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Part III

Environmental Protection Agency

Allegations That Chemical Substances
Cause Significant Adverse Reactions to
Health or the Environment;
Recordkeeping and Reporting Procedures

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ENVIRONMENTAL PROTECTION AGENCY

40 CFR Part 717

[OFTS-83001B; TSHFRL 2378-7]

Records and Reports of Allegations That Chemical Substances Cause Significant Adverse Reactions to Health or the Environment; Recordkeeping and Reporting Procedures

AGENCY: Environmental Protection Agency (EPA).

ACTION: Final rule.

SUMMARY: This rule implements section 8(c) of the Toxic Substances Control Act (TSCA). The rule requires manufacturers and certain processors of chemical substances and mixtures to keep records of significant adverse reactions to health or the environment alleged to have been caused by a substance or mixture. EPA may also inspect and require reporting of such records.

EFFECTIVE DATE: 30 days after OMB provides the Control Number but no sooner than September 21, 1983.

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SUPPLEMENTARY INFORMATION:

I. Introduction

Section 8(c) of the Toxic Substances Control Act requires that "any person who manufactures, processes, or distributes in commerce any chemical substance or mixture" must keep "records of significant adverse reactions to health or the environment, as determined by the Administrator by rule, alleged to have been caused by the substance or mixture." Section 8(c) requires that allegations of adverse reactions to the health of employees be kept for 30 years, and all other allegations be kept for five years. EPA may inspect these records and require submission of copies of such records. EPA proposed a rule to implement section 8(c) of TSCA, which was published in the Federal Register of July 11, 1980 (45 FR 47008). Approximately 160 written comments were received on the proposal and public meetings were held in Washington, D.C., Newark, N.J., and Houston, Texas.

This preamble explains the final rule's provisions and addresses by topic the

changes made from the proposal. A separate document titled "Responses to Individual Comments" presents EPA's responses to individual, substantive comments. This document is available to the public in the administrative record of this rulemaking.

After considering the comments, the Agency in this final rule has changed certain provisions of the proposed rule, clarified others and significantly reduced the number of firms subject to recordkeeping and reporting provisions as proposed. These changes will improve the quality and accessibility of records kept and will focus the recordkeeping responsibility on those firms generally recognized to be part of the chemical industry.

A. Purpose of the Rule

The rule defines "significant adverse reactions" to chemical substances and mixtures and establishes a system of recordkeeping and reporting that will:

1. Create a historical record of significant adverse reactions alleged to have been caused by substance or mixture. EPA can examine such records whenever a chemical is discovered to present possible risks to human health or the environment.

2. Provide a means to identify previously unknown chemical hazards and to reveal patterns of adverse effects that might otherwise either not be noticed or go undetected for long periods of time.

B. Outline of Rule Provisions

Key provisions of the final rule are as follows:

1. The definition of "significant adverse reactions" places an increased emphasis on reactions that impair normal activities of humans or other organisms in the environment. Reactions that are "known human effects" do not have to be recorded. Also exempt from recording are environmental reactions directly attributable to spills or other incidents that have been reported to the Federal government.

2. Firms subject to the rule include manufacturers of chemical substances. Such manufacturers are also responsible for collecting allegations relating to their processing activities and distribution in commerce activities. Processors, that are not also manufacturers, are subject to the rule if they are engaged in activities described in Standard Industrial Classification (SIC) codes 28 or 2911.

3. A retailer is exempt from this rule unless it is also a manufacturer or a processor subject to the rule. A firm whose sole activity is the distribution of chemical substances, (i.e., a distributor that is not also a manufacturer or a

processor) is exempt. Also exempt are manufacturers or manufacturing sites whose only activity involves mining or other extractive industry functions.

4. Firms are required to keep written and signed allegations. A firm must also record an oral allegation unless the firm requests the allee to submit the allegation in writing.

5. Records of allegations received at any applicable plant site are to be kept at the company's headquarters or at a location central to its chemical operations.

6. No automatic reporting provision is included in the rule. Required reporting of any records kept under this rule will be by letter or by notice in the Federal Register.

