as storage facilities or as generators under the provisions and procedures of § 261.6(g).

The actual burning of these materials also is subject immediately to case-by-case regulation. The proposed regulation (§ 261.6(g)(2)) thus provides that persons burning these materials as fuels in unregulated boilers or industrial furnaces can be regulated on a case-by-case basis under the Part 264 Subpart O regulations applicable to incinerators. The grounds for regulating are that the materials are being burned in a manner insufficient to protect human health and the environment, based upon the toxicity and quantity of stack emissions. Relevant factors in making this determination include the content and mass of the waste feed, operating conditions of the unit, and potential of stack emissions to pose a health hazard. For example, if the Regional Administrator discovers that a boiler is

[47] A survey conducted by the National Association of Solvent Recyclers indicates that none of their members operate exclusively under batch tolling agreements.

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burning large quantities of solvents at low temperatures and with short residence times, and that stack emissions indicate presence of toxicants (all of which circumstances have occurred in the damage incidents involving improper burning in boilers), the unit could be regulated under the Subpart O regulations.

5. Proposed § 261.6(b)(1)(vi): Temporary Exemption of Recycled Used Oil. The Used Oil Recycling Act of 1980 requires EPA to determine whether used oil is a hazardous waste and to report to Congress the basis for that determination.[48] This Act also requires EPA to promulgate regulations that protect human health and the environment from the hazards associated with recycled oil and to tailor the regulatory scheme so that recovering or recycling used oil is not discouraged.

The Agency intends to regulate certain recycled used oils as hazardous wastes. We also are developing the tailored management requirements contemplated by the statute. Until the specific regulations are completed, however, the Agency is deferring any regulation of *recycled* used oils that exhibit a characteristic of hazardous waste. (Used oil that is a hazardous waste and is disposed of, or treated or stored before disposal, remains subject to regulation as any other hazardous waste.) To regulate now would make little sense when the Agency is working on a specially tailored regulatory scheme and would well conflict with congressional intent by discouraging used oil recycling.

This exemption does not apply when a hazardous waste is mixed with used oil and the resultant mixture is recycled. The most usual case is placing the mixture on the land—*e.g.*, when a listed waste from aniline production is mixed with used oil, and the mixture is used as a dust suppressant. In this case, the Agency is regulating the hazardous waste that is mixed with the used oil, not the used oil component of the mixture. The recycling activity would be regulated as a use constituting disposal.[49]

6. Proposed § 261.6(b)(1)(vii): Exemption of Used Batteries Returned to a Battery Manufacturer for Regeneration. Used batteries sometimes are returned intact to battery manufacturers to be regenerated by replacing the drained electrolyte or replacing one or more bad cells.[50] This could be subject to Subtitle C regulation under the proposed solid waste definition, since it constitutes reclamation of a spent material by a person other than the generator (used batteries may be hazardous wastes because of acid and metal content). However, the Agency believes the practice presents minimal environmental risks and is very similar to recycling commercial chemical products, an activity not ordinarily regulated (see 45 FR at 78540, November 25, 1980). This practice is not subject to the turnover-notification provision for the same reason. Accordingly, we are proposing today to exempt from Subtitle C regulation used batteries returned to a battery manufacturer for regeneration.

C. Proposed §§ 261.6 (c) and (d): Specific Management Standards for Generators, Transporters, and Storers of Hazardous Wastes That Are Recycled.

These proposed provisions are the analogues to the present § 261.6(b) and provide the specific management requirements for recycled hazardous wastes. As an organizational change, the Agency has placed the generator and transporter requirements (proposed § 261.6(c)) and the storage requirements (proposed § 261.6(d)) into different paragraphs of this section.

As descussed above, the Agency, for the most part, is retaining its current management standards for regulated recyclable materials. Thus, these materials (unless subject to a Part 266 standard) will continue to be regulated through the conclusion of their storage. Persons managing them will be subject (in some instances) to Section 3010 of RCRA and in all cases to the provisions of Parts 262–265, as well as Parts 122 and 124 for storage facilities requiring a permit.

Specifically, generators and transporters are subject to requirements of Parts 262 and 263. We are not requiring RCRA notification from these persons (see amended Section 3010(a)), since we believe the Part 262 and Part 263 requirements (such as obtaining an identification number) satisfy the objectives of the notification provision.[51] Generators accumulating regulated recyclable materials in tanks and containers for less than 90 days are subject to the provisions of § 262.34, provided they comply with the substantive conditions of that provision. (Persons accumulating regulated recyclable materials in piles or impoundments for any length of time are storage facilities. See proposed § 261.6(d).)

Facilities storing regulated recyclable materials are subject to the standards contained in Subparts A–E of Parts 264 and 265, and to the technical standards of Subparts F through L of the same parts (depending upon the manner of storage—in tanks, containers, piles, or impoundments). The permit requirements and procedures of Parts 122 and 124 also apply (see proposed) § 261.6(d)).

D. Proposed § 261.6(e): Management Standards for Hazardous Wastes Used in a Manner That Constitutes Disposal. The standards for regulated cyclable materials used in a manner that constitutes disposal appear in § 261.6(e). We believe that these materials should be regulated at all stages of management. This includes the recycling phase, since recycling that constitutes disposal is virtually tantamount to unsupervised land disposal.

We are proposing, for the time being, to regulate these activities under the land treatment or landfill regulations of Parts 264 and 265. (These are the two Subparts that are most analogous to uses constituting disposal.) The risk of irrevocable environmental contamination from unregulated placement of hazardous wastes on the land is obvious. In addition, we indicated in our land disposal regulations that waste constituents cannot be contained indefinitely, and so are likely to migrate to ground water at some time. Predictions as to when and what the rate will be are very difficult. (See 47 FR at 32293, July 26, 1982.) We indicated that in protecting ground water, any statistically significant increase at the compliance point in ground water background levels of the

[48] See Pub. L. 96–462 (now codified substantially as Section 3012 of RCRA). Under EPA's current regulations, used oil is a hazardous waste only if it meets one or more of the hazardous waste characteristics. It is not subject to regulation when recycled because it is neither a listed waste nor a sludge.

[49] See Section VI.C. of Part I of this preamble; as well as proposed § 261.2(a)(2)(i), indicating that materials can be used in a manner constituting disposal, and thus be subject to regulation, when they are mixed together without appreciable change and then placed on the land.

[50] Batteries also are recycled to recover contained lead values. This practice prevents environmental risks different from regnerating used batteries and is subject to a set of special management standards (see Section III. D. 3. of this part of the preamble).

[51] Amended Section 3010(a) allows the Agency to make notification optional when it amends a Part 261 regulation "identifying additional characteristics of hazardous waste or listing any additional substances as hazardous waste. . . ." In spite of this language, the Agency believes the clear intent of the provision is to give the Agency authority to make notification optional whenever it amends Part 261 to bring additional persons into the hazardous waste management system, not just when additional characteristics or listings are promulgated; we are so interpreting the statutory language.

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Part 261 Appendix VIII constituents is sufficient to trigger compliance monitoring (40 CFR 264.91(a)(1)) and possibly corrective action. In light of the uncertainties of predicting waste migration, and the need for action if there is even a small increase in the concentration of hazardous constituents in ground water, there ordinarily will be some need for immediate regulation of this recycling activity.

At the same time, we recognize that uses constituting disposal involve unique situations different in practice (though possibly equivalent in risk) from waste management at ordinary land disposal facilities. Thus, uses constituting disposal can be regarded as a type of activity that does not fit precisely the decription of any of the specific units that are covered by specific Subparts of Part 264 or 265. In our land disposal regulations, we indicated that we were considering promulgating separate regulations to address these types of waste management units. These regulations would consist of general environmental performance standards similar to those contained in 40 CFR § 267.10. (See 47 FR 32281.) We believe that ultimately developing such general standards probably is suitable for regulating uses constituting disposal, because of the situation-specific nature of the activity. We accordingly solicit comments as to whether we should proceed along these lines.

In any case, the immediate impact of these provisions is likely to be minimal. Public comments and the Agency's own investigations indicate that most materials recycled in this manner are at present excluded from regulation by the 1980 statutory amendments. The principal examples are utility wastes and wastes from phosphate mining and processing.[52] We are studying these wastes and their management. It may be that special standards (other than those proposed today) will prove appropriate for these wastes, should any be subject to regulation as hazardous wastes.

The proposed rules also cover the regulated recyclable materials before they ultimately are recycled to the land. Thus, the materials must be carried to the use location by a Part 263 transporter. In addition, the manifest system must track these materials to the use location. (See proposed § 261.6(c).) The owner or operator of the facility using the materials must then comply with the provisions for using the manifest (40 CFR 264.71 or 265.71) and for dealing with manifest discrepancies (40 CFR 264.72 or 265.72).

Without these requirements, there would be nothing in the arrangement for use constituting disposal to ensure proper tracking of materials from the point of their generation to the point of their use. In fact, a user or generator might well not know if a shipment has been misdirected, particularly if the material involved is being shipped in large volumes via repeated movement (as in a land reclamation situation).

If a generator stores materials that will be used by a different person in a manner constituting disposal, the generator must still comply with applicable storage standards. The generator is not relieved of storage responsibilities because the end use is approved; nor are owners or operators of intermediate storage facilities exempt from regulatory control (*i.e.*, storage facilities whose owners or operators do not ultimately use the waste).[53] (See proposed § 261.6(d).)

E. Proposed §§ 261.6(f) and Subparts C and D of Part 266. Proposed § 261.6(f) serves as a cross-reference to the special management standards in Part 266. The Agency intends to use Part 266 for all regulatory standards that differ from those in Parts 264 or 265—in other words, for tailored management standards. Eventually, we hope to develop Part 266 standards for many types of recycling activities. At present, we are proposing two: for materials reclaimed under non-batch tolling agreements and for spent lead-acid batteries that are reclaimed.

1. Proposed §§ 261.6(f)(1) and 266.20: Regulated Recyclable Materials Reclaimed Under Nonbatch Tolling Agreements. We have developed special management standards for regulated recyclable materials reclaimed under nonbatch tolling agreements. A nonbatch tolling agreement is a contract between a generator and a reclaimer. Under this contract, the generator physically transfers waste material to a reclaimer, who then returns reclaimed material to the generator by a specified deadline. It differs from the batch tolling agreement (discussed in Section III. B. 4. of this part of the preamble) in that (1) the generator does not retain ownership of the material sent to the reclaimer and (2) the reclaimer is not paid in proportion to the amount of reclaimed material returned. Instead, the generator is simply guaranteed the return of a reclaimed material. (Contracts also may call for the waste and the reclaimed material to meet particular specifications.)

Nonbatch tolling agreements appear to satisfy all of the Agency's objectives in requiring a manifest system for generators, transporters, and facilities. As explained earlier, the agreement itself ensures proper tracking of materials from the generator to the reclaimer. We accordingly are eliminating any manifest requirements for generators, transporters, and facilities reclaiming wastes under these agreements. However, persons handling wastes under these agreements must be able to show that they actually are doing so by keeping copies of the apposite agreement. (See the discussion of proposed § 261.2(d) in the first part of today's preamble.)

We are also proposing to eliminate the general waste analysis requirements of 40 CFR sections 264.13 and 265.3 for facilities managing materials under these agreements. Under those provisions, an owner or operator who treats, stores, or disposes of any hazardous waste must obtain a chemical or physical analysis of a representative sample of the waste and must develop and follow a written analysis plan that describes the procedures to obtain the analysis. This requirement is to ensure that the facility has all the information necessary to properly treat, store, or dispose of the waste.

However, the nonbatch tolling agreement already serves the same purpose because the material sent to the reclaimer ordinarily must meet physical specifications to enable the reclaimer to return suitable reclaimed material to the generator. Thus, the materials will be analyzed by the reclamation facility or other appropriate party, whether or not regulations apply.

We do not believe, however, that existence of the nonbatch tolling agreement satisfies any of the technical standards for storing or properly handling the material. Indeed, materials stored under such agreements have been mishandled at a number of the recycling facilities involved in damage incidents. (See Appendix B.) Unlike batch tolling, nonbatch tolling agreements neither guarantee an end market for the materials, nor provide incentives for safe storage.

We thus are proposing to retain all of the technical requirements. However, the Agency solicits comments on whether further requirements could be reduced or eliminated. For each suggested elimination or reduction, we

[52] Used oil, which often is used directly on the land, will be regulated under a separate set of regulations. See Section III.B. of this part of the preamble.

[53] The Agency is aware of at least one damage incident caused by improper storage of wastes prior to a use constituting disposal. See *Damages and Treats Caused By Hazardous Materials Sites, supra*, p. 44.

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request the commenter to explain how the nonbatch tolling agreement ensures that the policy underlying that affected requirement would be satisfied.

2. Proposed §§ 261.6(f)(2) and 266.30: Management Standards for Spent Lead-Acid Batteries Being Reclaimed. The final category of materials for which the Agency is proposing a tailored management standard is spent lead-acid batteries that are hazardous wastes [54] and are being reclaimed. Reclaiming these batteries involves recovering the lead they contain by first cracking or breaking the casings and then smelting the lead plates that were inside.

We are proposing to regulate these spent batteries only when they are stored by persons who reclaim them. Spent batteries thus would be subject to regulation when stored by battery crackers and secondary smelters (including smelters who subsequently refine the recovered lead). However, they would not be regulated when accumulated by generators, or when stored by persons who do not also reclaim them, or transport them. The basis for these distinctions is set out below.

a. *Regulation of Spent Batteries Stored by Reclaimers.* Spent batteries have been mishandled while being stored by all types of reclamation facilities—by integrated smelter-refiner operations as well as by independent battery crackers and smelters (see Appendix B). Thus, we have no justification for distinguishing among these facilities for regulatory purposes. In this respect, the provisions proposed for these facilities differs from those proposed today for other types of reclamation facilities. In the case of those other facilities, the Agency—based in part on the lower level of risk—is proposing not to regulate generators reclaiming their own wastes or facilities reclaiming for their own subsequent use.

However, many battery reclaimers do not store batteries before reclaiming them, as the Agency interprets its current regulations. These reclaimers transfer the batteries directly from the delivery truck to the battery-breaking equipment.

The batteries sometimes remain on the truck for several hours, sometimes for up to several weeks. We ordinarily do not consider this temporary holding to constitute storage. This holding time usually is short because it is expensive for transporters to keep their delivery trucks off the road. We expect to propose soon a clarifying regulation indicating that temporarily holding hazardous wastes on bona fide transport vehicles does not constitute storage. The proposed time limit for such holding probably will be 14 days. Under the present proposal, therefore, battery reclaimers (and similarly situated persons) need not obtain a storage permit, unless they take the batteries off of the truck and store them at a separate area before reclamation.

We acknowledge that some questions remain as to the efficacy of regulating storage of spent batteries before reclamation. Most of the environmental damage from battery reclamation has been caused by disposing of wastes from the reclamation process rather than by storing batteries before reclamation. Existing regulations already apply to disposing of process wastes.[55] We also recognize that risks from improper storage are reduced with the increased use of automated battery shredding equipment.

Nevertheless, the damage from improper storage by battery reclaimers indicates some need for regulation. We also can envision potential problems arising from storing spent batteries. For example, a facility could pile batteries in leaking containers in the open, spilling metal-contaminated acid. Reclamation facilities also can receive damaged batteries with the possibility of harm if storage is unsafe.

We consequently are proposing to regulate spent battery reclaimers who store these batteries. At the same time, we solicit comments on alternative regulatory approaches, such as a class permit for battery reclaimers directed narrowly to containing releases of hazardous waste occurring both during storage and during treatment (battery breaking). A second alternative is to limit the quantity of batteries that a reclamation facility can store at one time without having to obtain a storage permit.

We also would like commenters to address the following questions: (1) What are the maximum and average lengths of time that reclaimers store spent lead-acid batteries before reclamation? (2) How are these spent batteries stored? and (3) What risks of environmental damage are associated with the reclamation process itself?

b. *Exclusion of Spent Batteries from Regulation When Accumulated by Persons Other than Reclaimers or When Transported.* We are proposing to exclude spent batteries from regulation when they are accumulated by persons other than reclaimers or when they are transported. This exclusion is needed because an excessive (and unnecessary) regulatory burden is likely to result if Subtitle C standards are extended back to cover activities before storage by reclaimers.

Generator and transporter requirements do not appear necessary, since there are other incentives outside RCRA and other regulatory constraints that ensure that these materials both arrive at their intended destination and are not improperly managed during this phase of the management cycle. First, these spent batteries are a valuable commodity, and customarily are reclaimed;[56] therefore, the Agency can be assured that these materials ordinarily will arrive at their intended designation. Second, acid spillage during transport is unlikely because the Department of Transportation currently regulates these batteries during their transportation under 49 CFR Part 122. Under these regulations, batteries must be properly packaged, labelled, etc., to prevent hazards during transport. (Such spillage also would constitute illegal hazardous waste disposal.) Finally, as indicated by both the independent battery crackers and the integrated smelter-refiners, reclamation operators pay for each battery on a weight basis. Therefore, to increase their profit, generators and transporters are encouraged to deliver batteries full of acid.

We also think it unnecessary to regulate storage of these batteries by

[54] We believe that most spent lead-acid batteries will exhibit the characteristics of corrosivity and EP toxicity and so will be hazardous wastes. With regard to corrosivity, these batteries contain concentrated sulfuric acid, which is corrosive (40 CFR 261.22). (Although the characteristic of corrosivity applies only to aqueous and liquid solutions, the Agency does not consider batteries to be solids for purposes of evaluating their corrosivity. In determining the hazardousness of the waste, a representative sample of the material must be taken. In the case of spent batteries, this means all parts of the battery, including the liquid acid, must be part of the sample. When this is done, most lead-acid batteries meet the definition of a corrosive liquid.)

These batteries also may exhibit the characteristic of EP toxicity. Spent batteries contain lead plates and leaded compounds that are engulfed in highly acidic solutions. Since lead is quite soluble under these conditions, we expect that the contained solution would be lead-contaminated and probably would exhibit the EP toxicity characteristic.

[55] These wastes are spent acid solutions and spent battery casings. Ordinarily, both are hazardous wastes when disposed or when treated before disposal (the spent acid solutions usually are hazardous because of their corrosivity and toxicity, and the spent casings may exhibit the EP toxicity characteristic). The regulation of these wastes is not affected by the regulations proposed today.

[56] In fact, these spent batteries are the primary source of lead for secondary lead smelters. Of the approximately 50 million batteries produced each year, over 90 percent are recycled and used again to make lead-acid batteries or other lead-based products.

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retailers, wholesalers, or local service stations that receive spent batteries from consumers. These types of establishments rely heavily on maintaining good public relations with the consumer, and thus have an added incentive to manage their wastes properly. We also are reluctant to impose Subtitle C regulations on establishments of this type (particularly when a recycling activity is involved), unless there is a compelling environmental need. No such need is apparent in the case of stored spent lead-acid batteries.

We also are proposing not to regulate the storage of spent lead-acid batteries at immediate collection centers. Many of these centers are small establishments—*e.g.*, scrap yards or salvage dealers—that receive many different types of scrap metal (including spent batteries), segregate it, classify it into the various grades, and send it off to be smelted and refined. We estimate that there may be thousands of these establishments. We believe that these facilities are unlikely to present a significant hazard to human health and the environment because they ordinarily do not store large quantities of these batteries for long periods. Therefore, we are proposing not to regulate spent batteries when accumulated at these intermediate collection centers. However, we believe that we need to investigate these facilities further. If after this analysis we conclude that regulatory control of these facilities is necessary, we will propose appropriate regulations.

In summary, the Agency is today proposing to regulate spent lead-acid batteries only when stored before reclamation at battery cracking, battery cracking-smelting operations, or battery cracking-smelting-refining operations.[57] Spent batteries stored by these persons thus would be subject to the requirements contained in Parts 264 and 265. These include: (1) the administrative requirements of Subparts A through E, minus those regulations pertaining to the manifest requirements and waste analysis (since the batteries' composition is known) and (2) the technical standards of Subparts F through L (depending on the manner of storage). The permit requirements of Parts 122 and 124 also apply.

[57] For our purpose, the reclamation process includes both cracking and smelting, both being necessary to recover lead. (Lead plates obtained by cracking batteries are unlikely to exhibit a characteristic of hazardous waste, and so could be sent from a battery cracker to a secondary lead smelter without being subject to RCRA regulation.)

IV. Standards Applicable to the Various Activities Constituting Waste Management Under the Proposed Definition of Solid Waste

This section of the preamble reviews which regulatory standards apply to the activities defined in § 261.2 as waste management.

Persons engaging in uses constituting disposal [58] are regulated under proposed §§ 261.6(c) (generators and transporters), 261.6(d) (storage facilities), and 261.6(e) (uses constituting disposal). Persons handling wastes being reclaimed by someone other than the generator or by someone who subsequently uses the reclaimed material are regulated under proposed §§ 261.6(c) and 261.6(d).[59] In the case of hazardous wastes that are listed in 40 CFR 261.31 and 261.32 or are hazardous sludges, persons managing these wastes prior to burning or blending are also regulated under proposed §§ 261.6(c) and 261.6(d). Any wastes listed under proposed § 261.2(a)(3) also would be regulated under these provisions.

Persons accumulating materials speculatively likewise are subject to the standards in proposed §§ 261.6 (c) and (d). These materials are deemed immediately to be solid wastes. Generators who accumulate these materials for less than 90 days in tanks and containers are subject to the provisions of 40 CFR 262.34. Storage for longer periods (or for any length of time in piles or impoundments) must satisfy the applicable storage standards.[60]

The standards applicable to materials that are accumulated without sufficient amounts being recycled require further explanation. Under the proposed definition, it is not determined whether these materials are regulated recyclable materials until a year has passed. The person accumulating these wastes also may petition the Regional Administrator for a determination that the materials he is accumulating are not solid wastes.

In the Agency's view, persons accumulating these materials are storage facilities when a year elapses without sufficient turnover of the material. Thus, they are subject to the standards contained in proposed § 261.6(d). These persons should not be considered generators, or have the benefit of the generator accumulation provision (§ 262.34), because they already have held the material for well over 90 days.

We do, however, interpret these provisions as allowing a six-month period for a facility either (1) to come into compliance with the applicable requirements (*i.e.*, the storage standards in proposed § 261.6(d), and the requirement to submit permit applications—both Part A and B applications for facilities ineligible for interim status), or (2) to ship all the materials to another Subtitle C facility. This is analogous to Section 3010(b) of RCRA, which provides that Subtitle C regulations become effective six months after promulgation—to allow regulated entities lead time to come into compliance.

The Agency believes a similar principle applies when a material becomes a solid waste after held for a year without sufficient turnover. In this situation, the applicability of regulatory requirements is not certain until the year has passed, just as the applicability of regulatory requirements is uncertain until a regulation is promulgated. Because of this uncertainty, the person accumulating the material may not have had, and cannot reasonably be expected to have had, sufficient opportunity to come into compliance with the regulatory requirement.[61]

V. Possible Inclusion of a Variance Provision

The Agency considered including a variance provision in these regulations to cover processes that do not appear to be waste-based but that nevertheless fall under the revised definition of waste management. However, we decided that such situations, if they exist, can be dealt with by using the rulemaking provisions and procedures of § 260.20 of the regulations. In fact, informal rulemaking, which would accord relief on a classwide basis is the most appropriate mechanism. If a petitioner can show that its process should not be considered waste management, all similar processes should be accorded the same regulatory status at that time.

[58] The descriptions of the recycling activities that constitute waste management are shortened characterizations. The actual regulatory standards in the proposed definition of solid waste are described in detail in Part I of this preamble.

[59] Regulated recyclable materials reclaimed under a nonbatch tolling agreement are subject to regulation under Part 266.

[60] It should be remembered, however, that these materials do not necessarily remain solid wastes once they are removed from accumulation to be recycled. See proposed § 261.2(c)(2).

[61] These facilities also would have to file a notification within 90 days after the accumulated material becomes a regulated recyclable material. As an incidental matter, the six-month period described above is a good time to apply to the Regional Admiinstrator, under proposed § 261.2(c)(3)(ii), for a determination that the accumulated material is not a solid waste. The time it takes for the Regional Administrator to make this determination is another reason to allow a six-month lead time to come into compliance.

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We do not think that a variance provision to exempt individual facilities (or generators or transporters) from particular regulatory requirements is appropriate. We believe that petitioners for this type of variance would argue that their facility performs a certain activity properly and so should not be regulated. This type of claim is properly made in the permitting process, where the existing Part 264 (or Part 266) standards provide flexibility to accommodate individual situations. If the form of relief requested is justifiable on a classwide basis, a rulemaking petition can be filed.

Consequently, we are not including a variance provision in the proposed regulation. We solicit comments on this approach, however.

VI. Eligibility of Owners or Operators of Recycling Facilities for Interim Status

It obviously is of great practical significance whether owners or operators of recycling facilities newly brought into the hazardous waste management system are eligible for interim status. The requirements for interim status are no different for recycling facilities than for any other hazardous waste management facility. They require: (1) that the owner or operator of a facility notify he is engaging in a hazardous waste management activity (if the Agency requires notification), (2) that he submit a Part A permit application in a timely manner, and (3) that the facility had been in existence on November 19, 1980. See § 122.23(a) and 45 FR 76630 (November 19, 1980), interpreting these requirements.

In general, the owner or operator of any facility [62] that presently has interim status will continue to have such status if his recycling operations are now brought into the hazardous waste management system for the first time. If the owner or operator of a facility does not have interim status, he may qualify if he notifies the Agency, if he submits a Part A permit application, and if on November 19, 1980, his facility was treating, storing, or disposing of a material later identified or listed as a hazardous waste.

The following examples illustrate how these principles apply:

1. The ABC Company generates and stores a listed waste and did so before November 19, 1980. It also complies with the other statutory prerequisites and so has interim status. After November 19, 1980, the company begins to reclaim a different person's EP toxic spent material, an activity considered to be hazardous waste management under the amended definition of solid waste. Does the company still have interim status and can the recycling activity be conducted permissibly?

The company continues to have interim status, and the recycling activity constitutes a change during interim status—specifically adding waste, increasing design capacity, and possibly adding a new process (if storage incident to reclamation uses a different type of vessel or mode of storage than that used for the listed wastes). The regulations on changes during interim status (§122.23(c)) determine whether this change is permissible and, if so, what regulatory obligations apply (such as filing an amended Part A application).

2. The EFG Company does not have interim status. After November 19, 1980, it begins to reclaim a different person's spent corrosive materials. It was not handling this waste before November 19, 1980. The facility owner or operator notifies the Agency and submits a timely Part A permit application. Does the company have interim status?

The company does not have not have interim status. Although it has complied with the notification and application requirements, it was not "in existence on November 19, 1980," because on that date it was not treating, storing, or disposing of waste it now is recycling. (See 45 FR at 76633–634, which interprets the requirement that a facility be in existence on November 19, 1980.) Consequently, until the company obtains a storage permit, it must stop storing the waste before recycling.

3. The DEF Company does not have interim status. On November 19, 1980, the company was reclaiming an EP toxic spent material generated by a different person and storing that material before reclamation. It is now deemed to be engaged in hazardous waste management as a result of the amended definition of solid waste. The owner or operator of DEF notifies the Agency and promptly submits a Part A permit application. Does the company have interim status?

This company's facility meets all of the prerequisites for interim status. A facility is "in existence on November 19, 1980" if it was treating, storing, or disposing of a material on that date, and action by the Agency subsequently brings that material (or management activity) into the hazardous waste management system. This is the case in the example above. The company also has satisfied the other interim status requirements.

4. The XYZ Company does not have interim status. It was generating a hazardous distillation bottom on November 19, 1980, and then it obtained an EP toxic sludge for recycling. The sludge has accumulated for over one year without sufficient amounts being recycled, and so is a solid and hazardous waste under amended § 261.2(a)(2)(v). The company promptly notifies and files a Part A application in a timely fashion. Does it have interim status?

The company does not have interim status. Although the company has notified and filed a permit application, it was not in existence on November 19, 1980, because it was not then treating, storing, or disposing of a hazardous waste—but only generating a hazardous waste. (This result is the same if XYZ generated a hazardous waste on November 19, 1980 and subsequently began to store and recycle that same waste.) XYZ still was not treating, storing, or disposing of a hazardous waste on the critical date, and so its facility was not in existence on November 19, 1980.

Part III: Miscellaneous

I. Regulatory Impact

Under Executive Order 12291, EPA must judge whether a regulation is "major" and thus requires a Regulatory Impact Analysis. This proposed rule is not a major rule because it will not (1) have an effect on the economy of $100 million or more, (2) significantly increase costs or prices for industry, or (3) diminish the ability of U.S.-based enterprises in domestic or export markets.

This assessment is based on two EPA studies of the economic effects on the regulated community of the proposed changes to the definition of solid waste and accompanying management standards. The first of these studies is entitled "Impact on the Regulated Community of Possible Changes in the Definition of Solid Waste: Use, Reuse, Recycling, Reclamation." This study analyzed the net reductions and increases in regulation of establishments that recycle hazardous wastes if the current regulations defining solid waste and establishing management standards for recycled hazardous wastes were replaced by those proposed today.

This study identified 39 industrial categories which are involved in the 15 recycling activities that will be affected significantly. We based our numerical

[62] See 45 FR at 76633–634; only owners or operators of "facilities" can obtain interim status, and so only entities engaged in treatment, storage, or disposal may qualify. See also § 260.10(a) defining "facility" as an entity that treats, stores, or disposes of hazadous waste.

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estimates on 27 of these industrial categories. (The number of establishments within the other 12 industrial categories could not be quantified within the scope of the study. Available information indicates strongly, however, that—under the proposed standards—there will be a net reduction in the regulation of the establishments within these categories.

According to the study, under the proposed regulations:

- Approximately 4,500 to 5,300 establishments would have their requirements under the hazardous waste management regulations reduced;
- At least 76 establishments that use or reuse materials otherwise considered hazardous wastes would be excluded from regulation;
- Approximately 230 to 350 establishments would have their requirements under the hazardous waste management regulations increased;
- Approximately 60 establishments that recycle hazardous materials would be newly subject to regulation.

These findings show a significant reduction in regulatory impact as a result of the proposed regulations. The most significant change would be the reduced regulatory impact on persons reclaiming materials that they generate (particularly spent solvents). These persons would not be subject to regulation under the proposed definition if they reclaim 75 percent of the material on hand at the beginning of a 1 year period. At present, they are subject to regulation immediately if they are reclaiming listed hazardous wastes or hazardous sludges. The regulatory impact on persons using or reusing listed hazardous wastes and hazardous sludges also would be significantly reduced. These regulated activities would not be regulated at all under the proposed regulation.

The proposed regulation increases the regulatory impact of facilities that reclaim hazardous wastes generated by others, or that process such wastes to make fuels. However, because this class or recycling operations has caused most of the damage incidents involving recycled hazardous wastes, we view this effect as appropriate.

The second study is entitled "Cost Impact Analysis for Proposed Changes in the Definition of Solid Waste and Management Standards for Wastes Which are Used, Reused, Recycled, and Reclaimed." It analyzed what the proposed change will actually cost the regulated community. The study applies the appropriate unit cost estimates to the estimates developed in the first study to arrive at a net cost. (These costs were adjusted to reflect only the volume-dependent variable costs and not the incremental fixed costs already incurred by the affected establishments.)

The results of the study demonstrate that the proposed regulation will reduce compliance costs by an estimated $24.4 million (costs shown are the annualized after-tax cost savings). This figure represents the sum of increases and decreases in annualized costs for all affected establishments, including:

- An estimated decrease in costs of $24.7 million for establishments with reduced regulatory requirements, or for establishments that are released from the hazardous waste management regulations entirely; and
- An estimated increase in costs of $0.34 million for newly-regulated establishments or for those facing increased regulatory requirements.

Our analysis further suggests that for industries facing increased regulatory requirements under the proposed regulations, there would be no significant cost increases or other adverse effects on competition, employment, or investment.[63]

Finally, it should be noted that many of the assumptions made in both reports were conservative. Thus, we believe that our estimates *understate* the reduced regulatory impact from the proposed changes. Moreover, a number of provisions presented unquantifiable effects for which we made no estimates at all, even thouth we know that costs will be reduced. Therefore, because this proposed amendment is not a major regulation, no Regulatory Impact Analysis is being conducted.

This proposed amendment was submitted to the Office of Management and Budget (OMB) for review, as required by Executive Order 12291.

II. Regulatory Flexibility act

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

EPA and its contractor performed an analysis to determine whether the proposed changes in the definition of solid wast and the accompanying management standards will impose significant costs on small entities. The resulting report ("Cost Impact on Small Entities of Proposed Changes in the Definition of Solid Waste and Management Standards for Wastes Which Are Used, Reused, Recycled, and Reclaimed") indicates that in none of the industry categories would this rule have a "significant economic impact on small entities" (as this is defined under the criteria for a Regulatory Flexibility Analysis). Accordingly, I hereby certify that this proposed rule will not have a significant economic impact on a substantial number of small entities and therefore does not require a regulatory flexibility analysis.

III. Paperwork Reduction Act

The reporting or record-keeping (information) provisions in this rule will be submitted for approval to the Office of Management and Budget (OMB) under Section 3504(b) of the Paperwork Reduction Act of 1980, U.S.C. 3501 et seq. Any final rule will explain how its reporting or record-keeping provisions respond to any OMB comments.

IV. List of Subjects in

40 CFR Part 260

Administrative practice and procedure, Hazardous materials, Waste treatment and disposal.

40 CFR 261

Hazardous materials, Waste treatment and disposal, Recycling.

40 CFR Part 264

Hazardous materials, Packaging and containers, Reporting requirements, Security measures, Surety bonds, Waste treatment and disposal.

40 CFR Part 265

Harzardous materials, Packaging and containers, Reporting requirements, Security measures, Surety bonds, Waster treatment and disposal, Water supply.

40 CFR Part 266

Hazardous materials.

[63] We could not compare the estimated increases in cost for independent battery crackers with profits, value added, or other measures of financial strenght because the available economic information is not sufficiently disaggregated. However, for a number of reasons, we do not expect that the proposed changes in the definition will cause significant adverse impacts (see cost impact analysis for details).

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Dated: March 21, 1983.

John W. Hernandez, Jr.,

Acting Administator.

Appendix A

This Appendix sets forth the Agency's legal basis for asserting jurisdiction under Subtitle C and the implementing regulations over materials being recycled. Although the statutory definition of solid waste (Section 1004(27)) does not expressly address the question of whether a material being recycled or destined for recycling can be a solid waste, we believe that Congress did indeed intend that recycled materials can be solid wastes, and, if they are hazardous, that they can be regulated under the hazardous waste management regulations.

I. Recycled Materials Can Be "Solid Wastes" Under RCRA

Many commenters to the Agency's May 19, 1980 regulations argued that recycled materials cannot be wastes under RCRA, basing their claim largely on the phrase "other discarded material" in the statutory definition (a term nowhere defined in RCRA). They claim that this language means that a material must first be discarded, in the sense of thrown away or abandoned, before it can be a RCRA solid waste.

The Agency disagrees with this reading. It is quite clear from the text of other statutory provisions that recycled materials can be wastes.[64] Perhaps the most pertinent provision is the definition of "hazardous waste management." This term (which is the title of Subtitle C) is defined as "the systematic control of the collection, source separation, storage, transportation, processing, treatment, recovery, and disposal of hazardous waste." (Section 1004(7).) The recycling activities of recovery, source separation (the selection of recyclable from non-recyclable items), and collection thus can involve hazardous waste.

Equally clear, a whole series of statutory definitions dealing with resource recovery indicate that this activity involves reclaiming material or energy from solid waste, demonstrating again that a material being recycled can be a waste. "Resource recovery" itself means "the recovery of material or energy *from solid waste.*" (Section 1004(22) (emphasis added).) A "resource recovery facility" is "any facility at which solid waste is processed for the purpose of extracting, converting to energy, or otherwise separating and preparing *solid waste* for reuse." (Section 1004(24) (emphasis added).) A "resource recovery system" is a "solid waste management system which provides for collection, separation, recycling, and recovery *of solid wastes,* including disposal of non-recoverable waste residues." (Section 1004(23) (emphasis added).) A "recovered resource" is "material or energy recovered *from solid waste.*" (Section 1004(2) (emphasis added).) Section 6002(c)(2) speaks of "systems that have the technical capability of using energy or fuels *derived from solid waste* * * *." See also Sections 1004(18), (28), and (29) all of which likewise presuppose a solid waste from which resources can be recovered.[65] There also are repeated references to resource recovery throughout the statute; these references would be meaningless if solid wastes were never reclaimed or otherwise recycled. See, *e.g.,* Section 1002(c) (2) and (3), 1003 (1) and (5)–(8), 2003, 4002(c)(10), 4003 (5) and (6), 4008 (a)(2)(A) and (d), 5001, 5002, and 6002 (c)–(g).[66]

The commenters' argument that a material must first be discarded or thrown away before it can be a RCRA waste also has been rejected by the United States Court of Appeals for the D.C. Circuit in *United States Brewers' Association, Inc.* v. *EPA,* 600 F. 2d 974 (D.C. Cir. 1979), a lawsuit challenging a beverage container recycling guideline issued by EPA under Section 1008(a)(1) of RCRA. The petitioners in that proceeding contended that beverage containers were not "solid wastes" until "discarded" and therefore that EPA had no authority under Section 1008(a)(1) to require that beverages be sold in returnable containers, or that a minimum deposit be charged on containers (to encourage their return for recycling). The Court of Appeals rejected this contention, saying that it

> flies squarely in the face of the explicit definition in the statute. Section 1008(a) directs EPA to publish suggested guidelines for solid waste management, which as defined in Section 1004(30) expressly included 'planning or management respecting resource recovery and resource conservation, * * * and 'utilization of recovered resources'. (600 F. 2d at 982–83.)

In addition, 17 courts to date have exercised jurisdiction in imminent hazard actions under Section 7003 brought against recycling facilities (reclaimers reclaiming wastes generated by a different person).[67] Since the

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[64] The Agency's interpretation that "wastes" are recycled also accords with common understanding and usage. In fact, a number of industry advertisements on waste management refer repeatedly to recycling of their "wastes". These advertisements are in the EPA docket which is listed in the address section of the preamble.

[65] A number of commenters have argued that the statutory definition of "recovered material" (Section 1004(19)) suggests by negative implication that materials "generated from, and commonly reused within, an original manufacturing process" are not solid wastes. The Agency disagrees. The plain language of the provision does not support the negative implication read into it by these commenters. Equally important, the legislative history indicates unequivocally that this provision was intended to apply to Federal procurement guidelines issued pursuant to Section 6002. See S. Rep. No. 96–172, 96th Congress, 1st Session at 2. It is clear, therefore, that the provision does not have the broader meaning attributed to it by these commenters.

[66] A number of commenters also found support in the House Report to RCRA for their argument that only discarded materials can be wastes. They pointed to the following language in the Report:

"Much industrial and agricultural waste is reclaimed or put to new use and is therefore not a part of the discarded materials disposal problem the committee addresses." H.R. Rep. No. 94–1491, 94th Cong., 2d Sess. at 2.

This language is taken out of context. In fact, it applies only to non-hazardous solid waste. Throughout the report, it is clear when the committee refers to non-hazardous waste and hazardous waste. Indeed, these two types of waste often are referred to separately. *See, e.g.,* H.R. Rep. at 1, 4, 5, 8, 12: "discarded materials and hazardous wastes." Congress intended a regulatory solution for hazardous wastes. *Id.* at 3, 4, 6–7. Statements made about non-hazardous wastes thus have little or no bearing on Congress' intent regarding hazardous waste.

Furthermore, the House Report indicates that "discarded materials" can indeed be utilized for recycling (and hence can be solid wastes). See H.R. Rep. at 7, 10: "the state plan must provide that no state or local government shall prohibit such local community from entering into long-term contracts to supply discarded materials of the community to resource recovery facilities"; "(r)esource recovery facilities cannot be built unless they are guaranteed a supply of discarded material"; see also H.R. Rep. at 13: "locating new markets for resources recovered from waste", and 43 "(t)he Committee has received much information on the importance of expanded and stable markets for the materials recovered from waste."

[67] These cases are *U.S.* v. *Midwest Solvent Recovery, Inc.,* 484 F. Supp. 138 (N.D. Ind., 1980); *U.S.* v. *Solvent Recovery Services of New England, Inc.,* 496 F. Supp. 1127 (D. Conn., 1980); *U.S.* v. *West* Cir. No. C 801342 M (D. Wash., 1981) (the complaint in this action was later amended to include only counts for violation of the Subtitle C regulations; a preliminary injunction was entered against the facility ordering compliance with certain of these regulations); *U.S.* v. *Acme Refining Co.,* No. 80C 3213 (N.D. Ill., filed 6/20/80); *U.S.* v. *Chem-Dyne Corp.,* No. C–1–79–703 (S.D. Ohio, filed 12/19/78); *U.S.* v. *Chemical Recovery Systems, Inc.,* No. C–80–1858 (N.D. Ohio, filed 10/7/80); *U.S.* v. *Bridgeport Rental and Oil Service, Inc., et al.,* No. 80–3267 (D.N.J., filed 10/2/80); *U.S.* v. *Ken Industries, Inc., et al.,* No. H80–420 (N.D. Ind., filed 8/1/80); *U.S.* v. *Fisher-Calo Chemicals and Solvent Corp., et al.,* No. S80–204 (N.D. Ind., filed 7/3/80); *U.S.* v. *A&F Materials Co., Inc., et al.,* No. 80–4395 (S.D. Ill., filed 9/3/80); *U.S.* v. *South Carolina Recycling and Disposal, Inc.,* No. 80–1274–6 (D.S. Car., filed 7/7/80); *U.S.* v. *Automated Industrial Disposal and Salvage Co., Inc.,* No. 2–80–139 (E.D. Tenn., filed 8/1/80); *U.S.* v. *Gulf Coast Lead Co.,* No. 80–1127 (M.D. Fla., filed 10/9/80); *U.S.* v. *Chemicals and Minerals Reclamation, Inc.,* No. C–79–1356 (N.D. Ohio, filed 1/10/79); *U.S.* v. *Spectron, Inc.,* No. HM80–15–52 (D. Md., filed 6/17/80); *U.S.* v. *Laskin Greenhouse and Waste Oil Co.,* No. C–79 75 9v (N.D. Ohio, filed 4/24/79); *U.S.* v. *Seymour Recycling Corp., et al.,* No. IP–80–457–C (S.D. Ind., filed 5/9/80).

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government's authority to bring an imminent hazard action depends upon the presence of "solid waste" or "hazardous waste" (see Section 7003(a)), these cases all stand for the proposition that materials destined for recycling can indeed be solid and hazardous wastes. See *U.S.* v. *Midwest Solvent Recovery, Inc.*, 484 F. Supp. 138 (N.D. Ind., 1980) (spent solvents held by a reclamation facility are "chemical wastes" which are " 'solid wastes' or 'hazardous wastes' as those terms are defined in Section 1004 of (RCRA), [and] that the chemical wastes so present are the objects of 'storage' and 'disposal' activity * * *." 484 F. Supp. at 142); *U.S.* v. *Solvent Recovery Services of New England*, 496 F. Supp. 1127 (D. Conn. 1980) (solvent reclaimer "accepted waste products (including chlorinated organic solvents) from industries in New England, processed those materials in order to recover usable chemicals, and returned the recovered chemicals to industry for reuse." 496 F. Supp. at 1130).

Finally, the House Committee on Energy and Commerce likewise reaffirmed, in recent action, that RCRA presently provides authority over hazardous wastes being used, reused, recycled, or reclaimed, and directed the Agency to exercise this authority more fully. (H.R. Rep. No. 97-570, 97th Cong. 2d Sess., at 16.) Although not part of the contemporaneous legislative weight, this report still carries "considerable weight as a kind of 'expert opinion' concerning the meaning and proper interpretation of the statute." *U.S.* v. *Solvents Recovery Services of New England*, 496 F. Supp. 1127, 1240 n. 18 (D. Conn. 1980). The full House of Representatives later adopted, by a wide margin, the provision reported by the Committee.

In sum, in view of the statutory language, the holding in the *Brewers'* case, and the results of the various Section 7003 actions, the Agency believes that solid wastes can be reclaimed, reused, or otherwise recycled, and that such recycling activities as material processing, source separation, and reclamation (termed "recovery" in the statutory definitions) involve solid wastes.[68]

II. EPA Has Regulatory Authority Under Subtitle C To Regulate Hazardous Wastes That Are Recycled and to Regulate Hazardous Recycling Operations

1. A number of commenters made the further argument that even if recycled materials could be solid and hazardous wastes under RCRA, Congress did not intend that the Agency's Subtitle C regulatory authority apply to hazardous wastes that are recycled or to hazardous waste recycling activities. The argument is that the Agency's regulatory authority is limited to treatment, storage, and disposal of hazardous waste (and any incidental generation and transport incident thereto), and that waste recycling (of any kind) does not constitute treatment, storage, or disposal.

The Agency does not accept this argument, for a number of reasons. As shown above, Congress defined the term solid waste (and therefore hazardous waste) to include recycled materials. It is at odds with the whole thrust of Subtitle C to argue, as these commenters do, that Congress did not then intend for these wastes to be regulated. Congress' "overriding concern" (H.R. Rep. No. 94-1491, 94th Cong., 2d Sess. at 3) ("H.R. Rep.") in enacting RCRA was to establish the statutory framework for a comprehensive system that would ensure the proper management of hazardous waste. Implementing this framework, Subtitle C establishes a cradle to grave management system, with regulatory control attaching to hazardous waste from the point of generation to the point of final disposition. A broad grant of regulatory authority over all enumerated aspects of waste management is necessary, and we believe intended, to effectuate this scheme.

Failure to regulate hazardous waste recycling would moreover leave open the very loophole Congress sought to close—unregulated disposition of hazardous waste—vitiating substantially the whole cradle to grave system. For example, hazardous wastes could be recycled by being placed directly on the land for land reclamation without regulatory control, contaminating soil and groundwater. Hazardous wastes could be stored insecurely for years before being reclaimed, with resulting environmental contamination. Wastes destined for recycling could be mishandled during transportation, or never arrive at their intended destination because of the lack of a manifest to track the waste. Indeed, all of these situations have occurred repeatedly, causing extensive damage. The Agency believes these are the very situations Congress meant to control in establishing the hazardous waste management system, and that the grant of regulatory authority in Subtitle C reaches these situations.

Congress' intent to regulate hazardous wastes which are recycled is borne out further by several of the damage incidents cited by Congress as justification for establishing a national hazardous waste management system. A number of incidents resulted from waste recycling activities, including an incident where wastes were stockpiled in the open prior to reclamation and leached toxic metals into public water supply wells (H.R. Rep. at 18); a similar incident where wastes destined for reclamation were improperly stored in lagoons and toxic metals seeped into an adjacent creek (*id.* at 17); and a final incident when a child was poisoned by contact with a pesticide drum being reused as a trash container (*id.* at 22). The Agency does not believe Congress would have referred to these incidents without intending that the described activity be regulated.

Congress also has continued to express a desire that recycled hazardous wastes be regulated. The Subcommittee on Interstate and Foreign Commerce issued a report of its oversight hearings on the Agency's proposed hazardous waste regulations (Committee Print 96-1FC 31, 96th Cong., 1st Sess. (September 1979) (the "Eckhardt Report")). The report describes three damage incidents involving recycled hazardous wastes, and expressed the Subcommittee's view that these activities should be controlled and that the Agency possessed jurisdiction to exercise control. (Eckhardt Report at 4, 12-13, 17, 24, 41-

[68] One commenter argued that even though the various statutory definitions dealing with resource recovery are phrased in terms of recovery from solid waste, and that hazardous wastes are a subset of solid waste, these definitions apply only when a non-hazardous solid waste is involved. Although non-hazardous materials can be wastes when recovered, the argument goes, hazardous materials cannot; they must be discarded first.

The Agency disagrees. The argument is at odds with the plain meaning of the statute, hazardous waste being a type of solid waste. Furthermore, we believe it highly unlikely that Congress intended the term "waste" to have a different meaning in different statutory provisions. Not only is the identical term used throughout the statute, but Congress' intent in promulgating Subtitle C was to implement a comprehensive scheme for controlling hazardous waste management and so to "eliminat(e) the last remaining loophole in environmental law". H.R. Rep. No. 94-1491 at 4. In light of this intention, it seems highly unlikely that Congress would intend to adopt a different and narrower meaning of "waste" in Subtitle C than in other statutory provisions.