II. Significant Adverse Reactions

A. Proposed Definition and Comments

The key element in this regulation is the definition of significant adverse reactions. The objective of the definition is to establish a file of significant adverse reactions that can be useful in finding unexpected or unrecognized problems.

The core of the definition of significant adverse reactions in the proposed rule read as follows:

Significant adverse reactions are reactions that may indicate a tendency of a chemical substance or mixture to cause long-lasting or irreversible damage to health or the environment * * *.

The proposed definition then listed certain examples or "indicators" of both health and environmental effects that should be considered significant.

The human health indicators in the proposed definition further defined "significant" as a function of the reaction's duration or persistence after cessation of exposure. But, the proposal specifically attempted to avoid requiring recordkeeping of "one-time" reactions. Therefore, a reaction that did not persist beyond the period of exposure would be considered significant only if it were experienced repeatedly upon exposure. These indicators were developed in response to the following language in the Conference Report on section 8(c) of TSCA:

The seriousness, duration, and the frequency of reactions should be taken into account in establishing what constitutes a significant adverse reaction. For example, if an individual reports that a chemical substance causes his or her eyes to become inflamed and to tear, such reaction may be attributed to an isolated allergic reaction. However, if several persons report a similar reaction, then the reaction may indeed be significant. Because the ultimate significance of adverse reactions is difficult to predict, the

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conferees intend that the requirement to retain records err on the side of safety. Some very serious neurological disorders, for instance, at first present what appear to be trifling symptoms. (Toxic Substances Control Act, Conference Report, H.R. Rep. No. 94-1879, 94th Cong., 2d Sess. 81 (1976).)

Indicators of significant environmental reactions centered on gradual or sudden changes in the composition of plant or animal life in an area.

The Agency received a substantial number of comments on the definition of significant adverse reactions. A majority of the comments from chemical companies and industry groups criticized the definition as being too vague or too broad to be useful, targeting the phrase "may indicate a tendency" as the major cause of this ambiguity. There was also criticism that the human health indicators did not accomplish the purpose of eliminating the recording of one-time effects. The concepts of duration of the reaction or persistence beyond cessation of exposure were also criticized, especially because examples such as headache or nausea were used. Comments from industry claimed that such reactions are common in workers and not usually associated with effects of a long-lasting or irreversible nature, either actual or potential. These commenters recommended, instead, that the concept of serious impairment of normal activities be included in the definition; they also favored eliminating the human health indicators. On the other hand, environmental and labor groups criticized the proposed definition as being too restrictive. These commenters stated that this definition of health effects should be broadened to include serious one-time, short-lived, or reversible effects. In addition, these commenters objected to requiring recordkeepers to make a preliminary judgment about the long-lasting or irreversible nature of reported reactions.

Commenters also disagreed with regard to the environmental indicators. Certain commenters wanted them eliminated. They claimed that many of the indicators could reflect adverse effects caused by natural or seasonal changes (e.g. fish kills due to natural algal blooms) which might be wrongly ascribed to a substance, effluent, or process. However, environmental groups commented that the environmental indicators were not broad enough because they did not include damage to microbial life or the abiotic environment—air, soil, water, or man-made or man-modified structures.

B. The Final Definition

After careful consideration of the comments, the Agency made certain modifications in the structure, emphasis, and application of the definition of significant adverse reactions.

The final definition reads as follows:

Significant adverse reactions are reactions that may indicate a substantial impairment of normal activities, or long-lasting or irreversible damage to health or the environment.

The Agency agreed with comments that the definition needs to state more directly the Agency's concept of what adverse reactions are significant. Toward this end the Agency removed from the definition the modifying phrase "a tendency of a chemical substance or mixture to cause". In its place the definition contains a second descriptor of what is (or may be) significant, "a substantial impairment of normal activities". The Agency believes that these changes add clarity and give the final definition an additional dimension not possessed by the proposed definition. In terms of human health the concept of a substantial impairment of normal activities will, of course, encompass physically manifest damage, such as cancer, an organ dysfunction, a birth defect, or a neurological disorder. But, it can also include subjectively experienced adverse reactions that may not be physically verifiable but may presage a more serious effect. A substantial impairment of normal activities can also be an adverse environmental effect, e.g. reduced reproductive capabilities of a species, reduced agricultural productivity, or adverse behavioral alterations as observed by the allegor.