In any case, the statutory definitions themselves indicate that hazardous wastes as well as non-hazardous wastes can be recycled. "Hazardous waste management" includes recycling activities such as collection, source separation, and recovery. "Solid waste management" (which term includes "management respecting resource recovery" (Section 1004(30)) occurs at "solid waste management facilities"; these facilities include those which manage hazardous wastes. See Section 1004(29)(C). Thus, solid waste management facilities engaging in management respecting resource recovery can indeed be managing hazardous wastes.

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42, 53–54; see also discussion in Section VI. C. of Part I of the preamble.) [69]

The recent report of the House Committee on Energy and Commerce, as well as the substantive legislation it accompanies, likewise would mandate EPA's regulations of hazardous waste recyling. In doing so, it stated unequivocally that the legislative change "clarifies" that "materials being used, reused, recycled, or reclaimed can indeed be solid and hazardous wastes and that these various recycling activities may constitute hazardous waste treatment, storage, or disposal." H.R. Rep. No. 97–570, *supra* at 22.

The Agency thus believes that Congress meant for it to regulate hazadous wastes which are recycled. The lack of an absolutely explicit directive in the statute (for instance "all persons reclaiming hazardous waste must obtain a permit") appears to result from a factual misconception that hazardous wastes are rarely, if ever, recycled or amenable for recycling. H.R. Rep. at 4. In light of this assumption, a statutory directive to control hazardous waste recycling would be unnecessary.

2. Even if one disregards Congressional intent, and assumes that Congress meant that EPA regulate only the treatment, storage, disposal, and transportation of hazardous wastes, the wording of these provisions indicates that the Agency possesses authority to regulate most hazardous waste recycling (and all recycling operations that the Agency seeks to regulate or contemplates regulating), and transport and storage incident thereto. There is indeed no question that transportation and storage of hazardous wastes prior to recycling is covered by the definitions of "transportation" and "storage", so that these activities can be regulated under Subtitle C. [70]

The definitions of treatment and disposal provide regulatory authority over the major types of recycling activity the Agency actually seeks to regulate or contemplates regulating: resource recovery (termed 'reclamation' in the proposed definition), and recycling involving direct placement of residual materials or materials derived therefrom on land or water or into the air.

a. Reclamation Operations Constitute Waste Treatment. Reclamation operations—that is, operations involving recovery of energy or material—meet the statutory definition of "treatment." This term is defined in RCRA to include "any method, technique, or process * * * designed to change the physical, chemical, or biological character or composition of any hazardous waste * * * so as to render such waste * * * amenable for recovery, amenable for storage, or reduced in volume." (Section 1004(34).)

One key part of this definition is the phrase "amenable for recovery." The Agency interprets this language to mean that processes that make a waste or its contained values available for further use constitute treatment. This includes processes that recover material or energy resources from wastes. [71] Subtitle C jurisdiction exists potentially until the material is available for reuse, or until energy has been recovered. For example, a spent chemical would be 'treated' until material values were finally recovered. This interpretation not only is consistent with the literal sense of the words, but also with the definition of treatment as a form of activity in addition to, and more encompassing than, processing. (See Sections 1004 (7), (28), and 29(C)—all dealing with waste management—where the terms 'processing' and 'treatment' are both included, indicating (to avoid redundancy) that treatment includes additional activities.)

"Treatment" also includes operations designed to reduce the volume of material. Where such a process is conducted incident to or as part of reclamation operations, there is thus another basis for regulating the process as waste treatment. The best example of such an activity is dewaterins of sludges before their reclamation or use elsewhere. Dewatering is conducted to reduce the volume of sludge; in the words of the statute, it is a process "designed to change the (waste's) composition * * * so as to * * * render such waste * * * reduced in volume."

Even if (contrary to the Agency's view) one interprets the "amenable for recovery" language to mean that treatment occurs only up until the point reclamation commences, the Agency still would retain Subtitle C jurisdiction over all aspects of reclamation (and ancillary activities) that it seeks to regulate. Under this reading, storage, transportation, and processing preceding reclamation could be regulated.

These are the very activities which the Agency presently regulates (see existing § 261.6(b)), and which the Agency would regulate under today's proposed regulation. Furthermore, where tanks, piles, or surface impoundments are used both to store and reclaim hazardous wastes, they are subject to regulation as storage facilities even through the reclamation phase of the operation would not be regulated. See generally, 46 FR at 2808 (second column) (January 12, 1983). All of these facilities thus are subject to regulation under Subtitle C whether or not the actual process of reclamation is subject to control.

b. Recycling Involving Direct Placement of Residual Materials on Land or Water, or Into the Air Can Be Regulated As Waste Disposal or Treatment. The other major types of recycling activity the Agency would regulate involve the direct placement of residual materials on the land or water (such as use of wastes for land reclamation or structural fill), or into the air (burning of these materials as fuel). We think reuse involving direct land or water application is fully encompassed by the statutory definition of disposal. "Disposal" means

> the discharge, deposit, injection, dumping, spilling, leaking, or placing of any solid waste or hazardous waste into or on any land or water so that such . . . waste or any constituent thereof may enter the environment or be emitted into the air or discharged into any waters, including groundwaters. (Section 1004(3).)

Recycling involving direct placement on land or water meets the terms of this definition. The waste is placed on the land in a fashion, "so that such * * * waste or any constituent thereof may enter the environment * * *." Environmental contamination by the waste or escaping waste constituents has resulted repeatedly from this type of recycling activity. The Agency, in fact, believes that in many cases this activity is the functional equivalent of unsupervised land disposal, an activity obviously within its jurisdictional purview. We therefore believes that this type of recycling activity can be regulated as waste disposal under the Subtitle C regulation.

[69] Regarding the value of this report in interpreting Congressional intent, see *U.S. v. Solvents Recovery Services of New England*, 496 F. Supp. 1127, 1140 n. 18: Such a subsequent report is not part of the legislative history of RCRA and therefore lacks the probative value as to legislative intent that contemporaneous statements of Congress' purpose would have. Nonetheless, it is entitled to considerable weight as a kind of 'expert opinion' concerning the meaning and proper interpretation of the statute (citations omitted).

[70] The only argument against regulation is that the materials involved in recyclying cannot be wastes, and this argument already has been answered above.

[71] This interpretation is reflected in the regulatory definition of treatment contained in § 260.10(a). The Agency realizes that it once took a contrary view in one of the background documents to its 1978 proposal, but has now reconsidered. Of course, "(n)othing in the Administrative Procedures Act prohibits an agency from changing its mind, if that change aids it in its appointed task." *American Petroleum Institute v. EPA*, 661 F. 2d, 340 (5th Cir. 1981).

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The burning of residual materials as fuels, and production of fuels from these materials, likewise is potentially subject to regulation under Subtitle C. The Agency believes that this activity is a type of waste treatment, being designed to "change the physical, chemical, or biological character or composition" so as to render it less hazardous, amenable to energy recovery, or reduced in volume. (*See also* H.R. Rep. No. 97-570, *supra* at 12: "(p)roduction and burning of hazardous waste-derived fuels recovers energy from hazardous waste, and so constitutes hazardous waste treatment under the statute.") In addition, this activity is the environmental equivalent of incineration, a waste management technique regulated as hazardous waste treatment (see 40 CFR Parts 264 and 265, Subpart O). Consequently, this type of recycling also can be regulated under Subtitle C regulations.

Conclusion

In summary, the Agency believes that recycled materials can be hazardous wastes under RCRA, and that recycled hazardous wastes can be regulated under Subtitle C regulations. This conclusion is fully in accord with the statutory language and the legislative history. It is also in accord with the paramount policy objective of the statute to control management of hazardous waste from point of generation to point of final disposition. The Agency's reading also has substantial support in judicial precedent. We thus conclude that we possess jurisdiction to regulate recycling of hazardous waste under Subtitle C and the implementing regulations.

APPENDIX B.—SUMMARY OF DAMAGE INCIDENTS RESULTING FROM RECYCLING OF HAZARDOUS WASTES [72]

Type of recycling operation, wastes present, damages caused, or hazards posed	Source of information
1. Resolve, Inc. (located in N. Dartmouth, Mass.) stored spent solvents and solvent distillation bottoms in unlined lagoons prior to reclamation. Substantial groundwater contamination has resulted.	Superfund Interim Priority Site.
2. The Gold Coast Oil Facility (located in Miami) is a solvent and paint thinner reclamation operation. It also obtained drums of other miscellaneous wastes containing phenols, metals, and other organic compounds. Nearly 3,000 of these drums have accumulated without their contents being recycled. In addition, still bottoms from the solvent reclamation operation were disposed of improperly. Substantial contamination of a drinking water aquifer has resulted.	Do.
3. Sapp Battery Salvage (in Jackson County, Florida) recovered lead from spent batteries. Damage to surface and ground water was caused by spillage of acid from the spent batteries, leaching from severed battery casings, and (to a lesser degree) from runoff from batteries stored prior to being recovered.	Do.
4. Seymour Recycling Corp. (located in Indiana) is an inactive waste recycling and incineration facility which overaccumulated inventory and eventually ceased operation, leaving over 60,000 drums and one-half million gallons of bulk waste. Wastes are toxic, ignitable, and corrosive. Ground and surface water contamination resulted, and there also is danger of fire or explosion.	*Seymour Recycling Corp.* (N.D. Ind.) (RCRA § 7003 action); Superfund Interim Priority Site.
5. A waste processing company (located in New Jersey) operated an oil recycling plant which purchased waste oil for reclamation. Waste oil, some of it PCB contaminated, was stored in unlined settling lagoons. Filter clay from the settling operation was also used to build a road to the site. The site was abandoned, leaving all waste material in place in the unlined lagoons. Contamination of an aquifer used as a public water supply is suspected. (Some damage at the site also resulted from disposal of waste from the reclamation process.).	Superfund Interim Priority Site (known as Burnt Fly Bog).
6. The Chem-Dyne facility (located in Ohio) engaged in reclamation of spent solvents and other organic chemicals. It also blended these wastes and sold the mixture as a fuel. The facility overaccumulated huge amounts of these materials, and also mishandled materials that were processed. Materials present include phenol, naphthalene, polyvinyl chloride distillation waste, paint sludges, ink sludges, vanadium pentoxide, cyanide, methylmercaptan, silicate resins, freon, acetaldehyde, benzyl chloride, cumenes, asbestos, epichlorohydrin, arsenic, toluene diisocyanate, pentachloronitrobenzene, phthalate esters, and plastic and rubber industry resins. Clean-up costs are estimated at $3.5 million. The company presently is in receivership. Hazards posed by this site include human health, contamination of air and surface water, fish kills, noticeable odors, actual fire, explosions, spills and runoff, storm sewer problems, erosion problems, inadequate security, and presence of incompatible wastes.	*U.S.* v. *Chem-Dyne, Inc.* (§ 7003 and Superfund action); Superfund Interim Priority *Site; Hazardous Waste Report,* December 14, 1981, p. 15.
7. The Bridgeport Rental and Oil Services site (located in Bridgeport, New Jersey) stored waste oil in an unlined lagoon prior to recycling it. The waste oil is known to be contaminated with benzene, vinyl chloride, methylene chloride, trichlorethylene and toluene. Overflow and leaching from the lagoon has been documented; groundwater used as a human drinking water source from nearby wells is contaminated.	Superfund Interim Priority Site; *U.S.* v. *Bridgeport Rental and Oil Services* (§ 7003 action).
8. Chemical Metals Industries (located in Maryland) engaged in the reclamation of precious metals primarily from various electroplating wastes, as well as other spent chemical reprocessing. Most materials were taken pursuant to tolling agreements. Waste materials were accumulated sloppily, resulting in spills of acid and metal-bearing wastes. The facility later was abandoned, leaving over 1500 drums of unreclaimed waste, many corroded or leaking. Over $350,000 in federal, state, and municipal funds has been expended to date on clean-up.	Superfund Interim Priority Site; *Hazardous Waste Report,* January 25, 1982, p. 4.
9. The Chemicals and Minerals Reclamation Company (located in Cleveland) acted as a waste broker, receiving flammable organics, solvents, and resins prior to recycling or disposal. A massive fire resulted from unsafe accumulation of these materials. The facility closed after the fire, leaving waste inventory (over 1,500 drums) for clean-up.	*U.S.* v. *Chemicals and Minerals Reclamation* (§ 7003 action); Superfund Interim Priority Site.
10. The Midwest Solvent Recovery Company, a solvent reclaimer located in Gary, Indiana, stored spent solvents improperly in drums, tanks, and open pits. These materials were often flammable, in many cases incompatible (acids and cyanides, for example), and were badly overaccumulated. A fire of "tremendous size" (484 F. Suppl at 140) broke out at the reclamation site, and burned for a week before it could be extinguished. The company continued to operate for a number of years after the fire without any change in practice. Soil and ground water contamination have ocurred. A preliminary injunction ordering clean-up was eventually entered in the government's imminent hazard action.	*U.S.* v. *Midwest Solvent Recovery Inc.* (§ 7003 action).
11. Solvent Recovery Service (located in Connecticut) obtained a variety of chlorinated solvents for reclamation. These solvents were stored improperly in leaking drums. Wastes were also disposed in a lagoon on the site. Aquifer contamination has resulted and the local drinking water supply has been affected.	*U.S.* v. *Solvent Recovery Service of New England* (§ 7003 action).
12. Andover Sites (located in Andover, Minn.) are a group of five sites which operated as waste brokers. They accepted metal-bearing wastes, solvents, waste oils, paints, inks, and glues. A recycling market was found for some of this material but a great deal overaccumulated. Some of this material was ultimately dumped or burned improperly. Many drums still remain. Ground and surface water have been contaminated by metals and organic contaminants.	Superfund Interim Priority Site.
13. Fritt Industries (in Walnut Ridge, Arkansas) obtained sulfate and other wastes from generators and used them as an ingredient in fertilizer production. These materials, along with other process ingredients, are stored in large, exposed piles. An enormous fire occurred when the piles of waste ignited; run-off from water used to fight the fire contaminated soil and surface waters.	Do.
14. The South Carolina Recycling and Disposal Company was a waste broker accepting volatile organic wastes end waste oils. These materials were accumulated improperly prior to reclamation or disposal. Among the compounds present are solvents, waste oils, acetaldehyde, methyl acetate, cyanuric acid, ethylene chlorohydrin, acetone cyanohydrin, trichloroethylene, mixed acids, sulfuric acid, mercuric oxide yellow, and other caustics and acids. Massive overaccumulation, fire hazard and actual fires, and ground water contamination near drinking water wells resulted.	*U.S.* v. *South Carolina Recycling and Disposal Company (Bluff Roads);* (§ 7003 action); Superfund Interim Priority Site.
15. (* * *) accepts steel mill flue dust, pickle liquors, solvents, and acids for regeneration and material recovery. Some of these materials also are used as ingredients in fertilizers. The facility used surface impoundments and piles for storage. These storage facilities were unsecure and leaked heavy metals and chlorinated solvents. The facility also burns waste oil, spent solvents, and solvent distillation bottoms as fuels, creating air pollution problems. A local Air Pollution Control Agency has initiated action against the company to require monitoring of incoming wastes and of boiler flue gas emissions.	*Damages and Threats Caused by Hazardous Material Sites,* EPA/430/9-80/004, p. 251; followup phone conversations with representatives of Ecology and Environment (EPA Superfund contractors); Superfund Interim Priority Site.
18. PCB contaminated waste oil was stored prior to recycling or road application. No market developed and the facility operator was unable to dispose of the contaminated oil. Over 24,000 gallons are accumulated, and the State probably will have to pay disposal costs.	*Damages and Threats from Hazardous Material Sites,* p. 103.

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APPENDIX B.—SUMMARY OF DAMAGE INCIDENTS RESULTING FROM RECYCLING OF HAZARDOUS WASTES [72]—Continued

Type of recycling operation, wastes present, damages caused, or hazards posed	Source of information
17. The Laskin Greenhouse and Waste Oil Co. (located in Jefferson, Ohio) accepted waste oil and spent solvents for storage prior to use as fuels or for road oiling. Millions of gallons accumulated without being recycled, resulting in a substantial hazard. The boilers in which the waste oil was burnt were incapable of destroying the contained contaminants (including PCB's), resulting in air pollution. Approximately $1.7 million has already been expended; additional funds are to be allocated.	*U.S.* v. *Laskin Greenhouse and Waste Oil Co.* (§ 7003 action); *Hazardous Waste Report*, January 25, 1982, pp. 5-6; Superfund Interim Priority Site.
18. This facility (located in Illinois) engaged in petroleum reclamation from waste oil, and also reclaimed metal hydroxide sludges, spent acids and caustics, and miscellaneous sludges. These materials overaccumulated in pits, lagoons, and tanks. PCB's phenol, and PAHs are found in the waste oil. Chromium, cadmium, and lead are also present, as are benzene, toluene, and trichloroethylene. Leaching and drainage to surface waters has caused extensive damage. Over $300,000 has been spent on clean-up to date.	*U.S.* v. *A&F Materials Co.*, (§ 7003 action); Superfund Interim Priority Site.
19. This scrap metal reclaimer stored materials destined for reclamation in leaking drums. Some ongoing disposal occurred as well. Paint sludge, 465 Resin Flux, and miscellaneous oily materials were on hand, contaminating soil and possibly ground and surface water	*U.S.* v. *Acme Refining Co.*, (§ 7003 action).
20. The site (located in Tennessee) engaged in waste salvage and disposal operations involving improperly drummed and buried materials; most constituents that leaked or spilled appear to be chlorinated solvents. 1,2-Dichloropropane has also been found. Nearby soil, ground, and surface water have been contaminated.	*U.S.* v. *Automated Industrial Disposal and Salvage Co.*, (§ 7003 action).
21. The Dewey-Loeffel, landfill (located in Nassau County, New York) was used in an oil reclamation and storage operation. PCB-contaminated oil was stored at the site. Ground and surface water in the vicinity have been found to be contaminated with PCBs.	*Damages and Threats from Hazardous Material Sites*, p. 193.
22. (* * *), is a solvent and chemical recovery and waste recycling operation. It also separates out and resells acids, caustics, and poisons. Some on-going disposal occurs as well. Chemicals which have been present at the site include acetone, ether, benzene, ketones, acetaldehyde, aniline, methanol, chlorinated solvents, cyanides, HCl, H_2SO_4, formic acid, PCBs, beryllium, pentachlorophenol, and caustics. The government's complaint alleges that damages and hazards include overaccumulation, imporper storage (including unsafe storage in underground bulk storage tanks), mislabelling, fire hazard, soil contamination, and possible water contamination. A preliminary injunction has been entered ordering the facility to comply with certain of the interim status standards for storage.	*U.S.* v. *West* (§ 7003 action).
23. Improper storage of spent solvents by this Ohio solvent recovery operation led to contamination of ground and surface water and air. PCBs, tetrachloroethene, toluene, MEK, and xylene are among the toxicants involved.	*U.S.* v. *Chemical Recovery Systems* (§ 7003 action).
24. This Indiana scrap metal recovery operation accepted steel drums containing flammable toxic materials. These drums were stored and handled improperly. Substance present include cyanide, asbestos, and paint residues.	*U.S.* v. *Ken Industries* (§ 7003 action).
25. This Indiana facility engages in solvent reclamation. Disposal of incoming materials and still bottoms also occurred. A large fire was caused by overaccumulation and improper storage. Compounds present include arsenic, chromium, cadmium, lead, mercury, nickel, selenium, antimony, cyanides, dimethylphenols, phthalate esters, naphthalene, and solvents.	*U.S.* v. *Fisher-Calo Chemicals and Solvent Corp.*, § 7003 action).
26. Dioxin-contaminated waste oil was sprayed in horse show arenas, in Missouri, leading to poisoning of exposed individuals and livestock.	EPA Damage Incident Files.
27. Radioactive mining wastes are used as foundation fill for residential dwellings throughout Denver	Superfund Interim Priority Site (known as Denver radium site); also cited in Eckhardt Report.
28. Radioactive mining wastes are used as foundation fill for residential dwellings in Montana	Eckhardt Report.
29. Radioactive phosphate mining wastes are used as foundation fill for residential dwellings in Florida	Background Document 6 to EPA's 1978 proposed regulations.
30. Air pollution from solvent reclamation operations	Subtitle C Environmenal Impact Statement, Vol. II. p. J-1.
31. The American Ecological Recycle Research Corporation (located in Jefferson, Colorado) stores adn reclaims solvents, waste oil, and other chemical wastes. Many of these materials are incompatible, including oxidizers and solvents, and cyanides and acids. These materials were stored together haphazardly, often in leaking drums. A large fire gutted portions of the facility, releasing toxic fumes and causing cyanide poisoning of firefighters. A continuing fire hazard and soil and water contamination threat remains.	*U.S.* v. *American Ecological Recycle Research Corp.* (§ 7003 action).
32. Air, ground water, and surface water contamination resulted from solvent recovery operations in Maryland. (including volatilization of solvents from distillation units).	*U.S.* v. *Spectron, Inc.* (§ 7003 action).
33. Drinking water was contaminated because of improper storage of organic solvents at a reclamation facility	Minnesota State Damage File D2306.
34. The Schuylkill Metals Company (located in Hillsboro County, Florida) reclaims lead from spent batteries. Acid spillage from the battery cracking operations, acid and metal leaching from stored casings, and runoff from piled spent batteries have contaminated ground water in the area.	Interviews with officials of Hillsboro County Environmental Protection Commission.
35. The Choloride Metals Company (located in Tampa) is a secondary lead smelter reclaming lead from spent batteries. Ground water is contaminated with acid and metals from the battery cracking operation (which recovers lead for smelting), and from runoff from piled casings and spent batteries.	Do.
36. Reclamation of tetraethyl lead sludges stored in ponds prior to reclamation. Damage is from air pollution and from fumes in transit.	§ 3004 damage incidents; also cited in H.R. Rep. 94-1491, pp. 20-21.
37. Metal reclamation of "waste stockpiled raw materials." Leachate from these piles contaminated public drinking water supplies with metals, closing a number of wells.	H.R. Rep. 94-1491, p. 18.
38. A company reclaims copper from "industrial wastes"; these materials are stored in cement-lined lagoons. The lagoons cracked, contaminating the ground and surface waters.	H.R. Rep. 94-1491, p. 17.
39. The McKin Company (located in Gray, Maine) was used as a transfer station and processing point for contaminated waste oils prior to final shipment to re-refiners. Both waste oil from oil spills and fuel still bottoms are reprocessed. Evidence exists that wastes were spilled at the processing facility and leached into the underlying aquifer. Organic toxicants were eventually identified in ground water, residential drinking wells, and the public water system. The damage appears to be attributable to waste disposal as well as waste oil processing. Specific contaminants found include tricholoroethane, tricholorethylene, acetone, xylene, dimethyl sulfide, trimethylsilanol, and alcohols. The state eventually ordered the facility closed.	*Damages and Threats Caused by Hazardous Material Sites*, p. 14.
40. Mercury-containing sludges generated by a number of different companies were sent to a Mexican reclaimer for metal recovery. The wastes were abandoned before they reached Mexico. In most cases, the drummed wastes were unlabelled and unmanifested, so that it is difficult to pinpoint responsibility or determine the precise nature of the drummed materials.	*U.S.* v. *Monochem, Inc.* (enforcement action).
41. Damage resulted from burning waste oil and solvents as fuel in boilers and landspreading of PCB-contaminated waste oil, coupled with improper tank and pond storage.	Tel. comm. with state site insp. on May 4, 1981; Task Force Source Data Report. [73]
42. Tons of fly ash to be used as road building material were piled beside roadways near Decatur, Alabama. Metals leaching from the fly ash appear to have contaminated ground water and residential drinking wells in the vicinity.	*Damages and Threats Caused by Hazardous Material Sites*, p. 44.
43. The Southern Metal Processing Company (located in Alabama) a reclamation facility for acid and metal-containing wastes, allowed over 10,000 drums to accumulate; leakage from these drummed wastes polluted surface waters. A fire at the site injured two firemen.	*Damages and Threats Caused by Hazardous Material Sites*, p. 43.
44. Waste oil contaminated with organics (including carbon tetrachloride) was used as a dust suppressant. Well contamination resulted.	EPA New Hampshire State Damage File, Code D2315.
45. Use of cadmium-contaminated POTW sludge as a fertilizer for farm land	EPA New York State Damage File, Code D2317.
46. Waste oil storage results in ground water contamination from organics. Site also was used for disposal	Do.
47. (* * *) engages in solvent reclamation and waste brokerage operations. Paint residues (to a lesser degree) are also redistilled at this plant. Hazards posed by the site include contamination of ground water and soil, noticeable odors, risk of fire/explosion, spills/runoff, sewer/storm problems, and presence of incompatible wastes.	Telephone conversation with state site inspector on May 5, 1981; Task Force Source Data Report.
48. (* * *) was paid by waste generators to store waste oil on-site. Prior to reclamation operations, waste oils were carelessly stored in surface impoundments or bulk tanks resulting in waste oil leakage.	Telephone conversation with state inspector on May 4, 1981; Task Force Source Data Report.
49. (* * *) reclaims both solvent and waste oil. Huge drum inventory resulted with some drums being stacked up as long as two years. Surface water was contaminated when hazardous wastes leached from containers with unbroken seals. Paint solids were stored so long that reclamation became virtually impossible (due to thinner evaporation and rain dilution). Hazards posed by the site include contamination of water supply, contamination of surface water, and soil contamination from spills and runoff.	Telephone conversation with state site inspector on May 4, 1981; Task Force Source Data Report.
50. (* * *) is a reclaimed solvent distributing plant that packages solvents in drums and sells them. If a company switches from one solvent to another, a pipeline must be washed out with the new product. The solvent mixture wash would be drummed, sold to (* * *) where the solvents would be separated and redistributed. Hazards posed by the site include worker injury, contamination of soil, and spills/runoff.	Do.

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APPENDIX B.—SUMMARY OF DAMAGE INCIDENTS RESULTING FROM RECYCLING OF HAZARDOUS WASTES [72]—Continued

Type of recycling operation, wastes present, damages caused, or hazards posed	Source of information
51. (* * *) is predominantly a solvent reclamation operation. Solvents are stored in drums and tanks prior to reclamation. (* * *) paid to return refined materials to the manufacturer. The site was investigated primarily because of a spillage problem from loading and unloading drums outside. Potential hazards on the site include contamination of air, water supply, and ground water, risk of fire and explosion, spills, leaks, runoff, and inadequate security.	Do.
52. (* * *) is a solvent reclamation operation. The waste generator buys back the reclaimed waste. Pre-RCRA, (* * *) piled wastes for long periods of time in the open on permeable soil. No labels were on the drums and toxic chemicals leached.	Telephone conversation with state site inspector on May 5, 1981.
53. An oil reclamation firm in Region V recycles oil for large manufacturing plants. The firm takes used oil, restores it to desired levels of purity, blends it with virgin oil, and finally sells it back to the dealer to be sold.	Do.
Hazard description/incident includes human health hazard, contamination of surface water, soil, and air, noticeable odors, fire/explosion, spills/runoff, and erosion problems.	Task Force Source Data Report.
54. The Silresim Chemical Corp. (located in Massachusetts) engaged primarily in solvent reclamation, but also accumulated many other types of wastes. These materials overaccumulated and incompatible wastes were stored indiscriminately. An office fire triggered an explosion and a spectacular fire. The site is now bankrupt and over 30,000 drums, most containing unknown toxicants, remain. $2.9 million has been spent on cleanup to date.	EPA Damage Incident Files; Superfund Interim Priority Site.
55. (* * *), a New Jersey facility recycling organo-tin compounds, presently stores approximately 5000 drums in poor condition. A potential fire hazard also exists and site security is inadequate.	EPA, Region II officials.
56. (* * *), a New Jersey facility, operated an oil/solvent reclamation facility. The site was abandoned, leaving hazardous wastes for clean-up.	Do.
57. (* * *), a New Jersey drum reconditioner, went out of business leaving approximately 3000 drums on the site. There is extensive soil contamination and runoff into an adjacent drainage ditch.	Do.
58. Quanta Inc. (located in New Jersey) received tainted waste oils and spent solvents which it blended into fuels. The fuel was sold to apartment buildings for burning. PCBs, metals, bromoform, and halogenated solvents are present at the site and in the fuels. The site now has been abandoned.	EPA, Region II officials. (This site was also the subject of ABC's "20/20" broadcast on waste oil).
59. The Ferguson site (located in Rock Hill, South Carolina) stored spent solvents prior to reclamation. The solvents were stored in corroded and leaking drums, and leakage from the drums contaminated soil and seeped into surface water. Toxic chemicals in the waste and surrounding soil including toluene, bis(2-ethylhexyl) phthlate, xylene, ethyl chloride, diethyl carbometoxy phosphate, alcohols, and toxic metals. The site eventually was abandoned leaving about 2,500-5,000 drums. $143,000 was spent so far for site clean-up, and clean-up is not yet complete.	U.S. EPA, *Remedial Actions at Hazardous Waste Sites: Survey and Case Studies*, EPA 430/9-81-05.
60. Chromium-bearing wastes were used as a landfill cap at the Monument St. Landfill in Baltimore, Md. The wastes began to leach toxic metals, and the runoff contaminated soil and surface water.	Report of the House Committee on Energy and Commerce (May 1982).
61. Commercial-grade pentachlorophenol is burnt as a fuel in diesel trucks. Chlorinated phenols, burnt at low temperatures and short residence times, are likely to form chlorinated dioxins and dibenzofurans.	EPA, Region VII officials.
62. B + L Oil (located in Newark, New Jersey) sold contaminated waste oil as fuel. The blended fuel contained phenolic compounds, volatile chlorinated hydrocarbons, and aromatic hydrocarbons. The company and its president both have been convicted criminally in the New Jersey state courts.	*New Jersey Hazardous Waste News*, April, 1982; Conversations with New Jersey state officials.
63. Madison Industries (located in Old Bridge, New Jersey) manufactures zinc chloride and zinc sulfate from waste zinc and spent acids, which it obtains from other sources. These materials were accumulated improperly in large quantities, causing damage.	Transcript of state enforcement proceedings.
64. Air pollution resulted from solvent and waste oil recovery operations conducted by Frinck's Industrial Waste facility (located in Pecatonica County, IL).	Documents from Illinois Environmental Protection Agency.
65. The Old Inger Oil Refinery (located in Darrow, La.) operated an oil reclamation plant. Storage tanks overflowed into holding ponds, which were later abandoned without clean-up.	Superfund Interim Priority Site.
66. York Oil Co. (located in Moira, New York) is an abandoned waste oil recycling facility. Lagoons used in the recovery of waste oil discharged into adjacent wetlands. The lagoons and wetlands remain contaminated with PCB-containing oil.	Do.
67. Enviro-Chem, a hazardous waste recycling facility in Indiana, was investigated by State officials after an employee died in a tank of hazardous waste. The officials found 21,000 barrels of hazardous waste at the site. The facility has been ordered to close down due to failure to remove sludge and contaminated soil from a pit, failure to provide adequate concrete pads for 14,000 barrels of hazardous waste being stored on the ground at the site, and failure to store hazardous materials in compliance with State fire marshal rules and regulations.	EPA, Region V officials.
68. American Recovery, a chemical waste reprocessing facility (located in the Baltimore area) has suffered a number of fires caused by explosions of accumulated wastes. The facility also was fined for violation of various state regulatory requirements.	EPA, Region III officials.

[72] Note: Summaries of § 7003 actions are based on allegations in the Government's verified complaint. The courts hearing these cases must decide ultimately whether these allegations have been proven, and no findings of fact or conclusions of law have yet been made in these cases. In citing these allegations, we are not seeking to prejudice the outcomes of these actions. At the same time, these statements reflect the results of the Government's investigation of these sites, and the Agency believes the statements to be accurate. In any case, we are citing these allegations to demonstrate that there is a need for regulation in this area, not to ascertain the potential liability of particular facilities.

In addition, certain sites are not named specifically in this Appendix, because the companies involved are the subject of ongoing enforcement investigation. These companies are indicated by '(* * *)' in the summary.

[73] The Agency's task force source data report is a confidential compilation of inspections of damage sites by Federal and State officials. It also contains reports of some § 3008 inspections, whether or not the sites were causing damage.

For the reasons set out in the preamble, it is proposed to amend Title 40 of the Code of Federal Regulations as follows:

PART 260—HAZARDOUS WASTE MANAGEMENT SYSTEM: GENERAL

1. The authority citation for Part 260 is as follows:

Authority: Sections 1006, 2002(a), 3001 through 3007, and 3010 of the Solid Waste Disposal Act, as amended by the Resource Conservation and Recovery Act, as amended (42 USC 6905, 6912(a), 6921 through 6927, and 6930).

2. Section 260.10 is amended by adding new definitions for "Boiler" and "Industrial Furnace" to appear alphabetically and by revising the definition of "Incinerator:"

§ 260.10 Definitions.

* * * * *

"Boiler" means an enclosed device using controlled flame combustion and having the following design characteristics:

(1) The unit has provision for heat recovery; and

(2) The combustion chamber and heat recovery section are of integral design. The combustion chamber and heat recovery sections are of integral design if formed physically into one manufactured or assembled unit. (A unit in which the furnace or combustion chamber and heat recovery section are joined by ducts or connections carrying flue gas in not integrally designed); and

(3) Significant heat recovery takes place in the combustion chamber section by radiant transfer of heat to the transfer medium.

"Incinerator" means an enclosed device using controlled flame combustion, and having a combustion chamber and heat recovery section, if any, that are not of integral design.

"Industrial Furnace" means any of the following devices that are integral components of manufacturing processes and use flame combustion or elevated temperature to accomplish recovery of materials or energy: cement kilns, lime kilns, aggregate kilns, phosphate kilns, blast furnaces, smelting furnaces, methane reforming furnaces, combustion devices used in the recovery of sulfur values from spent sulfuric acid, and pulping liquor recovery furnaces. The Administrator may decide to add devices to this list on the basis of one or more of the following factors:

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(1) The device is designed and used primarily to accomplish recovery of material products;

(2) The device burns secondary materials as ingredients in an industrial process to make a material product;

(3) The device burns secondary materials as effective substitutes for raw materials in processes using raw materials as principal feedstocks;

(4) The device burns raw materials to make a material product;

(5) The device is in common industrial use to produce a material product; and

(6) Other factors, as appropriate.

* * * * *

PART 261—IDENTIFICATION AND LISTING OF HAZARDOUS WASTES

3. The authority citation for Part 261 reads as follows:

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

4. In § 261.1, paragraph (b) is revised to read as follows:

§ 261.1 Purpose and scope.

* * * * *

(b)(1) The definition of solid waste contained in this Part applies only with respect to the regulations implementing Subtitle C of RCRA.

(2) This Part identifies only some of the materials which are solid wastes and hazardous wastes under Sections 3007, 3013, and 7003 of RCRA. A material which is not defined as a solid waste in this Part, or is not a hazardous waste identified or listed in this Part, is still a solid waste and a hazardous waste for purposes of these sections if:

(i) In the case of Sections 3007 and 3013, EPA has reason to believe that the material may be a solid waste within the meaning of Section 1004(27) of RCRA and a hazardous waste within the meaning of Section 1004(5) of RCRA; or

(ii) In the case of Section 7003, the statutory elements are established.

5. § 261.2 is revised to read as follows.

§ 261.2 Definition of solid waste.

(a) A solid waste is any discarded material that is not excluded by § 261.4(a). A "discarded material" is any material that fits one of the descriptions in paragraphs (a)(1) and (a)(2) of this section.

(1) Any garbage, refuse, sludge, or any other solid, liquid, semi-solid, or contained gaseous material resulting from industrial, commercial, mining, or agricultural operations or from community activities tha is:

(i) Abandoned by being disposed of; or

(ii) Abandoned by being burned or incinerated; or

(iii) Accumulated, stored, or treated prior to—or in lieu of—paragraphs (a)(1)(i) or (ii) of this section.

(2) Any of the following materials, when used, reused, or reclaimed in the following ways or accumulated, stored, or treated prior thereto:

(i) Any spent material, sludge, or by-product, or any material listed in § 261.33 that is not ordinarily used by being applied to the land, that is used or reused without essential change to its identity, or after simple mixing, in a manner that constitutes disposal;

(ii) Any spent material or sludge, or any by-product listed in §§ 261.31 or 261.32, or any material listed in § 261.33 that is not itself a fuel, that is being burned for the purpose of energy recovery, or that is being used to produce a fuel, and any fuel that contains one or more of these materials;

(iii) Any spent material, any sludge listed in §§ 261.31 or 261.32, or any by-product listed in §§ 261.31 or 261.32, that is reclaimed (as this activity is explained in paragraph (c)(1) of this section). This provision does not apply, however, to materials reclaimed at the plant site and then reused within the original process in which they were generated;

(iv) Any spent material, sludge, or by-product that is accumulated speculatively (as this activity is explained in paragraph (c)(2) of this section);

(v) Any spent material, sludge, or by-product that is accumulated for use, reuse, or reclamation without sufficient amounts being used, reused, or reclaimed during a one-year period (as this activity is explained in paragraph (c)(3) of this section);

(3) Materials that meet the criteria stated in paragraph (a)(3)(i) of this section, and that are listed in paragraph (a)(3)(ii) of this section are solid wastes when used or reused:

(i)(A)(*1*) The materials are ordinarily disposed of, burned or incinerated, or

(*2*) The materials contain toxic constituents listed in Appendix VIII of Part 261 and these constituents are not ordinarily found in raw materials or products for which the materials substitute and are not used or reused during the recycling process; and

(B) The materials may pose a substantial hazard to human health and the environment when used or reused.

(ii) Hazardous Waste Nos. F020, F021, F022, and F023.

(b) For the purpose of this section:

(1) A "spent material" is any material that has been used and has served its original purpose;

(2) "Sludge" has the same meaning used in § 260.10 of this chapter;

(3) A "by-product" is a material that is not one of the primary products of a production process and is not solely or separately produced by the production process.

(c) For the purposes of this section and § 261.6:

(1) A material is "reclaimed" if it is processed to recover usable products, or if it is regenerated. (Examples are recovery of lead values from spent batteries and regeneration of spent solvents.) However, a material that is used or reused in the following ways is not considered to be reclaimed:

(i) Used or reused as an ingredient (including use as an intermediate) in an industrial process to make a product (for example, sludges used as ingredients in cement production, or distillation bottoms from one process used as a feedstock in another process), provided that distinct components of the material are not recovered as separate end products (as in recovery of metals from metal-containing secondary materials); or

(ii) Used or reused as effective substitutes for raw materials in processes using raw materials as principal feedstocks (for example, sludges used as substitutes for ore concentrate in primary smelting); or

(iii) Used or reused in a particular function or application as an effective substitute for a commercial product (for example, spent pickle liquor used as a phosphorous precipitant and sludge conditioner in wastewater treatment).

(2) A material is "accumulated speculatively" if it is potentially usable, reusable, or reclaimable but is held without having any known market or disposition, or is held without having any feasible means of use, reuse, or reclamation. However, when a material that has been accumulated speculatively is removed from accumulation for use, reuse, or reclamation, it is no longer considered to be a solid waste for purposes of this paragraph.

(3) A material is "accumulated without sufficient amounts being used, reused, or reclaimed" if—during the calendar, fiscal, or inventory year period—the amount of material that is used, reused, reclaimed, or transferred to a different site for use, reuse, or reclamation does not equal at least 75 percent by volume of the amount of that material accumulated at the beginning of the period. However, paragraphs (c)(3) (i) and (ii) of this section provide certain exceptions to this principle. (In addition, materials excluded from regulation under § 261.6(b)(1) (vi)–(vii)

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are not to be included in making this calculation.)

(i) Spent materials, sludges, or by-products are not considered to be solid wastes under this paragraph if after being accumulated initially without sufficient amounts being used, reused, or reclaimed, they are removed from accumulation for use, reuse, or reclamation.

(ii) (A) If a material accumulates for one year without use, reuse, reclamation, or transfer of at least 75 percent of the accumulated volume, the Regional Administrator may determine that the accumulated material will not be a solid waste during the following year. To obtain this determination, the person accumulating the material must notify the Regional Administrator in writing, submitting the following information:

(*1*) The name and address of the person required to notify and the address of the location of the accumulated material, if different.

(*2*) A description of: (*i*) the material being accumulated, (*ii*) why the material would be a hazardous waste if deemed to be discarded (i.e., whether it is listed or exhibits a characteristic), (*iii*) the quantity accumulated at the date of notification, and (*iv*) the way the material is stored prior to use, reuse, reclamation, or transfer; and

(*3*) A statement of: (*i*) what the notifier expects the disposition (use, reuse, reclamation, or transfer) of the material to be, (*ii*) why this expectation is reasonable (for example, because of past practice, market factors, or contractual arrangements), (*iii*) why the material has accumulated for over one year, and (*iv*) when the notifier expects the use, reuse, reclamation, or transfer to occur.

The Regional Administrator may then use this information to determine whether the material will not be a solid waste during the following year, or alternatively, may require further pertinent information from the notifier.

Such a determination will be based upon the reasonableness of the notifier's expectation that the material will be used, reused, reclaimed, or transferred for these purposes, taking into account: the past practices, market factors, and contractual arrangements; the character and quantity of the material being accumulated; and the manner in which the material is being stored. The notifier must keep appropriate records to demonstrate why he reasonably expects the accumulated material to be used, reused, reclaimed, or transferred for these purposes.

(B) After the second year without use, reuse, reclamation, or transfer of at least 75 percent of the total volume accumulated at the beginning of that year, the Regional Administrator may again determine that the accumulated material will not be a solid waste during the following year. To do this, he must receive in writing the same information set out in paragraph (c)(3)(ii)(A) of this section from the person accumulating the material; and at least 50 percent of the total volume accumulated at the beginning of the year must have been used, reused, reclaimed, or transferred.

(C) If the material accumulates for a third year without use, reuse, reclamation, or transfer of at least 75 percent of the total volume accumulated at the beginning of that year, all material not actually used, reused, reclaimed, or transferred is a solid waste.

(d) Respondents in actions to enforce regulations implementing Subtitle C of RCRA who raise a claim that a certain material is not a solid waste, or is exempt from regulation, must demonstrate that there is a known market or disposition for the material, and that they meet the terms of the exclusion or exemption. In doing so, they must provide appropriate documentation (such as contracts showing that a second person uses the material as an ingredient in a production process) to demonstrate that the material is not a waste, or is exempt from regulation. In addition, owners or operators of facilities claiming that they are actually using, reusing, or reclaiming materials must show that they have the necessary equipment to do so.

6. Section 261.3 is amended by revising paragraph (c)(2 to read as follows:

§ 261.3 Definition of hazardous waste.

* * * * *

(c) * * *

(2) Any solid waste generated from the treatment, storage, or disposal of a hazardous waste, including any sludge, spill residue, ash, emission control dust, or leachate (but not including precipitation run-off), is a hazardous waste. (However, materials that are reclaimed from solid wastes and that are used beneficially are not solid wastes and hence are not hazardous wastes under this provision.)

* * * * *

7. Section 261.5 is amended by revising paragraph (c) to read as follows:

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

* * * * *

(c) Hazardous waste that is used, reused, or reclaimed and that is excluded from regulation under §§ 261.6(b) and 261.6(f)(2) is not included in the quantity determinations of this section, and is not subject to any requirements of this section. Hazardous waste that is subject to the special requirements of §§ 261.6 (c) and (d), and 261.6(f)(1) is included in the quantity determinations of this section and is subject to the requirements of this section.

* * * * *

8. Section 261.6 is revised to read as follows:

§ 261.6 Special requirements for regulated recyclable materials.

(a) Hazardous wastes that are used, reused, or reclaimed will be known as 'regulated recyclable materials.' (b)(1) The following regulated recyclable materials are not subject to regulation under Parts 262 through 266 or Parts 122 through 124 of this Chapter and are not subject to the notification requirements of Section 3010 of RCRA:

(i) Regulated recyclable materials that are reclaimed by the person generating them, provided that sufficient amounts of materials are reclaimed during a one-year period (as defined in § 261.2(c)(3)). This exemption does not apply, however, when the regulated recyclable materials are stored in a surface impoundment prior to reclamation, or are reclaimed or otherwise processed in a surface impoundment. This exemption also does not apply to spent lead-acid batteries being reclaimed.

(ii) Regulated recyclable materials that are reclaimed by a person who subsequently uses the reclaimed material in his own operation, provided that sufficient amounts of materials are reclaimed during a one-year period (as defined in § 261.2(c)(3)). This exemption does not apply, however, when the regulated recyclable materials are stored in a surface impoundment prior to reclamation, or are reclaimed or otherwise processed in a surface impoundment. This exemption also does not apply to spent lead-acid batteries being reclaimed.

(iii) Regulated recyclable materials utilized for precious metal recovery, provided that sufficient amounts of materials are reclaimed during a one-year period (as described in § 261.2(c)(3)).

(iv) Regulated recyclable materials reclaimed pursuant to batch tolling agreements. For purposes of this paragraph, a "batch tolling agreement" is a contractual arrangement pursuant to which the person generating the material retains ownership of the material, possession of the material is

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transferred within 180 days of generation to a reclaimer who reclaims that material and returns the reclaimed portion to the owner, reclamation and return of the reclaimed materials is completed within 90 days, the material is not commingled with that of any other person prior to or while being reclaimed, the reclaimer is paid according to the amount of reclaimed material returned to the owner, and the reclaimer is paid more as the amount of reclaimed material returned to the owner increases.

(v) Regulated recyclable materials (including any fuel produced from one or more of these materials) burned for energy recovery in an industrial furnace or in a boiler that is not regulated under Subpart O of Part 264 of this chapter. ("Industrial furnace" and "boiler" are defined in § 260.10 of this chapter.) This exemption does not apply when any of these materials are accumulated, treated, or stored prior to being used to produce fuels by a person who did not generate them and who is not using the fuel in its own operation, or when regulated recyclable materials that are sludges or are listed as hazardous wastes in §§ 261.31 or 261.32 of this chapter are accumulated, treated, or stored prior to burning as a fuel or prior to use to produce a fuel. This exemption also does not apply when these materials are accumulated prior to burning as a fuel or prior to use to produce a fuel without sufficient amounts being used during a one-year period (as defined in § 261.2(c)(3)).

(vi) Used oil that exhibits one or more of the characteristics of hazardous waste indentified in Subpart C of Part 261.

(vii) Used batteries returned to a battery manufacturer for regeneration (a used battery can be "regenerated" by addition of electrolyte, replacement of defective cells, or other minor processing).

(2) The Regional Administrator may decide on a case-by-case basis that persons accumulating, storing, or burning the regulated recyclable materials described in paragraphs (b)(1) (i)–(v) of this section should be subject to regulation under otherwise applicable provisions of this section or Subpart O of Part 264 of this chapter. The standard and procedures for this decisions are set forth in paragraph (g) of this section.

(c) Generators and transporters of regulated recyclable materials are subject to the following requirements, unless the materials are regulated under Subparts C or D of Part 266 of this chapter, or exempted under paragraph (b)(1) of this section:

(1) Generators: Part 262 of this Chapter;

(2) Transporters: Part 263 of this Chapter.

(d) Owners or operators of facilities that store regulated reyclable materials are subject to the following requirements, unless regulated under Subpart C or D of Part 266 of this Chapter, or exempted under paragraph (b)(1) of this section:

(1) Notification requirements under Section 3010 of RCRA;

(2) All applicable provisions in Subparts A through L of Part 264 of this chapter;

(3) All applicable provisions in Subparts A through L of Part 265 of this chapter;

(4) All applicable provisions in Parts 122 and 124 of this chapter.

(e) Owners or operators of a facility that uses regulated recyclable materials in a manner that constitutes disposal (within the meaning of § 261.2(a)(2)(i) of the chapter) are subject to the following requirements:

(1) Notification requirements under Section 3010 of RCRA;

(2) All applicable provisions in Subparts A through F and M through N of Part 264 of this chapter;

(3) All applicable provisions in Subparts A through F and M through N of Part 265 of this chapter;

(4) All applicable provisions in Parts 122 and 124 of this chapter.

(f) The following regulated recyclable materials are regulated under Subparts C and D of Part 266 of this chapter and all applicable provisions in Parts 122 and 124 of this chapter:

(1) Regulated recyclable materials reclaimed pursuant to non-batch tolling agreements (Subpart C); and

(2) Spent lead-acid batteries being reclaimed (Subpart D).

(g)(1) The Regional Administrator may decide on a case-by-case basis that persons accumulating or storing the regulated recyclable materials described in paragraphs (b)(1) (i)–(v) of this section are subject to regulation under otherwise applicable provisions of this section. The basis for this decision is that the materials are being accumulated or stored in a manner insufficient to protect human health and the environment due to failure to contain the materials or their toxic constituents, or incompatibility of the materials being accumulated or stored. In making this decision, the Regional Administrator will consider the following factors:

(i) The materials accumulated or stored by the person, and the amounts accumulated or stored;

(ii) The method of accumulation or storage;

(iii) The length of time the materials have been accumulated or stored prior to being reclaimed;

(iv) Whether any contaminants are being released into the environment, or are likely to be so released; and

(v) Other relevant factors.