Recordkeepers must exercise a substantial amount of judgment when comparing allegations received (i.e. the stated adverse reaction within the allegation) to this definition. Therefore, the definition retains the qualifier "may indicate" in order to require recordkeepers to consider for inclusion in the file those reactions of an apparently less serious nature that could point toward a future or more serious, underlying effect. In this way EPA is satisfying the intent of Congress that "records err on the side of safety".

C. Reactions That Must Be Recorded

The Agency has removed the indicators of human health and environmental reactions from the definition of significant adverse reaction and modified them for use in a new section of the regulation—§ 717.12. Significant adverse reactions that must be recorded.

Paragraph (a) of § 717.12 lists four groups of reactions to human health. These are intended to provide examples of the range of reactions that should be considered "significant" and, thus, recorded. These types of reactions include:

1. Long-lasting or irreversible damage, such as cancer or birth defects.
2. Partial or complete impairment of bodily functions, such as reproductive disorders, neurological disorders, or blood disorders.
3. An impairment of normal activities which is experienced by all or most of the persons exposed at one time.
4. An impairment of normal activities which is experienced each time an individual is exposed.

It is not difficult to classify physically manifest reactions such as cancer, birth defects or reproductive disorders as significant adverse reactions. These reactions meet the criteria of long-lasting or irreversible damage, or impairment of normal activities.

It is more difficult to classify those reactions of an apparently less serious nature that may be indicators of future problems. The Agency cannot predict and list in this regulation all such reactions. Therefore, reactions covered by 3. and 4. above include two criteria. First, they involve an effect that impairs normal activities, which can include both job and non-job related activities. Second, these effects are repeatable. That is, effects have been experienced by a group of people (even if it involves only one incident), or the effect has been experienced by one person several times and such reaction involves the same chemical substance, mixture, process, or effluent. These recordable reactions may at first appear to be open-ended. However, as explained later in this preamble, the Agency has included a conditional exemption of known human effects. This exemption will, therefore, place a certain limitation upon the recordable nature of reactions that may fall into groups 3. and 4. above.

Environmental reactions that must be recorded are outlined in paragraph (c) of § 717.12. They are, for the most part, similar in wording to the environmental indicators in the proposal. However, the Agency did agree with comments that changes in the composition of fungal and microbial life in an area can signal the presence of a significant adverse ecological condition. Therefore, language has been added to the regulation to ensure that effects on these organisms are not ignored.

Also the Agency agreed with comments that long-lasting or irreversible contamination of the

physical environment, especially in the case of a ground water resource, is a significant adverse reaction to the environment that should be recorded. Contamination of physical environmental resources, especially those portions with a limited self-cleansing capability, can have unavoidable consequences for the dependent biota. Therefore the Agency believes that requiring companies to keep such allegations could alert both them and the Agency to previously undetected contamination or unexpected consequences of existing effluents. Any duplication or overlap with reports of spills or other incidents already reported to the Federal government will be avoided through an exemption discussed later in this preamble.

D. Exempting Known Human Effects

In connection with the definition itself, another major comment by many companies and industry groups promoted the concept of exempting "known effects" from the recordkeeping requirements of the rule. Commenters claimed that such an exemption would be the most effective way of supporting one of the purposes of the rule—the identification of previously unknown chemical hazards. The exemption of known effects, they asserted, would keep the section 8(c) files from becoming filled with information about reactions to substances that are already well characterized in the scientific literature or in reports to the Agency. Also, such an exemption would prevent duplicative recordkeeping. It would be consistent with similar provisions in the Agency's TSCA section 8(e) policy statement (43 FR 11110) and the enforcement policy statement regarding section 6(a)(2) of the Federal Insecticide, Fungicide and Rodenticide Act (FIFRA) (44 FR 40716).