(2) The Regional Administrator may also decide on a case-by-case basis that persons who are burning regulated recyclable materials as fuels in boilers or in industrial furnances are subject to regulation under Subpart O of Part 264 of this chapter. The basis for this decision is that the materials are being burned in a manner that is insufficient to protect human health and the environment based upon the quantity and toxicity of the stack emissions. In making this decision, the Regional Administrator will consider the following factors:

(i) The content and mass of the input;

(ii) The conditions under which the unit is operated;

(iii) The potential for stack emissions to pose a hazard to human health and the environment; and

(iv) Other relevant factors.

(3) The following procedures will be used in making the determination set forth in paragraphs (g)(1) and (g)(2) of this section.

(i) The Regional Administrator will issue a notice setting forth the factual basis for the decision. If the person is accumulating the regulated recyclable material as a generator, the notice will state that the person must comply with the applicable requirements of Part 262 of this chapter. The notice will become final within 30 days unless the person served requests a public hearing to challenge the decision. Upon such request, the Regional Administrator will hold a public hearing, and after the conclusion of the hearing, will issue an appropriate final order. This final order may be appealed to the Administrator.

(ii) If the person is accumulating the regulated recyclable material as a storage facility or burning the material in a unit subject to regulation under Subpart O of Part 264 of this chapter, the notice will state further that the person must obtain a permit in accordance with all applicable provisions of Parts 122 and 124 of this chapter. The owner or operator of the facility must apply for a permit within 60 days of notice. If the owner or operator of the facility wishes to challenge the Regional Administrator's decision, he can do so in his permit application, or in a public hearing held on the draft permit. The question of whether the Regional

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Administrator's decision was proper will remain open for consideration during the public comment period under § 124.11 of this chapter and in any subsequent hearing.

9. Section 261.31 is amended by revising the hazardous waste listings F007, F008, F009, F010, F011, and F012 to read as follows:

§ 261.31 Hazardous waste from non-specific sources.

* * * * *

Industry	EPA hazardous waste No	Hazardous waste	Hazard code
Generic	F007	Spent cyanide plating bath solutions from electroplating operations.	(R, T).
	F008	Plating bath sludges from the bottom of plating baths from electroplating operations where cyanides are used in the process.	(R, T).
	F009	Spent stripping and cleaning bath solutions from electroplating operations where cyanides are used in the process.	(R, T).
	F010	Quenching bath sludges from oil baths from metal heat treating operations where cyanides are used in the process.	(R, T).
	F011	Spent cyanide solutions from salt bath pot cleaning from metal heat treating operations.	(R, T).
	F012	Quenching wastewater treatment sludges from metal heat treating operations where cyanides are used in the process.	(T).

* * * * *

10. Section 261.33 is amended by revising the introductory text to read as follows:

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

The following materials or items are hazardous wastes when they are discarded or intended to be discarded in a manner described in § 261.2(a)(1), when they are burned for purposes of energy recovery in lieu of their original intended use, when they are used to produce fuels in lieu of their original intended use, and when they are applied to the land in lieu of their original intended use:

* * * * *

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

11. The authority citation for Part 264 reads as follows:

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

12. In § 264.1, paragraph (g)(2) is revised to read as follows:

§ 264.1 Purpose, scope, and applicability.

* * * * *

(g) * * *

(2) The owner or operator of a facility managing regulated recyclable materials described in §§ 261.6(b) or 261.6(f) of this chapter (except to the extent that requirements of this Part are referred to in Subparts C or D of Part 266 of this chapter).

* * * * *

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

13. The authority citation for Part 265 reads as follows:

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

14. In § 265.1, paragraph (c)(6) is revised to read as follows:

§ 265.1 Purpose, scope, and applicability.

* * * * *

(c) * * *

(6) The owner or operator of a facility managing regulated recyclable materials described in §§ 261.6(b) or 261.6(f) of this chapter (except to the extent that requirements of this Part are referred to in Subparts C or D of Part 266 of this chapter).

* * * * *

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

15. The authority citation for Part 266 reads as follows:

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

16. In Part 266, Subparts C and D are added to read as follows:

* * * * *

Subpart C—Regulated Recyclable Materials Reclaimed Pursuant to Nonbatch Tolling Agreements

§ 266.20 Applicability and requirements.

(a) The regulations of this Subpart apply to generators and transporters of regulated recyclable materials being reclaimed pursuant to nonbatch tolling agreements, and to owners or operators of facilities that store regulated recyclable materials pursuant to nonbatch tolling agreements. For purposes of this Subpart, a "nonbatch tolling agreement" is a contractual arrangement pursuant to which the person generating the regulated recyclable material transfers the material to a reclaimer who returns reclaimed material to the person generating the material.

(b) Generators and transporters of regulated recyclable materials reclaimed pursuant to nonbatch tolling agreements are subject to the following requirements:

(1) Generators: Subparts A, C, D, and E of Part 262 of this chapter.

(2) Transporters: Subparts A and C of Part 263 of this chapter.

(c) Owners or operators of facilities that store regulated recyclable materials being reclaimed pursuant to nonbatch tolling agreements are subject to the following requirements:

(1) Notification requirements under Section 3010 of RCRA;

(2) All applicable provisions in Subparts A, B (but not § 264.13 (waste analysis)), C, D, E (but not §§ 264.71 and 264.72 (dealing with use of the manifest and manifest discrepancies)), and F through L of Part 264 of this chapter;

(3) All applicable provisions in Subparts A, B (but not § 265.13 (waste analysis)), C, D, E (but not §§ 265.71 and 265.72 (dealing with use of the manifest and manifest discrepancies)), and F through L of Part 265 of this chapter;

(4) All applicable provisions in Parts 122 and 124 of this chapter.

Subpart D—Spent Lead-Acid Batteries Being Reclaimed

§ 266.30 Applicability and requirements.

(a) The regulations of this Subpart apply to persons who reclaim spent lead-acid batteries that are regulated recyclable materials ("spent batteries"). Persons who generate, transport, or collect spent batteries, or who store spent batteries but do not reclaim them are not subject to regulation under Parts

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262–266 or Parts 122–124 of this chapter, and also are not subject to the requirements of Section 3010 of RCRA.

(b) Owners or operators of facilities that store spent batteries prior to reclaiming them are subject to the following requirements:

(1) Notification requirements under Section 2010 of RCRA;

(2) All applicable provisions in Subparts A, B (but not § 264.13 (waste analysis)), C, D, E (but not §§ 264.71 or 264.72 (dealing with the use of the manifest and manifest discrepancies)), and F through L of Part 264 of this chapter;

(3) All applicable provisions in Subparts A, B (but not § 265.13 (waste analysis)), C, D, E (but not §§ 265.71 and 265.72 (dealing with use of the manifest and manifest discrepancies)), and F through L of Part 265 of this chapter;

(4) All applicable provisions in Parts 122 and 124 of this chapter.

[FR Doc. 83–7931 Filed 4–1–83; 8:45 am]

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federal register

Monday
April 4, 1983

Part III

Environmental Protection Agency

Hazardous Waste Management System; Proposed Rule

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ENVIRONMENTAL PROTECTION AGENCY

40 CFR Parts 261, 264, 265, and 775

[SWH-FRL 2315-5]

Hazardous Waste Management System: Identification and Listing of Hazardous Waste; Standards for Owners and Operators of Hazardous Waste Treatment, Storage, and Disposal Facilities; Interim Status Standards for Owners and Operators of Hazardous Waste Treatment, Storage, and Disposal Facilities; and Storage and Disposal of Waste Material: Prohibition of Disposal of Tetrachlorodibenzo-p-Dioxin

AGENCY: Environmental Protection Agency.

ACTION: Proposed rule and request for comments.

SUMMARY: The Environmental Protection Agency (EPA) is today proposing to amend the regulations for hazardous waste management under the Resource Conservation and Recovery Act (RCRA), by listing additional hazardous wastes containing certain chlorinated dioxins, -dibenzofurans, and -phenols, and by specifying certain management standards for these wastes. These wastes are being listed as acutely hazardous. EPA is also proposing to delete several commercial chemical products from the list of hazardous wastes since these listings are duplicated in today's proposal. In addition, EPA is proposing to list these materials as solid wastes when they are recycled by being used or reused, so that these wastes remain subject to regulation when recycled in this manner. EPA also is proposing to revoke its regulation concerning the disposal of 2,3,7,8-tetrachlorodibenzo-*p*-dioxin (TCDD)-contaminated wastes under the Toxic Substances Control Act (TSCA), when this regulation under RCRA becomes effective. This action extends regulatory control to certain hazardous wastes not covered by the existing regulation. It requires handlers of such wastes to comply with the appropriate regulatory standards.

DATE: EPA will accept public comment on this amendment until June 3, 1983.

ADDRESSES: Comments should be sent to the Docket Clerk, Office of Solid Waste (WH-562), U.S. Environmental Protection Agency, 401 M Street S.W., Washington, D.C. 20460. Communications should identify the regulatory docket numbers "Section 3001/Dioxin" or "OPTS 62007".

Pursuant to provisions of RCRA and TSCA, requests for a hearing should be addressed to Eileen Claussen, Director, Office of Management, Information, and Analysis, Office of Solid Waste (WH-562), U.S. Environmental Protection Agency, 401 M Street, S.W., Washington, D.C. 20460.

Public Docket: The public docket for 40 CFR Parts 261, 264, and 265 is located in Room S-269C, U.S. Environmental Protection Agency, 401 M Street, S.W., Washington, D.C. 20460, and is available for viewing from 9:00 a.m. to 4:00 p.m., Monday through Friday, excluding holidays.

The public docket for 40 CFR Part 775 is located in Room E-107 at the same address, and is available for viewing during the same hours.

FOR FURTHER INFORMATION CONTACT: RCRA Hotline, toll free at (800) 424-9346 or at (202) 382-3000 or Judy Bellin (202) 382-4770.

SUPPLEMENTARY INFORMATION:

Outline

I. Background
II. Summary of the Proposed Listing
III. Basis for Listing
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I. Background

On May 19, 1980, as part of the final and interim final regulations implementing Section 3001 of RCRA, EPA published a list of hazardous wastes that included hazardous wastes generated from non-specific sources. (See 40 CFR 261.31.) This list has been amended several times. In today's action, EPA is proposing to amend this section to add particular wastes containing certain contaminants that are, for certain animal species, among the most toxic known; these wastes consequently are of particular environmental concern. EPA has evaluated these wastes against the criteria for listing acutely hazardous and hazardous wastes (40 CFR 261.11 (a) (2) and (a) (3)), and has determined that they: (1) Are capable of causing or significantly contributing to an increase in serious irreversible or incapacitating reversible, illness, and (20) also pose a substantial present or potential threat to human health or the environment when improperly treated, stored, transported, disposed of, or otherwise managed, and therefore are acutely hazardous wastes.[1]

II. Summary of the Proposed Listing [2]

This proposed regulation covers principally wastes from the production of certain chlorophenols and of chlorophenoxy pesticides, as well as discarded unused formulations containing tri-, tetra-, or pentachlorophenol and their derivatives. Specifically, this proposed regulation designates as hazardous certain wastes (including reactor residues, still bottoms, brines, spent filter aids, spent carbon from product purification, and sludges from wastewater treatment, but not including untreated wastewater or spent carbon from hydrogen chloride purification) resulting from the following processes:[3, 4]

[1] The RCRA definition of acutely hazardous waste is set forth at 40 CFR 261.11(a)(2). Under that definition, such a material is not necessarily "acutely toxic" in the way that term is used by toxicologists. Rather, the term is intended by EPA to identify wastes which are so hazardous that they may, either through acute or chronic exposure, "cause, or significantly contribute to an increase in serious irreversible, or incapacitating reversible, illness", regardless of how they are managed.

[2] The following acronyms and definitions are used in this document (and in the background document for this regulation):

PCDDs = all isomers of all chlorinated dibenzo-*p*-dioxins.

PCDFs = all isomers of all chlorinated dibenzo-furans

CDDs and CDFs = all isomers of the tetra-, penta-, and hexachlorodibenzo-*p*-dioxins and -dibenzofurans, repectively.

TCDDs and TCDFs = all isomers of the tetrachlorodibenzo-*p*-dioxins and -dibenzofurans, respectively.

TCDD and TCDF = the respective 2,3,7,8-isomers.

The prefixes D, Tr, T, Pe, and Hx denote the di-, tri-, tetra, penta-, and hexachloro-congeners, respectively.

[3] Not all of these wastes are generated by every process discussed in the text.

[4] We are not proposing to list untreated wastewaters or spent carbon from hydrogen chloride purification because these wastes are not expected to contain CDDs or CDFs at levels of concern.

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(a) The production and manufacturing use [5] of tri-, tetra-, or pentachlorophenol and intermediates used to produce their derivatives;[6, 7]

(b) The manufacturing use of tetra-, penta-, or hexachlorobenzenes under alkaline conditions;

(c) the production of materials on equipment previously used for the production or manufacturing use of materials listed under (a) and (b) above; and

(d) discarded unused formulations containing tri-, tetra-, or pentachlorophenols, or discarded unused formulations containing compounds derived from these chlorophenols.[8]

[5] In the context of this listing, "manufacturing use" means the use of the named chemical as a reactant or chemical intermediate (for instance, as in the use of 2,4,5,-trichlorophenol (2,4,5,-TCP) as a feedstock for the synthesis of 2,4,5,-T), or as a component in a formulating process (as, for instance, in the formulation of a mixture of 2,4,5,-TCP and 1,2,4,5,-TeCP, in which these components retain their chemical identity). In the present context, the term "manufacturing use" does not include residues from the use of chlorophenoxy pesticide formulations, *e.g.*, in wood preservation.

[6] The principal manufacturing use of chlorophenols is in the synthesis of chlorophenoxy acids, esters, and amines. They are also used in the synthesis of phenolic resins, and of dye and pigment intermediates. However, only wastes from chlorophenoxy synthesis are listed as hazardous wastes, because the Agency has no data on the conditions of synthesis, generation of wastes, and the level of chlorinated dibenzo-*p*-dioxin or -dibenzofuran contamination of wastes from the synthesis of phenolic resins, dyes, and pigments. The Agency solicits data on the extent of CDD/CDF contamination of the latter wastes. We also are presently initiating sampling of some of these wastes in the course of our ongoing Industry Studies program.

[7] The 2,4,5,-TCP derivative Hexachlorophene is now synthesized from a purified 2,4,5,-TCP in an acid-catalyzed condensation reaction. Because the reaction occurs at rather low temperatures, and at acid pH, no CDD or CDF formation is expected to occur. Earlier production techniques resulted in TCDD contamination. Wastes resulting from Hexachlorophene production therefore are not included in this listing unless prepurified 2,4,5, TCP was not used, or the process took place on equipment contaminated with CDDs or CDFs.

[8] This category of listed wastes includes discarded pesticides and formulations containing tri-, tetra-, or pentachlorophenol as ingredients. Some of these materials, namely EPA Hazardous Wastes U212, 230, 231, 242, and the chlorophenoxy pesticides U232 and U233 already are hazardous wastes under 40 CFR 261.33(f) when discarded in commercial grade, technical grade, or off-specification form, or when present as the sole active ingredient in a formulation. However, discarded formulations containing these chlorophenols or chlorophenoxy compounds as one of a number of ingredients (for example, in a mixture of 2,4,5-T and 2,4,-D) are not presently considered to be hazardous wastes (unless they exhibit a characteristic of hazardous waste). These multi-ingredient formulations nevertheless are likely to be just as toxic as sole active ingredient mixtures, since the concentration of toxic ingredients is the same or higher. Today's action thus would remedy this gap in regulatory coverage by listing the multi-ingredient formulations containing the discarded listed compounds. In addition, we are amending the basis for listing these commercial chemical products to include certain chlorinated dioxins and -dibenzofurans as toxicants of concern.

III. Basis for Listing

A. Toxicity of contaminants of concern

1. Toxicity of chlorinated dioxins and -dibenzofurans. The contaminants of concern in these wastes are CDDs and CDFS, tri-, tetra-, and pentachlorophenols, and the chlorophenoxy derivatives of these chlorophenols. CDDs and CDFs are, for certain animal species, among the most potent toxic substances known.[9] TCDD and two HxCDD isomers are among the most potent animal carcinogens tested. Since each of these substances are carcinogenic in well-conducted tests in both rats and mice, they are also considered by the Agency to be potential human carcinogens (see 44 FR 39858–39879 (July 6, 1979)). In laboratory studies, TCDD has also been shown to be teratogenic, fetotoxic, and embryotoxic at extremely low doses (ng/kg/day). Based on structure-activity relationships, TCDF also may have reproductive effects at extremely low doses. Many CDDs and CDFs are acute toxicants as tested in laboratory animals at the μg/kg/day dose rate, and, even at these very low concentrations, have many observable physiologic effects. Although an EPA Scientific Advisory Panel determined 1 ng/kg body weight to be "for all practical purposes" a no observed effect level in rodents (44 FR 72337 (December 13, 1979)), several other scientists have concluded that a NOEL has not been conclusively demonstrated. Moreover, the Scientific Advisory Panel concluded that a NOEL had not been demonstrated for primates. In addition, the U.S. Food and Drug Administration has established a guideline suggesting limitation of human consumption of fish containing TCDD concentrations greater than 25–50 ng/kg (ppt). Furthermore, in several enforcement actions and in two site-specific risk assessments conducted by the Agency regarding Times Beach and Imperial in Missouri, environmental concentrations in the ppt to ppb range were determined to be levels of concern, and were used to define clean-up levels.

The Agency emphasizes that, for purposes of this regulation, it considers all CDDs and CDFs as toxicants of concern in these wastes. Many biochemical and toxicology studies have demonstrated that there are well-defined structure/activity correlations defining the acute and chronic toxic effects of PCDDs and PCDFs. Those isomers that have halogens in at least three of the four lateral ring positions (numbers 2,3,7, or 8), and that have at least one ring hydrogen atom, are the most toxic isomers. All the CDDs and CDFs substituted in this manner have extremely high acute toxicity, bind strongly to a cytosolic protein receptor, and are potent inducers of several liver enzymes. The Agency recognizes that, even within such congeneric groupings, there are differences in toxicity. There is, for instance, a 370-fold difference in acute toxicity between the 1,2,3,7,8- and the 1,2,4,7,8-PeCDD isomers; however, even the less toxic isomer has extremely high acute toxicity (oral LD_{50} in the guinea pig=1.1 mg/kg).

Only limited toxicity information is available on certain of the CDD and CDF isomers. However, many are structurally similar to other CDD and CDF isomers that are potent toxicants. The Agency may permissibly infer that certain waste constituents are toxic, based upon structural similarity to known toxicants. See *EDF v. EPA*, 598 F. 2d 62, 78–83 (D.C. Cir. 1978) (prohibition of discharge to navigable waters of less chlorinated PCBs is permissible in the absence of specific toxicologic data due to their structural similarity to the more chlorinated PCBs).

Consequently, because most of the isomers of the listed CDDs and CDFs are toxic, albeit to different degrees, because identification of individual isomers in the waste would be an excessive regulatory burden, and because the Agency believes that these wastes would contain a certain percentage of the more toxic component, the Agency has determined that it is a conservative public health assumption that all the isomers of TCDD should be considered in estimating its toxicity. We have therefore determined that all the CDDs and CDFs identified or proposed to be identified in Appendix VIII should be considered as toxicants of concern in these wastes. This decision is analogous to the finding adopted by the Agency in the case of municipal waste resource recovery facilities.[10]

2. Toxicity of chlorophenols and their chlorophenoxy derivatives. The other toxicants of concern in these wastes also have serious adverse effects. EPA's Carcinogen Assessment Group has

[9] The statements on toxicity, persistence, and environmental contamination outlined in this preamble are more fully explained and substantiated in the background document for this listing which is available for review in the public docket.

[10] *See* Interim evaluation of the health risks associated with emissions of tetrachlorinated dioxins from municipal waste resource recovery facilities. U.S. EPA, Office of the Administrator, November 16, 1981.

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determined that 2,4,6-TCP is a potential human carcinogen.[11] In addition, chlorophenols may cause liver and kidney damage. Some chlorophenoxy compounds are also known or potential human carcinogens, and may have reproductive and teratogenic effects. Water Quality Criteria have been established for many of these compounds. For example, for 2,4,6-TCP, the criterion for the protection of people from excess risk of developing cancer (10^{-5} risk level) from the lifetime consumption of contaminated fish and water is 12 ppb. The criterion for 2,4,5-TCP (based on its chronic systemic toxic effects) is 2.6 ppm.

For several other chlorophenols, the organoleptic water quality criteria are at the ppb level (see 45 FR 79318 November 28, 1980).

B. Contaminant concentration levels in these wastes

The toxicants of concern are likely to be present in the listed wastes at concentrations many orders of magnitude greater than the levels which, as cited above, are of concern in terms or human health. In some cases, the Agency has inferred the presence of these contaminants from knowledge of reaction chemistry and process operating conditions. In other cases, the contamination of chemical intermediates and commercial chemical products is analytically established. For example, analysis of distillation bottoms from manufacturing processes making or using trichlorophenols can contain several hundred ppm CDDs, filter aids may contain up to 6000 ppm TCDDs, and cooling pond muds were shown to contain as much as 1200 ppm CDDs. Still bottoms from 2,4,5-TCP and 2,4,5-T production generated by the Vertac Chemical Corporation contained up to 111 ppm TCDDs. (*U.S* v. *Vertac Chemical Corp.*, 489 F. Supp. 870, 879 (D. Ark. 1980)) (improper storage and disposal of dioxin-containing wastes results in imminent and substantial endangerment warranting injunctive relief).

Some process wastes may be contaminated with CDDs or CDFs because they were generated in the course of a manufacturing process performed on equipment that was previously used for a CDD or CDF-generating process. In the manufacture of chemicals on a production train previously used for a process generating, *e.g.*, CDDs, both the product and the wastes generated can be contaminated with CDDs. This was shown to be the case, for instance, for wastes resulting from the manufacture of 2,4-D. These wastes contained TCDDs at the ppb level, presumably because the equipment, used previously to produce 2,4,5-T, remained contaminated with TCDD after production shifted to 2,4-D (45 *FR* 32677, May 19, 1980).

The contamination of tri-, tetra-, and pentachlorophenols, and their phenoxy derivatives with CDDs (30–100 ppm) and CDFs (50–140 ppm) also results in the contamination of biocides and their formulations.

The concentration of higher chlorinated phenols and chlorophenoxy derivatives in these wastes also is likely to be considerable. In the case of wastes from cholorophenol production, cholorophenols (because of their solubility characteristics) are likely to be present in reactor residues, in still bottoms, and in the sludges from wastewater treatment. Wastes from the manufacturing use of these compounds likewise will contain these chlorophenols—since they are the principal raw material in the process—as well as various chlorophenoxy derivatives. Because of the nature of the purification and precipitation processes, the latter compounds will occur principally in reactor residues, on adsorbents used for product purification, and on filter aids. These compounds are known to be present in the wastes from these processes. For example, a study of the aqueous waste of one herbicide manufacturing facility found that it contained 13.5 kg/day of mixed chlorophenols, and about 32.7 kg/day of phenoxy acid. These are discharged in fairly concentrated form: a typical untreated aqueous waste stream from phenoxy acid manufacture contains 112 ppm of mixed chlorophenols and 235 ppm of chlorophenoxy acids.

Discarded pesticides and pesticide formulations containing these chlorophenols as active ingredients obviously will contain these toxicants in high (percent) concentrations.

C. The wastes' potential to cause substantial harm if mismanaged

Not only are the contaminants of concern present in significant concentrations, but they are capable of migrating from waste matrices and reaching environmental receptors in potentally dangerous concentrations. These contaminants are persistent[12]—CCDs and CDFs extremely so—and several can accumulate in the food chain. The measured bioaccumulation factor (BCF) for TCDD is species dependent, and varies from 2,000 to 48,000; structure/activity considerations make it reasonable to assume that the BCF for other CDDs and CDFs are within the same range. The calculated BCF for the chlorophenols ranges from 290 for 2,4,5-TCP to 610 for 2,4,6-TCP (however, the measured steady state BCF for PCP is only 13). Thus, if these toxicants migrate from these wastes, even in extremely low concentrations, they can accumulate in biological organisms at much higher levels, increasing the likelihood of substantial harm to human health and the environment.

These toxicants, moreover, are mobile in the environment, particularly as a result of water run-off or wind dispersion of contaminated particles, and can migrate from these wastes if they are improperly managed. Although CDDs and CDFs are relatively water insoluble, and bind strongly to organic soil constituents, improper land disposal could cause substantial harm to environmental receptors. Pollution of air and surface waters can occur, perhaps as a result of windblown dust, water run-off or erosion, or flooding of waste disposal sites. All of these scenarios have occurred. In the *Vertac* case cited earlier, improper storage and disposal of wastes from the manufacture of 2,4,5-TCP, 2,4-D, and 2,4,5-T resulted in significant environmental contamination. Fish and other aquatic life in a local stream accumulated TCDD at levels as high as 600 ppt. The court concluded:

> Dioxins * * * can and have been transported off the Vertac site on dust, by the action of landfill areas and equalization basin area, and when people and equipment move to and from the Vertac site. Samples show that dioxin has been transported off the Vertac site into fish and sediment in (a local stream), and also into the Jacksonville sewage treatment plant. (489 F. Supp. at 879)

TCDDs also have been detected at levels of concern in the sediments of streams, public sewers, and home sumps at other sites, including Love Canal. TCDD has been reported in fish and crayfish living in contaminated streams, in concentrations (600 ng/kg) up to fifteen times higher than that at which FDA advises that human consumption be limited. High ppt concentrations have been reported for other CDDs and CDFs in fish. Because of their insolubility in

[11] U.S. EPA, Ambient water quality criteria for chlorophenols. EPA 440/5-80-032.

[12] CDDs (and presumably CDFs) are highly resistant to microbial degradation. The Agency thus believes that these toxicants will be present in wastewater treatment sludges. The listed chlorophenols and their chlorophenoxy derivatives are biodegradable, but where overloading and inadequate treatment occur, and in the anaerobic environment of sludge disposal, they may persist.

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water, and their strong binding to organic soil constituents, CDDs and CDFs are not ordinarily expected to leach to ground water if proper precautions are taken. However, if these wastes are co-disposed with solubilizing solvents, or disposed in situations where soil binding site are exhausted, ground water contamination could result.

Although chlorophenols and chlorophenoxy compounds are subject to environmental degradation, including biodegradation by adapted communities, environmental pollution from these constituents has occurred where wastes from the production and manfuacturing use of chlorophenols were mismanaged. More than twenty-five years after the improper disposal of chlorophenolic wastes at Love Canal, tri-, tetra-, and pentachlorophenols were identified in soil, water, and storm sewer sediments at concentrations ranging from 14 ppb (PCP in sump water) to 496 ppm (TCPs in storm sewer sediment).

A further risk to human health may be posed by improper incineration of these wastes. Improper incineration of chlorophenols are prediced to form CDDs and CDFs as products of incomplete combustion,[13] posing a further risk of substantial harm. Indeed, as discussed later in this preamble, the Agency is studying whether different criteria or management standards (*e.g.*, higher destruction and removal efficiency for the incineration of these wastes) are appropriate and practical.

D. Listing as acutely hazardous wastes.

It is clear from this discussion that these wastes have the potential to cause substantial harm, if mismanaged. The Agency is further convinced that these are acutely hazardous wastes under 40 CFR 261.11(a)(2), since they contain contaminants which, when tested in animals, are among the most toxic contaminants known, and thus are capable of causing, or significantly contributing to serious irreversible, or incapacitating reversible, illness.[14] This standard is taken directly from Section 1004(5) of RCRA, and is reserved for wastes particularly likely to pass a substantial risk to human health and the environment (see preamble to Part 261, 45 FR 33106, May 19, 1980).

Additional reasons for listing these wastes as acutely hazardous are that the wastes have been implicated in a series of damage incidents, among them the incidents of Love Canal and Times Beach. The Agency also has been compelled to exert regulatory control over many of these wastes under the Toxic Substances Control Act in the face of the unreasonable risk posed by ongoing and contemplated waste management practices (see further discussion in Part VI. below).

The practical consequences of such a listing are two-fold. First, these wastes will be subject to the 1 kg/month small quantity generator limitation contained in 40 CFR 261.5(e).[15]

The Agency deems 1 kg to be equivalent, for all practical purposes, to total control of the management of these wastes since they are generated in amounts far greater than 1 kg. The Agency solicits comments on the appropriateness of this limitation, however. Second, the residues in empty containers that contain these listed wastes are subject to control under Subtitle C of RCRA, unless the container has been triple-rinsed using a solvent capable of cleaning the container, or the container has been otherwise cleaned by a method that has been shown to achieve equivalent removal. In addition, as explained more fully below, we are proposing that these wastes be managed only at treatment, storage, and disposal facilities that have been fully permitted under RCRA (except as discussed in Section VII.). In the Agency's judgment, these wastes should be managed pursuant to the most stringent appropriate standards that are contained in the RCRA hazardous waste management regulations.

IV. Removal of Certain Commercial Chemical Products Listed in 40 CFR 261.33(f)

As discussed in the previous section, the Agency is proposing to list as acutely hazardous those unused discarded formulations containing tri-, tetra-, or pentachlorophenol and discarded formulations containing as ingredients compounds derived from these chlorophenols. Some of these materials already are hazardous wastes under 40 CFR 261.33(f) when discarded or intended for discard in commercial grade, technical grade, or off-specification form, or when the toxicant is present in formulations as the sole active ingredient. They were originally listed as toxic (rather than acutely hazardous) because the Agency did not at that time consider the presence of CDDs and CDFs. However, as shown above, these formulations will contain chlorinated dioxins and -dibenzofurans, because the chlorophenol or chlorophenoxy derivatives will themselves be contaminated with CDDs and CDFs. For this reason, we are now listing them as actutely hazardous under 40 CFR 261.11(a)(2).

To avoid listing the same waste under two different (and inconsistent) provisions, we are proposing to remove EPA Hazardous Wastes U212, U230, U231, U232, U233, and U242 from 40 CFR 261.33(f). As a consequence, there should be no confusion that these wastes will be subject to a small quantity generator exclusion of 1 kg/mo.

V. Regulatory Status of These Materials When Recycled by Being Used or Reused

On May 19, 1980, EPA promulgated a definition of solid waste which, among other things, states which materials are solid wastes when recycled. In promulgating this rule, EPA established broad jurisdiction over recycled materials and recycling operations. EPA is today proposing in a separate notice to revise this rule to state that certain types of activities involving secondary material use and reuse do not constitute solid waste management; in particular, the proposal states that secondary materials recycled by being used or reused as ingredients in new products, or by being used or reused directly as products, ordinarily are not solid wastes. The proposal provides that materials so used or reused may be listed individually in § 261.2(a)(3) as solid wastes if they meet two conditions: (1) They are ordinarily disposed of (on a nationwide basis), or contain toxic constituents which are not ordinarily found in raw materials or proudcts used for the same purpose which constituents are not used during the recycling process; and (2) the materials could pose a substantial hazard to human health or the environment when so used or reused.

Both these conditions are met here. These wastes are typically disposed of or incinerated, rather than recycled.

[13] Shaub, W. M. and W. Tsang, Physical and chemical properties of dioxins in relation to their disposal. Proceedings 2nd. International Symposium on Dioxins. Arlington, VA. October 1981.

[14] By means of a site-specific exclusion petition, a generator may be able to show that a waste does not contain CDDs and/or CDFs at levels sufficient to sustain regulatory concern as acutely hazardous waste. Such levels, however, as well as the presence of chlorophenols or chlorophenoxy compounds, may still render such wastes hazardous.

[15] The Agency is proposing today to amend this provision to apply to all acutely hazardous wastes, not just to the acutely hazardous wastes listed in 40 CFR 261.33(e). At the time § 261.5 was written, there were no acutely hazardous wastes other than those in § 261.33(e). Now that we are proposing to list wastes in § 261.31 as acutely hazardous, we are proposing to conform the reference to acutely hazardous waste in § 261.5. For the same reason, we are proposing to make the same type of conforming change to § 261.7(b)—the provision stating when containers that have held acutely hazardous wastes are "empty."

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They also contain significant levels of hazardous constituents—CDDs and CDFs—not ordinarily found in raw materials or analogous commercial products, nor would these toxicants contribute to the efficacy of the recycling practice. In addition, in light of their toxicity and their environmental persistence, these wastes could pose the same potential for causing substantial harm when used or reused as when disposed. Since use or reuse would be unregulated, the potential for harm in fact is probably greater.[16]

Accordingly, we are proposing elsewhere in today's **Federal Register** to list these materials as solid wastes when they are used or reused. As a result, these wastes will remain subject to regulation when transported and stored under the Subtitle C regulations even when recycled by being used or reused as ingredients in new products, or by being used or reused directly as products.

VI. Relation of Today's Proposal to Regulation of TCDD-Contaminated Wastes Under the Toxic Substances Control Act

Many wastes containing TCDD are presently regulated under 40 CFR Part 775, a regulation issued under Section 6 of the Toxic Substances Control Act (TSCA).[17] This regulation, promulgated on May 19, 1980 (45 FR 32676), prohibits the Vertac Chemical Company from disposing of certain wastes containing TCDD, and requires the company to store and monitor these wastes until a long-term management solution can be determined. The regulation also requires other persons intending to dispose of TCDD wastes (defined as those resulting from the production of 2,4,5-TCP or its pesticide derivatives, or substances produced on equipment that was previously used for the production of 2,4,5-TCP or its pesticide derivatives) to notify the Agency 60 days in advance of such disposal. The regulation does not apply, however, "to persons disposing of wastes containing TCDD at facilities permitted for disposal of TCDD under Section 3005(c) of RCRA." (See 40 CFR 775.197.)

On January 5, 1982, EPA issued an Advance Notice of Proposed Rulemaking (ANPRM) (47 FR 193), announcing the Agency's intent to review the TCDD disposal rule (40 CFR 775), and solicited comment to aid the Agency in determining the most appropriate long-term solution for TCDD-contaminated wastes. Several comments received on this ANPRM stated that the regulation of treatment and disposal of hazardous wastes properly belongs under RCRA, and that the Agency should avoid overlapping and potentially contradictory approaches to the same problem under different regulatory authority, *e.g.*, TSCA and RCRA. Section 1006(b) of RCRA in fact provides that, in implementing the Act, EPA "Shall avoid duplication" with other statutes administered by the Agency. Section 9(b) of TSCA provides that the Agency must utilize its authority under the other environmental laws it administers where these laws are adequate to protect against unreasonable risk, and where there is no stong public interest in taking action under TSCA.

EPA agrees that RCRA provides the appropriate long-term solution for controlling the management of TCDD-contaminated wastes. The disposal rule under TSCA was only meant as a temporary solution. *See* 45 FR 32682. EPA, in fact, acknowledged the advantages of using RCRA, by providing that final permits issued under RCRA for disposal of TCDD-contaminated wastes would supersede the TSCA rule. The rule proposed today under RCRA will provide the safeguards of a final permit, and will, therefore, render the TSCA rule unnecessary.

Accordingly, only the RCRA rule becomes effective, EPA proposes to revoke the TSCA rule that applies to disposal of TCDD-contaminated wastes. The basis for this revocation is stated in the following paragraphs.

EPA promulgated the TSCA rule under Section 6(a) of that Act. Section 6(a) provides that EPA may prohibit or otherwise regulate any manner or method of disposal of chemical substances or mixtures if the Agency finds that there is a reasonable basis to conclude that such activities present or will present "an unreasonable risk of injury to health or the environment." Determining unreasonable risk involves an administrative judgment which is reached by balancing "the probability that harm will occur and the magnitude and severity of that harm against the effect of proposed regulatory action on the availability to society of the benefits of the substance or mixture, taking into account the availability of substitutes for the substance or mixture which do not require regulation, and other adverse effects which such proposed action may have on society." (TSCA Legislative History at 422).

In the May 19, 1980 regulation, EPA determined that removal for disposal of certain TCDD wastes at Vertac's Jacksonville, Arkansas site would present unreasonable risks. The Agency found that maintaining drummed wastes on-site, with monitoring, presented a relatively known and correctable risk, while disposing of the wastes, as proposed by *Vertac*, posed a substantially greater risk, particularly where a case-specific assessment on the management of these wastes had not been performed. (*See* Preamble to Final Rule at 45 FR 32680; Preamble to Proposed Rule at 45 FR 15595.) Similar considerations led EPA to determine that disposal of TCDD wastes by other persons without prior notification to EPA would present unreasonable risks. The minimal costs of notifying EPA sixty days before disposal, so that EPA could evaluate the management scheme proposed by the notifier, was determined to be outweighed by the risks of harm that could occur from exposure to TCDD disposed of improperly.

We now propose to regulate these wastes under RCRA. On May 19, 1980, EPA believed that the then existing RCRA regulations for treatment and disposal of hazardous waste were not appropriate for TCDD-contaminated waste because EPA had not yet developed final permit standards for land disposal or incineration of hazardous wastes. These final regulations are not effective, and provide a means of properly evaluating the various management alternatives for TCDD-contaminated wastes to ensure that these wastes are managed in a manner that does not present an unreasonable risk. Thus, when the rules proposed today under RCRA become final, it will no longer present an unreasonable risk for these wastes to be treated and disposed of in RCRA facilities, and this will be the only legal waste management option. Since promulgation of these RCRA regulations will vitiate the unreasonable risk finding under TSCA, we will at the same time revoke the TSCA May 19, 1980 regulation.

It should be noted that by doing this, we are eliminating the 60-day notification requirement under TSCA for waste disposed at facilities not

[16] We note, however, that when secondary materials that are derived from commercial pesticides (such as rinse waters from pesticide containers) are put to use as pesticides, they are not considered to be RCRA solid wastes. The Agency considers this activity to constitute continued use of the pesticide, and so not to involve waste management. Any such use, of course, would have to comply with requirements for use of the pesticide imposed under the Federal Insecticide, Fungicide, and Rodenticide Act.

[17] The hazardous waste listings proposed today are more inclusive than those regulated under TSCA, including for example, wastes from the production of certain tetrachlorophenols and chlorobenzenes.

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permitted under Section 3005(c) of RCRA. However, when this rule becomes effective, it will be illegal to dispose of these wastes at facilities that have not been fully permitted. Therefore, we believe the TSCA 60-day notification requirement is unnecessary; in addition, notification under Section 3010(b) will still be required and thus, the Agency will still be informed of who is handling these types of wastes.

We also believe that it will be less confusing for the regulated community, and more cost effective, both with respect to compliance and regulatory enforcement, for waste disposal to be regulated under RCRA alone, rather than under both statutes. Moreover, the technical expertise needed to issue permits for these wastes is chiefly within the Agency's office administering RCRA. We consequently believe that the public interest warrants rescission of the TSCA rule once this RCRA regulation becomes effective.

VII. Proposed Management of These Wastes

A. Management at RCRA Interim Status Facilities

As noted, the TSCA rule presently does not allow these wastes to be disposed or treated at interim status facilities without prior approval, because management of such waste at unscrutinized interim status facilities ordinarily presents an unreasonable risk (45 FR 32682). To avoid a decrease in regulatory coverage, and in light of the waste contaminants' high toxicity, persistence, and potential to bioaccumulate, we are proposing to amend the RCRA regulations, except as noted below, for landfills, waste piles, surface impoundments, land treatment facilities, and incinerators, to require that these wastes be managed only at fully permitted facilities. The reasons for the unreasonable risk finding still hold. Interim status incinerators need not perform at 99.99% destruction and removal efficiencies, or meet the other performance standards contained in Subpart O of Part 264. Interim status landfills, waste piles, surface impoundments, and land treatment facilities need not meet the monitoring requirements in Subpart F or many of the design and operating standards of Subparts K, L, M, and N of Part 264 until they are permitted. In addition, we believe that any facility that manages these wastes should be evaluated individually by EPA before accepting them in order to ensure that the facility is designed and operated properly. The proposed regulation consequently prohibits interim status facilities from managing these wastes.

We have proposed three exceptions to this prohibition. The first applies to surface impoundments in which wastewater treatment sludges are generated. The Agency has the authority to prohibit interim status surface impoundments from receiving these wastes. If we propose this action, however, the facilities now generating the listed wastewater treatment sludges would probably have to close down until they obtain permits for their impoundments, or build alternative treatment facilities that can efficiently treat these wastes. The Agency is not proposing this course of action, and notes that Section 3004 of RCRA (as amended by the Solid Waste Disposal Act Amendments of 1980) specifically allows the Administrator, in setting standards for hazardous waste management facilities, to distinguish between new and existing facilities. The legislative history indicates that Congress was concerned with the costs of modifying existing wastewater treatment impoundments installed to meet Clean Water Act requirements (although the Agency has the authority to require such modification where appropriate). See S. Rep. No. 96–172, 96th Cong. 1st Sess., at 3. We are drawing this distinction in today's proposal.

Allowing these wastewater treatment sludges at interim status surface impoundments in which they are generated should be environmentally acceptable for the period until a permit is issued. These sludges are expected to contain lower concentrations of CDDs, CDFs, and chlorophenols than the other waste we are listing. The CDDs and CDFs present also will be adsorbed to the organic matter present; in addition, we believe that there should be little chance that solubilizing solvents, such as benzene, toluene, xylene, or halogenated benzenes, will be present in significant concentrations (since these solvents have very limited water solubility). This situation therefore should not present a significant risk of leaching. Risk of wind dispersal, one of the principal exposure pathways for CDD and CDF-containing wastes which are stored in open piles or disposed in landfills, is not present for these wastewater treatment sludges when they are in an impoundment.

We are not proposing to allow other interim status surface impoundments to manage these sludges, however, because other impoundments could contain CDD- or CDF-solubilizing residues from processes not related to chlorophenol or chlorophenoxy manufacture. In addition, manufacturing operations will not be curtailed if these impoundments have to obtain permits before receiving these wastes.

For all of these reasons, therefore, we are proposing to allow the listed wastewater treatment sludges to be managed at the interim status surface impoundments in which they are generated. However, we expect, as a first priority, to evaluate the Part B permit applications of those interim status surface impoundments that manage these wastes, in order to minimize any potential risk. In addition, if monitoring data, or a review of site management make it apparent that the wastes cannot be prevented from migrating, the owner or operator of the facility will be required to remove the waste from the surface impoundment.

The second exception is for interim status tank and container facilities, which will be allowed to accept these wastes. These facilities, although not providing maximum protection, do provide control of these wastes to prevent them from posing a substantial environmental hazard or an unreasonable risk since tanks or containers at interim status facilities must meet most of the requirements (*e.g.*, storage in non-leaking units, periodic inspections) required for fully permitted tank and container facilities. Therefore, these facilities should provide adequate management of these wastes in the short term. However, we do expect to give highest priority to examining the Part B permit applications of those interim status tank and container storage facilities that store these wastes, in order to minimize any potential risk.

The final exception is for enclosed waste piles. An "enclosed waste pile" is defined in this proposed rule as a pile that meets the requirements of § 264.250(c)—namely, that the pile is inside a structure that provides protection from run-on, precipitation, and wind dispersal; does not generate leachate, and does not contain free liquids. Under existing regulations, waste piles meeting these requirements are exempt from the otherwise-applicable permitting provisions of Subpart L of Part 264 relating to containment. (See 46 FR 55112, November 6, 1981.)

We are proposing that enclosed waste piles be allowed to accept these wastes without first obtaining a permit because enclosure of this type will guard in the short-term against the means of exposure of concern—run-off, wind dispersal, and leaching. In addition,

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allowing this type of interim status facility to accept these wastes should help provide management capacity until disposal facilities receive permits to manage these wastes.

We are proposing that interim status enclosed waste piles accepting these wastes still must meet the remaining applicable requirements of Subpart L of Part 265: waste analysis, special requirements for ignitable, reactive, or incompatible wastes, and closure requirements. (Post-closure requirements would not be applicable because we are assuming that these wastes will be removed from these piles.) We note, in addition, that to be eligible for interim status, the facility must have been in existence on November 19, 1980, submitted a Part A permit application, and (if required) submitted a notification of hazardous waste activity. (See § 122.23(a) and 45 FR 76636, November 19, 1980.) Enclosed piles added at interim status facilities after November 19, 1980, or accepting these wastes after that date, may be eligible for interim status provided they meet the requirements for adding waste, increasing design capacity, and (possibly) adding a new management process. (See § 122.23(c) (1), (2), and (3) (permissible changes during interim status)).

B. Management at Fully Permitted RCRA Facilities

1. *Management at fully permitted landfills, waste piles, surface impoundments, lagoons, and land treatment facilities.* Except as described in the previous sections, the storage, treatment, and disposal of these wastes will be allowed only at fully permitted RCRA landfills, surface impoundments, waste piles that are not enclosed, and land treatment facilities. Enclosed waste piles that are permitted under Part 264 would not require a waste management plan prior to accepting these wastes. (The Agency made this determination because it judged that the means of enclosure satisfies the concerns the plan would address.)

In addition, before any of these particular facilities can obtain a permit and, thus, before it can accept any of the wastes proposed to be listed today, it must have a "waste management plan" that is approved by the Regional Administrator. EPA believes that the inherent hazard of these wastes, and their mismanagement history, warrants regulatory controls on potential migration above those contained in the existing permit requirements. The management plan will be the vehicle for assuring individualized consideration that the wastes will be managed safely. The plan must be submitted by the owner or operator of the facility as part of the permit application; it must describe the potential for migration of toxicants from the site via any media, and, where migration is possible, it must address measures to be taken, over and above the applicable permitting requirement, to reduce migration of the wastes or waste constituents.

At a minimum, the proposed plan must address the volume and toxicant concentrations in the wastes to be managed at the facility, the propensity of toxicants to be emitted to the air through volatilization or as aerosols or dusts during placement of the wastes, whether toxicants may migrate from or with the wastes, whether the wastes will be co-disposed with other materials having mobilizing properties, and the potential for soils to attenuate migrating toxicants if the liner system (when one is required by the regulations) is damaged and breached. Where a potential for migration is identified, the proposed plan must identify design provisions and/or operating practices to be adopted to prevent that migration. These design and operating features are in addition to those that would otherwise be required by the regulations. For example, if the facility also disposes of dioxin solubilizing solvents, the applicant may propose to segregate the wastes to prevent contact. If leaching is possible, the applicant might propose lining the unit or mixing the waste with activated carbon, organic sorbents, or other materials designed to immobolize the migrating toxicants. Whatever is proposed by the applicant must be supported by data or a technical rationale. The Regional Administrator will evaluate whether these additional management and design features are adequate to prevent migration.

As a general matter, the additional measures required under a waste management plan will focus on control measures not currently specifically required by the Part 264 land disposal regulations. For example, the plan may include specific waste treatment processes that will reduce the likelihood that dioxin will migrate out of the unit. In addition, the plan may include a demonstration that siting factors (*e.g.*, the attenuative properties of the soil beneath the site) would operate to control migration of dioxin. In most cases, EPA does not believe that it will be necessary to impose additional structural requirements (*e.g.*, liner specifications) for the unit. The Agency intends to provide detailed guidance for the preparation of a waste management plan for managing these wastes prior to issuing this regulation in final form.

Waste management plans will be considered in the normal course of the permitting process, so that no special EPA review procedures are required.

2. *Management at fully permitted incinerators.* As stated, we also are proposing to allow incineration of these wastes only at fully permitted incinerators. It is the Agency's view that incineration often is a preferred management option for these wastes, because high temperature destorys the chlorinated dioxins and -dibenzofurans. If incineration is not properly performed, however, the original toxicants may be released undestroyed, or chlorinated -dioxins, -dibenzofurans, biphenyls, and -phenols can be formed from precursors such as chlorinated biphenyls, benzenes, and -phenols.

The proposed regulation, therefore, allows these wastes to be burned only at fully permitted RCRA incinerators which have proven capability to assure 99.99% DRE for principal organic hazardous constituents (POHCs) which are as difficult, or more difficult to incinerate than CDDs or CDFs.[15] The Agency judges that such a demonstration of DRE is sufficiently rigorous to ensure the proper management of these wastes, and therefore feels that it is not necessary to require an additional management plan for incinerator facilities treating these wastes.

3. *Management at fully permitted tank and container storage facilities.* We also have tentatively decided against requiring fully permitted tank and container storage facilities to have a waste management plan approved by the Regional Administrator, before storing these wastes. The current storage regulations provide the Agency with sufficient information to evaluate the storage facility's ability to contain these wastes. Therefore, an additional management plan for tank and container storage facilities storing these wastes appears unnecessry.