After consideration of these comments, the Agency has determined that it is in keeping with the purpose of the rule to exempt known human effects from the recordkeeping requirements. The definition of known human effects (§ 717.3(c)) covers commonly recognized human health effects resulting from exposure to a substance as described in the scientific literature, in product labeling, or in material safety data sheets. However, the exemption would not apply if the reaction was a significantly more toxic effect than previously reported, or if the reaction resulted from a lower exposure level, a shorter exposure period, or a different exposure route than previously reported.

It must be emphasized that this exclusion applies strictly to effects observed in or known to occur in

humans. Results of *in vitro* testing or animal testing related to the substance in question may not be considered the equivalent of a known human effect. For example, a company cannot decide to exclude from their records an allegation that a substance caused sterility in a worker solely because the scientific literature contains studies showing that the substance caused sterility in laboratory animals.

E. Exemption From Recording Environmental Effects

Commenters asserted that the Agency should exempt known environmental effects in the same way as known human effects. If the Agency were to allow such an exemption, we would want to apply similar caveats to it as are applied to the known human effects exemption. There are several differences, however. Allegations of adverse human health effects relate to one species and, often, will involve workers within a contained workplace where levels and types of exposure can be readily observed or quantified and compared with the literature. There are, however, many more variables involved in the case of environmental reactions. The problem becomes one of trying to fit an instance of environmental damage with reports in the literature. One would almost have to have a perfect match-up with the species of animals or plants affected, levels of exposure (if known) and numerous other variables in order to satisfy the caveats in the definition and reach a point where the exemption could be properly applied. Take, for example, a case in which an allegation states that use of substance x has adversely affected birds and certain livestock. If the literature cites only adverse effects of substance x on birds, then the exemption could not be applied because the effect on livestock is not also described.

However, an exemption from recording certain environmental reactions is included in paragraph (d) of § 717.12. This exemption is based more on the problem of duplication of recordkeeping and reporting requirements than it is on whether the reaction is "known" in the literature. A significant adverse reaction to the environment would not have to be recorded if the alleged cause is directly attributable to an incident of environmental contamination that has already been reported to the Federal government under any applicable authority.

III. Appropriate Allegations and Recordable Reactions

A. Written and Oral Allegations

The Agency received considerable comment about the appropriate format and content of allegations that must ultimately be recorded. One specific issue involved oral allegations. Most companies commenting opposed the concept of being required to record oral allegations. Their basic position is that if an allegation contains information of specific concern, that it is fair to require that it be written down and signed. Environmental groups and labor unions commented that the Agency should require recording of oral allegations, especially in the case of employees. Their contention was that a worker would be much more inclined to relate a problem orally to a supervisor than to commit such allegations to writing. However, one union representative was opposed to oral allegations because they would be transcribed by the company, with no review by the alleege.

EPA agrees that a written and signed allegation is a superior type of allegation to deal with under this rule. It expresses the circumstances of the significant adverse reaction in the alleege's own words. The fact that it is written and signed also attests to the alleege's own seriousness of concern about the reaction. However, the Agency is also concerned about the potential consequences of a criterion that would recognize only written allegations. The Agency would in no way intend that such a requirement become an excuse for ignoring problems brought to a company's attention orally.

Consequently, both written and oral allegations are subject to the rule. A company must take one of two actions with respect to oral allegations. It must transcribe the oral allegation into written form, or it must inform the alleege that his allegation may be recordable under this rule and request that he submit a written and signed allegation. It then becomes the responsibility of the alleege to provide the company with the allegation in written form. If the alleege does not respond to the company's request for a written allegation then the company is not obligated to take any further steps. By taking one of the two actions outlined above a firm will satisfy EPA's concern that the firm recognize oral allegations and take steps to consider such allegations for ultimate inclusion in their section 8(c) file.

A final point concerns which company official(s) shall be responsible for recognizing and dealing with oral

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allegations. Commenters were opposed to having such company officials designated by rule, arguing that such a decision should be left up to the individual firms. EPA agrees that the company is in the best position to determine which of their officials shall be responsible for handling oral allegations. However, the Agency does want to make clear that it expects companies to educate their line supervisory personnel regarding oral allegations so that a worker who wishes to make such allegation does not have to seek out some unknown or far removed company official in order to have his allegation heard.