C. Other Management Options Considered for These Wastes

1. Standards for Interim Status Landfills, Waste Piles, Surface Impoundments, Land Treatment Facilities, and Incinerators. The Agency considered proposing a regulation that would allow interim status land disposal and incineration facilities to manage these wastes if they obtained prior

[15] The requirements for trial burn permits are described in 40 CFR 122.27. See also, "Guidance manual for hazardous waste incinerator permits. "U.S. EPA, Office of Solid Waste, November 1982.

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approval from the Regional Administrator. It was felt that the Agency could provide interim status facilities the same opportunities to handle these wastes as are provided to fully permitted facilities if the Agency can be assured that such management can be accomplished safely. The vehicle to be used to assure individualized consideration of prospective waste management would be a waste management plan that would address the factors outlined in the previous section as well as other design and operating conditions contained in the Part 264 regulations, as deemed appropriate by the Regional or State officials.

The procedures we considered for approving a waste management plan would be the same as, or similar to, those for approving a closure plan. They would allow for public participation on the plan submitted by the facility, and on a tentative decision (and a rationale therefor) of the Regional Administrator. The Regional Administrator could hold a public hearing if he believed it would aid in elucidating the issues.

However, the Agency believes that most interim status facilities probably could not adequately manage these wastes without significant changes. In addition, the amount and detail of information to be provided in the management plan could be almost equivalent to the information needed to obtain a permit. For example, as part of the waste management plan for incineration, the owner or operator of the incinerator would need to conduct a trial burn to ensure that destruction and removal efficiencies could be met. EPA thinks it is unlikely that interim status facilities would go to the expense of preparing and receiving approval on a plan, only to have to go through a later permit proceeding when their Part B application is processed.

However, the Agency solicits comments on the desirability of allowing disposal and treatment of these wastes at interim status facilities having an approved management plan for these wastes.

2. *Additional Standards for Container and Tank Storage Facilities.* The Agency believes that container storage facilities storing these wastes should meet the most stringent requirements under Part 264. Present regulations (Subpart I) do not require secondary containment for non-liquid wastes (*e.g*, tarry materials) if the storage area slopes, or the container is elevated. However, the Agency believes that secondary containment might appropriately be required for container storage areas that store all non-liquid CDD and CDF-contaminated wastes, due to the toxicity of these wastes, their potential to ooze and to spill, and the long time periods these wastes may be stored before a disposal or incinerator treatment facility can be found that is willing to accept these wastes. (For example, the wastes at the Vertac site have been stored for many years, despite the repeated attempts by the company to find a disposal site.) This requirement may be necessary to ensure that any spillage or release of these wastes is contained and not released into the environment. The Vertac damage incident, where improper storage of these wastes was responsible for considerable harm, serves as an example of these wastes' potential for harm if stored improperly. The Agency therefore is considering a provision that would require secondary containment at container storage facilities that store non-liquid CDD- and CDF-contaminated wastes.

The Agency is also considering a provision that would require secondary containment at tank storage facilities that store CDD- and CDF-contaminated wastes, due to the wastes' toxicity and the long periods of time they might be stored. The damage incident at Neosho, Missouri, when a concrete tank holding chlorophenol production still bottoms (a waste covered by this proposal) and wastewater cracked, and caused considerable contamination, illustrates the potential for harm that secondary containment could address. The Agency solicits comment on the suitability of these two provisions.

3. *Optional Standards Considered for Permitted Incinerators.* Under current regulations, a facility which has shown that it can achieve 99.99% DRE for POHC's which are more resistant to thermal degradation than are CDDs or CDFs (such as carbon tetrachloride or pentachlorophenol), may be permitted to incinderate CDD or CDF-containing wastes without conducting an additional trial burn or modifying its permit (40 CFR 264.342 and 264.343). Because of their hazardousness, the Agency is considering proposing that a facility burning these wastes notify the Regional Administrator of that fact. We are considering this requirement because it is felt that Regional authorities might wish to prioritize compliance monitoring for facilities incinerating these wastes.

The Agency solicits comments on the desirability of requiring notification to the Regional Administrator on the part of a facility that is burning CDD or CDF wastes.

4. *Development of Special Management Standards.* The Agency is considering the development of special management standards for CDD/CDF-contaminated wastes. For some wastes, high temperature incineration might be the preferred method of treatment, whereas for other wastes land disposal might be a better alternative. For the latter, disposal at sites having particular hydrogeological and topographic or surface water characteristics might be needed. The Agency is presently reviewing these problems, and may, for example, propose incineration standards that could require levels of destruction and removal efficiency (DRE's) for these wastes that are greater than the 99.99% DRE presently required under RCRA. For some wastes, land disposal controls ensuring the prevention of dust formation could be imposed, and for some wastes the Agency could prescribe the application of special technologies, such as photodechlorination, or molten salt or critical water oxidation, which are known to cause the destruction of chlorinated aromatics such as CDDs.

The Agency solicits comment with respect to the regulatory alternatives discussed above, as well as any other approaches which might realistically be considered.

VIII. Analytical Method for Tetra-, Penta-, and Hexachloro-Dibenzo-p-Dioxins and -Dibenzofurans

In order to assist generators in the determination of the contamination of wastes with the above compounds, (*e.g.*, for delisting purposes under §§ 260.20 and 260.22 of the RCRA regulations), the Agency is proposing a method of analysis for tetra-, penta-, and hexachlorodibenzo-*p*-dioxins and -dibenzofurans (see Appendix A). The method proposed in this regulation was largely developed by the workers at Wright State University, and has been used for the analysis of TCDDs in a variety of wastes.[19] If adopted, this method will replace the method for analysis of TCDD presently listed in the solid waste test manual ("Test Methods for Evaluating Solid Waste Physical/Chemical Methods", EPA publication number SW-846). The present method is inappropriate because it is not sufficiently sensitive, and does not sufficiently eliminate interfering substances. It also does not specify the procedure to be followed for the

[19] "Analytical protocol for determination of TCDDs in phenolic chemical wastes and soil samples obtained from the proximity of chemical dumps", and "Analytical protocol for determination of chlorinated dibenzo-*p*-dioxins and chlorinated dibenzofurans in river water", Brehm Laboratory, Wright State University, Dayton, OH 45435, January 7, 1982. These protocols are available in the Docket for this listing.

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analysis of the chlorinated dibenzofurans.

The proposed method subjects the sample to extraction with petroleum ether (waste not amenable to petroleum ether as an extractant, such as tar-like or carbonaceous wastes, will require extraction with other organic solvents, such as toluene, hexane, or dichloromethane).[20] The extract is successively washed with alkali and acid, subjected to fractionation on alumina, and the eluate is analyzed by high-resolution gas chromatography, using a capillary glass column, and by low-resolution mass spectrometry. In case of interference, the alumina eluate is subjected to further cleanup with high pressure liquid chromatography (HPLC).

The Agency has chosen the proposed method because it is the one that has been most successfully applied to chemical wastes. In addition, its originators have indicated to the Agency that it can be used for the analysis of both CDDs and CDFs.[21–24] For example, the proposed method has been used for the analysis of TCDD in chlorophenol still bottoms, reactor residues, oxidation pond sediments, cooling pond muds, contaminated soils, and sludge samples. The detection limit for TCDD established in these different matrices varied from 15 ppt (soils, 0.5 ppb (cooling pond muds), and 1 ppb (sludges) to 0.1–1300 ppb (still bottoms, highly variable). The recovery of added TCDD varied from 14–111 percent, averaging 76 percent. In incinerator stack effluents, the minimum detectable quantity was 3.8 ng for CDDs and 3.5 ng for CDFs, and the recovery of added CDDs or CDFs averaged 80 percent.

IX. Questions for Comment

The Agency welcomes public comment on all aspects of this proposed rule. However, public comment is especially solicited with respect to the following questions.

1. *Should EPA develop, for CDD or CDF-cantaining wastes, a "characteristic" definition of hazardousness under Subpart C of Section 261 of the RCRA regulations?* Instead of listing CDD/CDF-containing wastes as hazardous under Subpart D of the Part 261 regulations, EPA considered an alternative approach, namely, identifying such wastes as "characteristic" hazardous wastes under Subpart C of Part 261. This approach would oblige the Agency to make a generic determination as to the lower level of concern regarding CDD/CDF contamination, and would then require generators to either analyze or estimate the amount of CDD's or CDF's in a waste (by actual analysis or, for example, from a knowledge of reaction chemsistry, process technology, and chemical engineering principles).

The Agency judged that this approach, although at first glance appealing because of its apparent simplicity, would not be a suitable regulatory alternative. It would require that the Agency set a concentration (as in the EP hazardous waste characteristic) defining the level at which CDD's and CDF's constitute a minimum level of concern. Heretofore, EPA has not attempted to set a lower limit for the concentration of a toxicant of concern in a waste, except in a limited manner. Instead, EPA has made qualitative assessments in determining that certain wastes should be listed in the RCRA regulations because they present a potential threat to human health and the environment, if mismanaged.

Because of the high acute and chronic toxicity properties of many of the CDD's and CDF's, as evidenced in animal studies, the Agency considered that, if a lower limit of concern were to be developed it would be *very* low. Additionally, because biological availability of these toxicants is expected to be dependent on waste matrix characteristics, it was felt that a generic risk estimation for all wastes would be extremely difficult to perform. One alternative was to set the lower limit at the limit of detection of CDD's and CDF's in the waste. However, this is not a fixed concentration. As outlined above, the limit of detection is sample and matrix-dependent. Since industrial wastes are highly variable, it may not be realistic to establish generally applicable standards for the level of detection, recovery, and reproducibility for the analytical determination of CDD's and CDF's in these wastes.

Within the above limitations, the Agency could nevertheless set a lower level of concern for the concentration of CDD's and CDF's in these wastes. The Agency solicits comment on the advisability, practicality, and desirability of doing so. If a lower level of concern is to be established, at what level should it be set, and how could this level be justified?

2. *Analytical Methodology*—The Agency solicits comment on the proposed method of analysis for CDD's and CDF's; in particular, evidence that some extraction media may be more efficacious than others for particular wastes. The Agency considered whether it might be useful to develop a method of analysis that would be less detailed, and therefore less expensive, than that proposed, since a high degree of specificity with respect to isomeric content is not necessary in the present instance. For delisting purposes, for instance, it might be sufficient for a petitioner to show that a waste does not contain any CCD's or CDF's—even though, for example, dichloro- or hepta- and octachlorodioxins are present. The Agency solicits comments with respect to the usefulness, practicability, and cost, for instance, of a GC/MS analytical method which would detect *total* CDD's and CDF's at low levels in a waste in one analytical determination.

3. *Wastes resulting from manufacturing processes canducted on equipment contaminated with CDD's or CDF's*—The Agency is proposing to list as hazardous, wastes resulting from processes conducted on equipment previously used for a manufacturing process that generated CDD's or CDF's. A generator could legitimately question how this regulation can be enforced: how can they know whether the equipment in question was previously used for these processes? The Agency considers that a demonstration of historical knowledge would be deemed sufficient for this purpose (45 *FR* 32678 (May 19, 1980); see also the Listing Background Document). If historical records are not available, or inaccurate, analysis of the listed wastes on several occasions for total CDD's and CDF's would be sufficient to establish their absence. The Agency solicits comments on the appropriate historical records and time periods to be used, and the appropriate analytical detection limit to be used if historical records are not available.

4. *Identification of commercial chemical products subject to this listing.* The Agency is concerned that some users of commercial chemical products may not be able to identify which commercial chemical products contain tri-, tetra-, or pentachlorophenol, or their chlorophenoxy derivative acids, esters, and amine salts, and which, therefore, would be regulated (when discarded) as

[20] "Capabilities on methodology for the analysis of tetrachlorodibenzo-*p*-dioxin", Battelle Columbus Laboratories, Columbus, OH 43201, August 10, 1981.

[21] Dr. M. Taylor, Wright State University, to C. Gozda, U.S. EPA, Report of analytical data (December 6, 1979).

[22] Dr. T. O. Tiernan, Wright State University, to D. L. Rosengren, Viar and Company, Inc., Report on sample analyses (June 1, 1982).

[23] Dr. T. O. Tiernan, Wright State University, to L. Haas, Viar and Company, Inc., Report on sample analyses (August 6, 1982).

[24] T. O. Tiernan *et al.*, Incineration of chemical wastes containing polychlorinated biphenyl: assessment of tests conducted at Rollins Environmental Services, Deer Park, Texas, and Energy Systems Company, El Dorado, Arkansas. *In:* Detoxication of Hazardous Waste, J. H. Exner, Ed., Ann Arbor Science, 1982, pp 143–183.

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EPA Hazardous Waste Nos. F023. Although the FIFRA regulations (40 CFR 162) do require that active ingredients be identified by their chemical name or by a usual common name, and an EPA publication ("Accepted common names and chemical names for the ingredient statement on pesticide labels", EPA 540/9-7-017) is available to aid in their chemical identification, these aids may not convey sufficient information to the unsophisticated user. Non-pesticide products may also be hard to identify. Therefore, the Agency is considering various mechanisms to solve this potential problem (*i.e.*, labeling requirements for manufacturers, publishing a list of all products which contain these compounds, etc.). The Agency solicits comment on this potential problem.

5. *Wastes which may contain CDDs and CDFs but which are not covered by the present regulation.* The Agency has some data indicating that wastes, other than those covered by this proposal, may contain CDDs and CDFs. This may be the case, for instance for residuals such as fly ash from low temperature combustion of certain industrial wastes (especially of wastes containing chlorophenols, or chlorobenzenes); residuals from dichlorophenol manufacture; and sludges from wood preserving using pentachlorophenols. In the case of the first two wastes, although the Agency, on the grounds of knowledge of reaction chemistry and process technology, believes this may be the case, it lacks sufficient data to support this supposition. For this reason, studies are being conducted in order to gather more data. These wastes may be listed at a future date if further evidence demonstrates that they indeed are hazardous.

With regard to waste from wood preserving, we are presently investigating whether additional wastes from this process should be listed as hazardous, and whether CDDs and CDFs should be constituents of concern in the process wastes already listed (EPA Hazardous Waste K001, Wastewater treatment sludges). Pending completion of those studies we may take further regulatory action.

X. Economic, Environmental, and Regulatory Impacts

A. Regulatory Impact Analysis

Under Executive Order 12291, EPA must determine whether a regulation is "major" and therefore subject to the requirement of a Regulatory Impact Analysis. The effect of the present amendment is judged not to be major, since it in part replaces regulation under a different statute (Section 6(d) of the Toxic Substances Control Act), and imposes an additional regulatory burden only on three manufacturers of chlorophenols, and five manufacturers of chlorophenols and their chlorophenoxy derivatives. In addition, some number of manufacturers who use equipment that may be contaminated with CDDs or CDFs may also have additional regulatory burden. However, we presume that this part of the regulation is unlikely to affect many additional manufacturers other than the eight referred to above. In addition, this regulation imposes a regulatory burden on persons or entities discarding some unused formulations containing tri-, tetra-, or pentachlorophenol or unused formulations containing compounds derived from these phenols. The disposal of many of these formulations, however, is already regulated under § 261.33 of RCRA. Additionally, because of their inherent value, we do not believe that the regulated community will usually discard substantial quantities of these materials, further minimizing any impact.

In addition, we believe that there will be no adverse impact on the ability of U.S.-based enterprises to compete with foreign-based enterprises in domestic or export markets. Therefore, since the Agency does not expect that the proposed action will result in either an effect on the economy of $100 million or more, or an adverse impact on U.S. based enterprises, this proposed regulation is not considered to be a major action. Because this proposed amendment is not a major regulation, no Regulatory Impact Analysis has been conducted.

This amendment was submitted to the Office of Management and Budget (OMB) for review as required by Executive Order 12291. Any comments from OMB to EPA, and any EPA responses to those comments are available for public inspection in Room S-269C at EPA.

B. Regulatory Flexibility Act

Pursuant to the Regulatory Flexibility Act, 5 U.S.C. § 601 *et seq.*, whenever an agency is required to publish a general notice of rulemaking for any proposed or final rule, it must prepare and make available for public comment a regulatory flexibility analysis that describes the impact of the rule on small entities (*i.e.*, small businesses, small organizations, and small governmental jurisdictions). No regulatory flexibility analysis is required, however, if the head of the agency certifies that the rule will not have a significant economic impact on a substantial number of small entities.

Only one of the hazardous wastes proposed to be listed in § 261.31 is expected to be generated by small entities. The Agency anticipates that pesticide aerial applicators will constitute the main segment of small business entities affected by this regulation.[25] However, these persons are probably already regulated under RCRA since a large number of pesticides (both acutely hazardous and toxic) are currently covered by existing regulations. Therefore, we would not expect any aerial applicators to be newly regulated as a result of this rule. In addition, the Agency does not believe that small entities will dispose of significant quantities of the commercial chemical products proposed for regulation. Thus, today's amendment is unlikely to have a significant economic impact on a substantial number of small entities. This regulation therefore does not require a regulatory flexibility analysis.

C. Paper Reduction Act of 1980

The reporting or recordkeeping (information) provisions in this rule will be submitted for approval to the Office of Management and Budget (OMB) under Section 3504(h) of the Paperwork Reduction Act of 1980, U.S.C. 3501 *et seq.* Any final rule will explain how its reporting or recordkeeping provisions respond to any OMB or public comments.

XII. Rulemaking Record

The public docket for 40 CFR Part 775 is located in Room E-107 at the address listed for the U.S. Environmental Protection Agency in the address section of this preamble. The entire rulemaking docket for the rule being proposed today is included in the record for 40 CFR Part 775. EPA will identify the complete rulemaking record for 40 CFR part 775 on or before the date of repeal. EPA will consider any time between the publication of this notice and the date the Agency identifies the final record.

XII List of Subjects

40 CFR Part 261

Hazardous materials, Waste treatment and disposal, Recycling.

[25] Farmers may also generate some of these wastes—discarded unused formulations—however, farmers are exempt from regulation provided the waste pesticides are from their own use and are disposed of on their own farm in a manner consistent with the disposal instructions on the pesticide label. Therefore, we do not expect farmers to be severely impacted.

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40 CFR Part 264

Hazardous materials, Packaging and containers, Reporting requirements, Security measures, Surety bonds, Waste treatment and disposal.

40 CFR Part 265

Hazardous materials, Packaging and containers, Reporting requirements, Security measures, Surety bonds, Waste treatment and disposal, Water supply.

40 CFR Part 775

Environmental protection, Hazardous materials, Pesticides and pests, Waste treatment and disposal.

Dated: March 21, 1983.

John W. Hernandez,

Acting Administrator.

For the reasons set out in the preamble, it is proposed to 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 reads as follows:

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

2. In § 261.5, paragraphs (e)(1) and (e)(2) are revised to read as follows:

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

* * * * *

(e) * * *

(1) A total of one kilogram of acutely hazardous wastes listed in §§261.31, 261.32, or 261.33(e).

(2) A total of 100 kilograms of any residue or contaminated soil, waste or other debris resulting from the cleanup of a spill, into or on any land or water, of any acutely hazardous wastes listed in §§261.31, 261.32, or 261.33(e).

3. In §261.7, the introductory text of paragraphs (b)(1) and (b)(3) is revised to read as follows:

§261.7 Residues of hazardous waste in empty containers.

* * * * *

(b)(1) A container or an inner liner removed from a container that has held any hazardous waste, except a waste that is a compressed gas or that is identified as an acutely hazardous waste listed in §§261.31 261.32, or 261.33(e) of this chapter is empty if:

* * * * *

3. A container or an inner liner removed from a container that has held an acutely hazardous waste listed in §§261.31 261.32, or 261.33(e) is empty if:

* * * * *

4. In §261.31, add the following waste streams:

§261.31 Hazardous waste from nonspecific sources.

Industry and EPA hazardous waste no.	Hazardous waste	Hazard code
* * * * *		
Generic:		
F020	Wastes (except wastewater and spent carbon from hydrogen chloride purification) from the production or manufacturing use (as a reactant, chemical intermediate, or component in a formulating process) of tri-, tetra-, or pentachlorophenol, or of intermodiates used to produce their derivatives. (This listing does not include wastes from the production of Hexachlorophene from highly purified 2,4,5-trichlorophenol.	(H).
F021	Wastes (except wastewater and spent carbon from hydrogen chloride purification) from the manufacturing use (as a reactant, chemical intermediate, or component in a formulating process) of tetra-, penta-, or hexachlorobenzenes under alkaline conditions.	(H).
F022	Wastes (except wastewater and spent carbon from hydrogen chloride purification) from the production of materials on equipment previously used for the production or manufacturing use (as a reactant, chemical intermediate or component in a formulating process) of materials listed under F020 and F021..	(H).
F023	Discarded unused formulations containing tri-, tetra-, or pentachlorophenol or discarded unused formulations containing compounds derived from these chlorophenols.	(H).
* * * * *		

5. In § 261.33(f), remove the following waste streams:

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

* * * * *

Hazardous waste No.	Substance
* * * * *	
U212	2,3,4,6-Tetrachlorophenol.
U212	Phenol, 2,3,4,6-tetracholoro-.
U230	2,4,5-Trichlorophenol.
U230	Phenol, 2,4,5-trichloro-.
U231	2,4,6-Irichlorophenol.
U231	Phenol, 2,4,6-trichloro-.
U232	2,4,5-Trichlorophenoxyacetic acid.
U232	2,4,5-T.
U233	Silvex.
U233	Propionic acid, 2-(2,4,5-trichlorophenoxy)-.
U242	Pentachlorophenol.
U242	Phenol, pentachloro-.
* * * * *	

6. Amend Table I in Appendix III of Part 261, by removing the entry "chlorinated dibenzodioxins", and adding the following entries in alphabetical order:

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Appendix III—Chemical Analysis Test Methods

* * * * * * *

TABLE 1.—ANALYTICAL CHARACTERISTICS OF ORGANIC CHEMICALS

Compound	Sample handling class/fraction	Non-GC methods	Measurement techniques		
			GC/MS	Conventional	
				GC	Detector
* * *	* * *	*	*		
Chlorinated dibenzo-*p*-dioxins	Extractable/BN		8280		
Chlorinated dibenzofurans	Extractable/BN		8280		
* * *	* * *	*	*		*

7. Add the following entries in numerical order to Appendix VII of Part 261:

Appendix VII—Basis for Listing Hazardous Wastes

EPA hazardous waste No.	Hazardous constituents for which listed
* * * * *	
F020	tetra-, penta-, and hexachlorodibenzo-*p*-dioxins; tetra-, penta-, and hexachlorodibenzofurans; and tri-, tetra-, and pentachlorophenols and their chlorophenoxy derivative acids, esters, and amine salts.
F021	tetra-, penta-, and hexachlorodibenzo-*p*-dioxins; tetra-, penta-, and hexachlorodibenzofurans; and tri-, tetra-, and pentachlorophenols and their chlorophenoxy derivative acids, esters, and amine salts.
F022	tetra-, penta-, and hexachlorodibenzo-*p*-dioxins; tetra-, penta-, and hexachlorodibenzofurans; and tri-, tetra-, and pentachlorophenols and their chlorophenoxy derivative acids, esters, and amine salts.
F023	tetra-, penta-, and hexachlorodibenzo-*p*-dioxins; tetra-, penta-, and hexachlorodibenzofurans; and tri-, tetra-, and pentachlorophenols and their chlorophenoxy derivative acids, esters, and amine salts.

8. Add the following constituents in alphabetical order to Appendix VIII of Part 261:

Appendix VIII—Hazardous Constituents

* * * * *

hexachlorodibenzo-*p*-dioxins
hexachlorodibenzofurans
pentachlorodibenzo-*p*-dioxins
pentachlorodibenzofurans
tetrachlorodibenzo-*p*-dioxins
tetrachlorodibenzofurans

* * * * *

9. Appendix IX is added to Part 261 to read as follows:

Appendix IX—Method of Analysis for Chlorinated dibenzo-p-dioxins and -dibenzofurans [1 2 3 4]

Method 8280

1. Scope and Application.

1.1 This method covers the determination of chlorinated dibenzo-*p*-dioxins and chlorinated dibenzofurans in chemical wastes including still bottoms, filter aids, sludges, spent carbon, and reactor residues, and in soils.

1.2 The sensitivity of this method is dependent upon the level of interferences.

1.3 This method is recommended for use only by analysts experienced with residue analysis and skilled in mass spectral analytical techniques.

1.4 Because of the extreme toxicity of these compounds, the analyst must take necessary precautions to prevent exposure to himself, or to others, of materials known or beleved to contain CDDs or CDFs.

2. Summary of the Method.

2.1 This method is an analytical extraction cleanup procedure, and capillary column gas chromatographty-low resolution mass spectrometry method, using capillary column GC/MS conditions and internal standard techniques, which allow for the measurement of PCDDs and PCDFs in the extract.

2.2 If interferences are encountered, the method provides selected general purpose cleanup procedures to aid the analyst in their elimination.

3. Interferences.

3.1 Solvents, reagents, glassware, and other sample processing hardware may yield discrete artifacts and/or elevated baselines causing misinterpretation of gas chromatograms. All of these materials must be demonstated to be free from interferences under the conditions of the analysis by running method blanks. Specific selection of reagents and purification of solvents by distillation in all-glass systems may be required.

3.2 Interferences co-extracted from the samples will vary considerably from source to source, depending upon the diversity of the industry being sampled. PCDD is often associated with other interfering chlorinated compounds such as PCB's which may be at concentrations several orders of magnitude higher than that of PCDD. While general cleanup techniques are provided as part of this method, unique samples may require additional cleanup approaches to achieve the sensitivity stated in Table 1.

3.3 The other isomers of tetrachlorodibenzo-p-dioxin may interfere with the measurement of 2,3,7,8-TCDD. Capillary column gas chromatography is required to resolve those isomers that yield virtually identical mass fragmentation patterns.

4. Apparatus and Materials.

4.1 Sampling equipment for discrete or composite sampling.

4.1.1 Grab sample bottle—amber glass, 1-liter or 1-quart volume. French or Boston Round design is recommended. The container must be washed and solvent rinsed before use to minimize interferences.

4.1.2 Bottle caps—threaded to screw on to the sample bottles. Caps must be lined with Teflon. Solvent washed foil, used with the shiny side towards the sample, may be substituted for the Teflon if sample is not corrosive.

4.1.3 Compositing equipment—automatic or manual compositing system. No tygon or rubber tubing may be used, and the system must incorporate glass sample containers for the collection of a minimum of 250 ml. Sample containers must be kept refrigerated after sampling.

4.2 Water bath—heated, with concentric ring cover, capable of temperature control (± 2° C). The bath should be used in a hood.

4.3 Gas chromatograph/mass spectrometer data system

4.3.1 Gas chromatograph: An analytical system with a temperature-programmable gas chromatograph and all required accessories including syringes, analytical columns, and gases.

[1] This method is appropriate for the analysis of tetra-, penta-, and hexachlorinated dibenzo-*p*-dioxins and -dibenzofurans.

[2] Analytical protocol for determination of TCDDs in phenolic chemical wastes and soil samples obtained from the proximity of chemical dumps. T.O. Tiernan and M. Taylor. Brehm Laboratory, Wright State University, Dayton, OH 45435.

[3] Analytical protocol for determination of chlorinated dibenzo-*p*-dioxins and chlorinated dibenzofurans in river water. T.O. Tiernan and M. Taylor. Brehm Laboratory, Wright State University, Dayton, OH 45435.

[4] In general, the techniques that should be used to handle these materials are those which are followed for radioactive or infectious laboratory materials. Assistance in evaluating laboratory practices may be obtained from industrial hygienists and persons specializing in safe laboratory practice. Typical infectious waste incinerators are probably not satisfactory devices for disposal of materials highly contaminated with CDDs or CDFs. A laboratory planning to use these compounds should prepare a disposal plan to be reviewed and approved by EPA's Dioxin Task Force (Contact Conrad Kleveno, WH-548A, U.S. EPA, 401 M Street, S.W., Washington, D.C. 20460).

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4.3.2 Column: SP-2250 coated on a 30 m long x 0.25 mm I.D. glass column (Supelco No. 2-3714 or equivalent). Glass capillary column conditions: Helium carrier gas at 30 cm/sec linear velocity run splitless. Column temperature is 210° C.

4.3.3 Mass spectrometer: Capable of scanning from 35 to 450 amu every 1 sec or less, utilizing 70 volts (nominal) electron energy in the electron impact ionization mode and producing a mass spectrum which meets all the criteria in Table 2 when 50 ng of decafluorotriphenyl-phosphine (DFTPP) is injected through the GC inlet. The system must also be capable of selected ion monitoring (SIM) for at least 4 ions simultaneously, with a cycle time of 1 sec or less. Minimum integration time for SIM is 100 ms. Selected ion monitoring is verified by injecting .015 ng of TCDD Cl ^{37} to give a minimum signal to noise ratio of 5 to 1 at mass 320.

4.3.4 GC/MS interface: Any GC-to-MS interface that gives acceptable calibration points at 50 ng per injection for each compound of interest and achieves acceptable tuning performance criteria (see Sections 6.1-6.3) may be used. GC-to-MS interfaces constructed of all glass or glass-lined materials are recommended. Glass can be deactivated by silanizing with dichlorodimethylsilane. The interface must be capable of transporting at least 10 ng of the components of interest from the GC to the MS.

4.3.5 Data system: A computer system must be interfaced to the mass spectrometer. The system must allow the continuous acquisition and storage on machine-readable media of all mass spectra obtained throughout the duration of the chromatographic program. The computer must have software that can search any GC/MS data file for ions of a specific mass and that can plot such ion abundances versus time or scan number. This type of plot is defined as an Extracted Ion Current Profile (EICP). Software must also be able to integrate the abundance, in any EICP, between specified time or scan number limits.

4.4 Pipettes-Disposable, Pasteur, 150 mm long x 5 mm ID (Fisher Scientific Co., No. 13-678-6A or equivalent).

4.5 Flint glass bottle (Teflon-lined screw cap).

4.6 Reacti-vital (silanized) (Pierce Chemical Co.).

5. Reagents.

5.1 Potassium hydroxide-(ACS), 2 percent in distilled water.

5.2 Sulfuric acid-(ACS), concentrated.

5.3 Methylene chloride, hexane, benzene, petroleum ether, methanol, tetradecane-pesticide quality or equivalent.

5.4 Stock standards in a glovebox, prepare stock standard solutions of TCDD and C1-TCDD (molecular weight 328). The stock solutions are stored in a glovebox, and checked frequently for signs of degradation or evaporation, especially just prior to the preparation of working standards.

5.5 Alumina-basic, Woelm; 80/200 mesh. Before use activate overnight at 600°C, cool to room temperature in a dessicator.

5.6 Prepurified nitrogen gas.

6.0 Calibration.

6.1 Before using any cleanup procedure, the analyst must process a series of calibration standards through the procedure to validate elution patterns and the absence of interferences from reagents.

6.2 Prepare GC/MS calibration standards for the internal standard technique that will allow for measurement of relative response factors of at least three TCDD/^{37}C1-TCDD and TCDF/^{37}C1-TCDF ratios.[6] The ^{37}C1-TCDD/F concentration in the standard should be fixed and selected to yield a reproducible response at the most sensitive setting of the mass spectrometer.

6.3 Assemble the necessary GC/MS apparatus and establish operating parameters equivalent to those indicated in Section 11.1 of this method. Calibrate the GC/MS system according to Eichelberger, et al. (1975) by the use of decafluorotriphenyl phosphine (DFTPP). By injecting calibration standards, establish the response factors for CDDs *vs.* ^{37}C1-TCDF. The detection limit provided in Table 1 should be verified by injecting .015 ng of ^{37}C1-TCDD which should give a minimum signal to noise ratio of 5 to 1 at mass 320.

7. Quality Control.

7.1 Before processing any samples, the analyst should demonstrate through the analysis of a distilled water method blank, that all glassware and reagents are interference-free. Each time a set of samples is extracted or there is a change in reagents, a method blank should be processed as a safeguard against laboratory contamination.

7.2 Standard quality assurance practices must be used with this method. Field replicates must be collected to validate the precision of the sampling technique. Laboratory replicates must be analyzed to validate the precision of the analysis. Fortified samples must be analyzed to establish the assuracy of the analysis.

8. Sample Collection, Preservation, and Handling.

8.1 Grab and composite samples must be collected in glass containers. Conventional sampling practices should be followed, except that the bottle must not be prewashed with sample before collection. Composite samples should be collected in glass containers in accordance with the requirements of the RCRA program. Sampling equipment must be free of tygon and other potential sources of contamination.

8.2 The samples must be iced or refrigerated from the time of collection until extraction. Chemical preservatives should not be used in the field unless more than 24 hours will elapse before delivery to the laboratory. If an aqueous sample is taken and the sample will not be extracted within 49 hours of collection, the sample should be adjusted to a pH range of 6.0-8.0 with sodium hydroxide or sulfuric acid.

8.3 All samples must be extracted with 7 days and completely analyzed within 30 days of collection.

9. *Extraction and Cleanup Procedures.*

9.1 Use an aliquot of 1-10 g sample of the chemical waste or soil to be analyzed. Soils should be dried using a stream of prepurified nitrogen and pulverized in a ball-mill or similar device. Transfer the sample to a tared 125 ml flint glass bottle (Teflon-lined screw cap) and determine the weight of the sample. Add an appropriate quantity of ^{37}C1-labelled 2,3,7,8-TCDD (adjust the quantity according to the required minimum detectable concentration), which is employed as an internal standard.

9.2 Extraction.

9.2.1 Extract chemical waste samples by adding 10 ml methanol, 40 ml petroleum ether, 50 ml doubly distilled water, and then shaking the mixture for 2 minutes. Tars should be completely dissolved in any of the recommended neat solvents. Activated carbon samples must be extracted with benzene using method 3540 in SW-846 (Test Methods for Evaluating Solid Waste—Physical/Chemical Methods, available from G.P.O. Stock #055-002-81001-2). Quantitatively transfer the organic extract or dissolved sample to a clean 250 ml flint glass bottle (Teflon lined screw cap), add 50 ml doubly distilled water and shake for 2 minutes. Discard the aqueous layer and proceed with Step 9.3.

9.2.2 Extract soil samples by adding 40 ml of petroleum ether to the sample, and then shaking for 20 minutes. Quantitatively transfer the organic extract to a clean 250 ml flint glass bottle (Teflon-lined screw cap), add 50 ml doubly distilled water and shake for 2 minutes. Discard the aqueous layer and proceed with Step 9.3.

9.3 Wash the organic layer with 50 ml of 20% aqueous potassium hydroxide by shaking for 10 minutes and then remove and discard the aqueous layer.

9.4 Wash the organic layer with 50 ml of doubly distilled water by shaking for 2 minutes and discard the aqueous layer.

9.5 Cautiously add 50 ml concentrated sulfuric acid and shake for 10 minutes. Allow the mixture to stand until layers separate (approximately 10 minutes), and remove and discard the acid layer. Repeat acid washing until no color is visible in the acid layer.

9.6 Add 50 ml of doubly distilled water to the organic extract and shake for 2 minutes. Remove and discard the aqueous layer and dry the organic layer by adding 10g of anhydrous sodium sulfate.

9.7 Concentrate the extract to incipient dryness by heating in a 50° C water bath and simultaneously flowing a stream of prepurified nitrogen over the extract. Quantitatively transfer the residue to an alumina microcolumn fabricated as follows:

9.7.1 Cut off the top section of a 10 ml disposable Pyrex pipette at the 4.0 ml mark and insert a plug of silanized glass wool into the tip of the lower portion of the pipette.

9.7.2 Add 2.8g of Woelm basic alumina (previously activated at 600° C overnight and then cooled to room temperature in a desiccator just prior to use).

[6] ^{37}C1-labelled TCDD and TCDF are available from K.O.R. Isotopes, Cambridge, MA. Proper standardization requires the use of a specific labelled isomer for each congener to be determined. However, the only labelled isomers readily available are ^{37}C1-2,3,7,8-TCDD and ^{37}C1-2,3,7,8-TCDF. This method therefore uses these isomers as surrogates for the CDDs and CDFs. When labelled CDDs and CDFs are available, their use will be required.

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9.8 Elute the microcolumn with 10 ml of 3% methylene chloride-in-hexane followed by 15 ml of 20% methylene chloride-in-hexane and discard these effluents. Elute the column with 15 ml of 50% methylene chloride-in-hexane and concentrate this effluent (55° C water bath, stream of prepurified nitogren) to about 0.3–0.5 ml.

9.9. Quantitatively transfer the residue (using methylene chloride to rinse the container) to a silanized Reacti-Vial (Pierce Chemical Co.). Evaporate, using a stream of prepurified nitrogen, almost to dryness, rinse the walls of the vessel with approximately 0.5 ml methylene chloride, evaporate just to dryness, and tightly cap the vial. Store the vial at 5°C until analysis, at which time the sample is reconstituted by the addition of tridecane.

9.10 Approximately 1 hour before GC–MS (HRGC–LRMS) analysis, dilute the residue in the micro-reaction vessel with an appropriate quantity of tridecane. Gently swirl the tridecane on the lower portion of the vessel to ensure dissolution of the CDDs and CDFs. Analyze a sample by GC/EC to provide insight into the complexity of the problem, and to determine the manner in which the mass spectrometer should be used. Inject an appropriate aliquot of the sample into the GC–MS instrument, using a syringe.

9.11 If, upon preliminary GC–MS analysis, the sample appears to contain interfering substances which obscure the analyses for CDDs and CDFs, high performance liquid chromatographic (HPLC) cleanup of the extract is accomplished, prior to further GC–MS analysis.

10. HPLC Cleanup Procedure.

10.1 Place approximately 2 ml of hexane in a 50 ml flint glass sample bottle fitted with a Teflon-lined cap.

10.2 At the appropriate retention time, position sample bottle to collect the required fraction.

10.3 Add 2 ml of 5% (w/v) sodium carbonate to the sample fraction collected and shake for one minute.

10.4 Quantitatively remove the hexane layer (top layer) and transfer to a micro-reaction vessel.

10.5 Concentrate the fraction to dryness and retain for further analysis.

11. GC/MS Analysis

11.1 The following column conditions are recommended: Glass capillary column conditions: SP–2250 coated on a 30 m long × 0.25 mm I.D. glass column (Supelco No. 2–3714, or equivalent) with helium carrier gas at 30 cm/sec linear velocity, run splitless. Column temperature is 210°C. Under these conditions the retention time for TCDDs is about 9.5 minutes. Calibrate the system daily with, a minimum, three injections of standard mixtures.

11.2 Calculate response factors for standards relative to ^{37}Cl–TCDD/F (see Section 12).

11.3 Analyze samples with selected ion monitoring of at least two ions from Table 3. Proof of the presence of CDD or CDF exists if the following conditions are met:

11.3.1 The retention time of the peak in the sample must match that in the standard, within the performance specifications of the analytical system.

11.3.2 The ratio of ions must agree within 10% with that of the standard.

11.3.3 The retention time of the peak maximum for the ions of interest must exactly match that of the peak.

11.4 Quantitate the CDD and CDF peaks from the response relative to the ^{37}Cl-TCDD/F internal standards. Recovery of the internal standard should be greater than 50 percent.

11.5 If a response is obtained for the appropriate set of ions, but is outside the expected ratio, a co-eluting impurity may be suspected. In this case, another set of ions characteristic of the CDD/CDF molecules should be analyzed. For TCDD a good choice of ions is m/e 257 and m/e 259. For TCDF a good choice of ions is m/e 241 and 243. These ions are useful in characterizing the molecular structure of TCDD or TCDF. For analysis of TCDD good analytical technique would require using all four ions, m/e 257, 320, 322, 328, to verify detection and signal to noise ratio of 5 to 1. Suspected impurities such as DDE, DDD, or PCB residues can be confirmed by checking for their major fragments. These materials can be removed by the cleanup columns. Failure to meet criteria should be explained in the report or the sample reanalyzed.

11.6 If broad background interference restricts the sensitivity of the GC/MS analysis, the analyst should employ cleanup procedures and reanalyze by GC/MS.

11.7. In those circumstances where these procedures do not yield a definitive conclusion, the use of high resolution mass spectrometry is suggested.

12. Calculations

12.1 Determine the concentration of individual compounds according to the formula:

$$\text{Concentration, ug/ gm} = \frac{A \times A_s}{G \times A_{is} \times R_f}$$

Where:

A = ug of internal standard added to the sample.[6]

G = gm of sample extracted

A_s = area of characteristic ion of the compound being quantified

A_{is} = area of characteristic ion of the internal standard

R_f = response factor

Response factors are calculated using data obtained from the analysis of standards according to the formula:

$$Rf = \frac{A_s \times C_{is}}{A_{is} \times C_s}$$

[6] The proper amount of standard to be used is determined from the calibration curve (See Section 6.0).

Where:

C_{is} = concentration of the internal standard

C_s = concentration of the standard compound

12.2 Report results in micrograms per gram without correction for recovery data When duplicate and spiked samples are analyzed, all data obtained should be reported.

12.3 Accuracy and Precision. No data are available at this time.

TABLE 1—Gas Chromatography of TCDD.

Column	Retention time (min.)	Detection limit (ug/kg) [1]
Glass Capillary	9.5	0.003

[1] Detection limit for liquid samples is 0.003 ug/l. This is calculated from the minimum detectable GC response being equal to five times the GC background noise assuming a 1 ml effective final volume of the 1 liter sample extract, and a GC injection of 5 microliters. Detection levels apply to both electron capture and GC/MS detection. For further details see 44 *FR* 69526 (December 3, 1979).

TABLE 2.—DFTPP KEY IONS AND ION ABUNDANCE CRITERIA [1]

Mass	Ion abundance criteria
51	30 to 60 percent of mass 198.
68	Less than 2 percent of mass 69.
70	Do.
127	40 to 60 percent of mass 198.
197	Less than 1 percent of mass 198.
198	Base peak, 100 percent relative abundance.
199	5 to 9 percent of mass 198.
275	10 to 30 percent of mass 198.
365	Greater than 1 percent of mass 198.
441	Present but less than mass 443.
442	Greater than 40 percent of mass 198.
443	17 to 23 percent of mass 442.

[1] J. W. Eichelberger, L. E. Harris, and W. L. Budde. 1975. Reference compound to calibrate ion abundance measurement in gas chromatography-mass spectrometry. Analytical Chemistry 47:995.

TABLE 3.—LIST OF ACCURATE MASSES MONITORED USING GC SELECTED-ION MONITORING, LOW RESOLUTION, MASS SPECTROMETRY FOR SIMULTANEOUS DETERMINATION OF TETRA-, PENTA-, AND HEXACHLORINATED DIBENZO-*p*-Dioxins and Dibenzofurans

Class of chlorinated dibenzodioxin or dibenzofuran	Number of chlorine substituents (x)	Monitored M/z for dibenzofurans $C_{12}H_{8-x}OCl_x$	Monitored m/z for dibenzodioxins $C_{12}H_{8-x}O_2Cl_x$	Approximate theoretical ratio expected on Basis of isotopic abundance
Tetra	4	[1]319.897	[1]303.902	0.74
		[2] 321.894	321.899	1.00
		[2]327.885		
		[3]256.933		.21
		[3]258.930		.20
Penta	5	[1]353.858	[1]337.863	.57
		355.855	339.860	1.00
Hexa	6	389.816	373.821	1.00
		391.813	375.818	.87

[1] Molecular ion peak.

[2] Cl_4—labelled standard peaks.

[3] Ions which can be monitored in TCDD analyses for confirmation purposes.

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

10. The authority citation for Part 264 reads as follows:

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

11. In Subpart K of Part 264, add the following § 264.231:

§ 264.231 Special requirements for hazardous wastes F020, F021, F022, and F023.

(a) Hazardous Wastes F020, F021, F033, and F023 must not be placed in a surface impoundment unless the owner or operator operates the surface impoundment in accordance with a management plan for these wastes that is approved by the Regional Administrator pursuant to the standards set out in this paragraph, and in accord with all other applicable requirements of this Part. The factors to be considered are:

(1) the volume, physical, and chemical characteristics of the wastes, including their potential to migrate through soil or to volatilize or escape into the atmosphere;

(2) the attenuative properties of underlying and surrounding soils or other materials;

(3) the mobilizing properties of other materials co-disposed with these wastes;

(4) the effectiveness of additional treatment, design, or monitoring techniques.

(b) The Regional Administrator may determine that additional design, operating, and monitoring requirements are necessary for surface impoundments managing hazardous wastes F020, F021, F022, and F023 in order to reduce the possibility of migration of these wastes to ground water, surface water, or air so as to protect human health and the environment.

12. In Subpart L of Part 264, add the following § 264.259:

§ 264.259 Special requirements for hazardous wastes F020, F021, F022, and F023.

(a) Hazardous Wastes F020, F021, F022, and F023 must not be placed in waste piles that are not enclosed (as defined in § 264.250(c)) unless the owner or operator operates the waste pile in accordance with a management plan for these wastes that is approved by the Regional Administrator pursuant to the standards set out in this paragraph, and in accord with all other applicable requirements of this Part. The factors to be considered are:

(1) the volume, physical, and chemical characteristics of the wastes, including their potential to migrate through soil or to volatilize or escape into the atmosphere;

(2) the attenuative properties of underlying and surrounding soils, or other materials;

(3) the mobilizing properties of other materials co-disposed with these wastes;

(4) the effectiveness of additional treatment, design, or monitoring techniques.

(b) The Regional Administrator may determine that additional design, operating, and monitoring requirements are necessary for piles managing hazardous wastes F020, F021, F022, and F023 in order to reduce the possibility of migration of these wastes to ground water, surface water, or air so as to protect human health and the environment.

13. In Subpart M of Part 264, add the following § 264.283:

§ 264.283 Special requirements for hazardous wastes F020, F021, F022, and F023.

(a) Hazardous wastes F020, F021, F022, and F023 must not be placed in a land treatment facility unless the owner or operator operates the facility in accordance with a management plan for these wastes that is approved by the Regional Administrator pursuant to the standards set out in this paragraph, and in accord with all other applicable requirements of the Part. The factors to be considered are:

(1) the volume, physical, and chemical characteristics of the wastes, including their potential to migrate through soil or to volatilize or escape into the atmosphere;

(2) the attenuative properties of underlying and surrounding soils or other materials;

(3) the mobilizing properties of other materials co-disposed with these wastes;

(4) the effectiveness of additional treatment, design, or monitoring techniques.

(b) The Regional Administrator may determine that additional design, operating, and monitoring requirements are necessary for land treatment facilities managing hazardous wastes F020, F021, F022, and F023 in order to reduce the possibility of migration of these wastes to ground water, surface water, or air so as to protect human health and the environment.

14. In Subpart N of Part 264, add the following § 264.317:

§ 264.317 Special requirements for hazardous wastes F020, F021, F022, and F023.

(a) Hazardous wastes F020, F021, F022, and F023 must not be placed in landfills unless the owner or operator operates the landfill in accordance with a management plan for these wastes that is approved by the Regional Administrator pursuant to the standards set out in this paragraph, and in accord with all other applicable requirements of this Part. The factors to be considered are:

(1) the volume, physical, and chemical characteristics of the wastes, including their potential to migrate through the soil or to volatilize or escape into the atmosphere;

(2) the attenuative properties of underlying and surrounding soils or other materials;

(3) the mobilizing properties of other materials co-disposed with these wastes;

(4) the effectiveness of additional treatment, design, or monitoring requirements.

(b) The Regional Administrator may determine that additional design, operating, and monitoring requirements are necessary for landfills managing hazardous wastes F020, F021, F022, and F023 in order to reduce the possibility of migration of these wastes to ground water, surface water, or air so as to protect human health and the environment.

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

15. The authority citation for Part 265 reads as follows:

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

16. § 265.1 is amended by adding paragraph (d).

§ 265.1 Purpose, scope and applicability.

* * * * *

(d) The following hazardous wastes must not be managed at facilities subject to regulation under this Part.

(1) EPA Hazardous Waste Nos. F020, F021, F022, and F023 unless:

(i) The waste is generated in a surface impoundment as part of the plant's wastewater treatment system.

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(ii) The waste is stored in tanks or containers.

(iii) The waste is stored or treated in waste piles that meet the requirements of § 264.250(c) as well as all other applicable requirements of Subpart L of this Part.

PART 775 [REMOVED]

17. The authority citation for Part 775 reads as follows:

Authority. Sec. 6 of the Toxic Substances Control Act (TSCA) Pub. L. 94–469, 90 Stat. 2020 [15 U.S.C. 2605].

18. Title 40 is amended by removing Part 775.

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