B. The Reaction's Cause

Another issue involved the stated cause of the reaction. The allegation must clearly state the alleged cause of the adverse reaction by naming or identifying one or more of the following: (1) a specific chemical substance or mixture (2) an article containing a substance (3) a company process or operation involving a substance, or (4) an effluent, emission, or other site

discharge. Commenters objected to allegations being allowed to cite articles, processes or emissions, but the Agency retained these criteria because in many cases a worker, consumer, or plant neighbor may not know the name of a specific chemical or mixture that is the perceived cause of a reaction.

C. Alleger Feedback

EPA is not requiring firms to set up a formal allegor feedback program. However, the Agency strongly encourages firms to inform allegers regarding the ultimate disposition of their allegations. The Agency is aware that many firms have voluntarily developed such a feedback mechanism in connection with section 8(e) of TSCA. We encourage firms to implement similar practices of communication with persons submitting allegations that may be recordable under this rule.

D. Recordable Reactions

A firm may keep in its file any allegation received. However, a firm must at a minimum keep records of significant adverse reactions of the type

outlined in § 717.12—Significant adverse reactions that must be recorded.

The criteria for both human health and environmental reactions have been discussed in Unit II of this preamble, along with the exemptions of known human effects and the exclusion for environmental reactions that have resulted from incidents previously reported to the Federal government.

In summary, all allegations received by a firm may not necessarily be recordable. The allegation must meet certain criteria of form and content. Then, the reaction cited must meet the definition of a significant adverse reaction and not be subject to the exemptions in § 717.12. A final factor, which will be discussed in detail in the next unit of this preamble, is that firms subject to the rule are required to collect (i.e. consider for recordkeeping) allegations only from certain chemical processing operations that they own or control.

E. Hypothetical Examples

The following hypothetical examples are presented in order to help illustrate the rule's provisions.

Hypothetical Examples

Fact situation	Recordable under section 8(c)?	Comment
(1) Several workers submit a report claiming that working around the chemical W gave them "blue lips."	No	"Blue lips" or methemoglobinemia is a known human effect of exposure to chemical W at the level and route of exposure experienced by the workers.
(2) One worker writes that whenever he is required to work around chemical W he has experienced severe nose bleeds.	Yes	Nose bleeds are not a commonly recognized reaction to chemical W exposure. The reaction is experienced each time the individual is exposed.
(3) A worker writes that on several occasions when he has worked with chemical X he has experienced tingling fingers and nausea. The literature states that these reactions are known to occur at exposure levels above 100 parts per million in the workplace air. However, the plant monitoring records show that levels of chemical X in the air do not exceed 20 parts per million.	Yes	Even though the reported reaction is a "known human effect" the worker seems to be repeatedly experiencing the reaction at a much lower exposure level than existing information indicates.
(4) On a day when the temperature was 98°F, a plant neighbor calls the company to complain that something in the air is making him sick. A company official asks that the allegation be submitted in writing but nothing is subsequently received.	No	The company chose to ask the allegor to submit this oral allegation in writing. Since nothing was received, no further action by the company is required.
(5) A farmer writes to a chemical plant that his farm pond seems to have become contaminated from the company's waste disposal facility located adjacent to his property. The farmer alleges that his cattle, whose only water source is this pond, have experienced several stillbirths and one case of deformed hooves. Sampling records of test wells at the facility showed no significant level of leachate.	Yes	The report cites reproductive disorders or birth defects in livestock alleged to have been caused by a "discharge" from a disposal facility. This may represent a hitherto undetected problem of environmental contamination.
(6) After beginning work on a new process involving chlorinated compounds, a worker alleged that she contracted painful sores on her face that lasted several days, causing her to miss work.	Yes	Even though an apparent on-time occurrence, the reaction was a substantial impairment of normal activities. Also, the reaction is suggestive of chloracne, an indicator of a potentially more serious effect.
(7) The family of a long-time company employee writes that they believe the employee's lung cancer was caused by his many years of work around chemical Y. The company health records show that the employee did not evidence adverse symptoms during his employment but he did smoke cigarettes. Chemical Y is, however, a suspected human carcinogen.	Yes	Even though chemical Y is a suspected human carcinogen the report cannot be excluded on this basis. Further, it cannot be excluded on the supposition that smoking was the sole cause of the cancer or that it may have enhanced the carcinogenic properties of chemical Y. The company may, however, place in the file evidence of the smoking as a potential mitigating factor.
(8) A consumer writes that she got a skin rash the first time she used the company's new detergent.	No	There is no evidence that the rash occurred repeatedly or that the product was used more than once. Also, there was no indication that the rash was an impairment of the consumer's normal activities.
(9) A consumer writes that even with proper ventilation (recommended), he got dizzy and nauseous the three times he used the company's furniture finish remover.	Yes	The repeated nature of the reaction makes it recordable along with the fact that the reaction was an apparent impairment of normal activities. The reaction apparently is not a "known human effect" under the exposure conditions associated with use in accordance with the product's labeling.
(10) A neighbor of a chemical plant writes that on May 15 he saw numerous dead fish as well as an oily film covering the water downstream from the plant. On May 13 the plant had experienced a ruptured wastewater pipe that allowed concentrated waste to enter the river. The spill was duly reported to the state and to EPA.	No	The environmental reaction appears to be directly attributable to an incident of environmental contamination already reported to EPA.

IV. Who Is Subject to the Rule

The proposed rule covered all manufacturers, processors, and distributors of chemical substances and

mixtures. The Agency proposed to exempt retailers unless they were also a manufacturer or processor.

The Agency had to consider a number of factors in determining who should be

subject to the final rule. First, there is the statutory language and Congressional intent. Section 8(c) states that "any person who manufactures, processes or distributes in commerce

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any chemical substance or mixture shall maintain records . . . Congress clearly intended for such recordkeeping requirements to be comprehensive and to encompass firms engaged in the production and the major distribution activities of the chemical industry.

However, during the development of the proposal it became apparent that there are many thousands of firms that can distribute or process a chemical substance in addition to those firms that are commonly associated with the chemical industry.

The Agency also considered for whom the section 8(c) records would have the most immediate value. Certainly, the records will be valuable to the Agency as it investigates specific substances or classes of substances. But, more importantly perhaps, the recordkeeping requirements will become an early warning system for companies regarding previously unrecognized problems with their products or processes. The question then becomes, "for which firms will these allegations have the most meaning?" The Agency believes that recordkeeping responsibility should be concentrated in the hands of those firms that will have the greatest ability and the most incentive to take corrective or preventive action with respect to a potentially harmful substance or mixture.

A. Manufacturers Subject to the Rule

The Agency has determined that this final rule shall apply to all persons who manufacture chemical substances, except for a narrow category as outlined in B. of this unit. More specifically, the rule applies to firms that manufacture, import, or produce any amount of a chemical substance or mixture for the purpose of obtaining an immediate or eventual commercial advantage.

The manufacturer category is the broadest category of firms subject to the rule. Certainly, most of these manufacturers will be companies primarily engaged in activities described in the Standard Industrial Classification (SIC) Major Group 28—Chemicals and Allied Products or SIC 2911—Petroleum Refining. However, numerous other firms produce, manufacture, or import chemicals. These firms may classify themselves in a primary SIC code other than in SIC 28 or 2911. This fact was made clear during reporting for the TSCA Inventory of Chemical Substances.

Therefore, a firm should review activities at all its plant sites to determine whether any chemical production, manufacture, or importation occurs. If so, such firm is subject to this rule as manufacturer, regardless of the

primary SIC code under which it reports for the purposes of the periodic census.

As a manufacturer subject to this rule, a firm has the obvious responsibility to collect allegations regarding substances it manufactures. However, this firm must also collect allegations regarding certain chemical processing and distribution activities it may carry out. Therefore, the Agency believes that it is important to outline for manufacturers their comprehensive responsibilities for collecting allegations. This will be especially important direction for large, multi-industry firms.

A manufacturer must collect:

1. Any allegation identifying a chemical substance it manufactures (this includes, of course, any allegation identifying a company process or operation—see unit III. B. of this preamble and section 717.10 of the rule).
2. Any allegation identifying any of its own processing or distribution in commerce activities with respect to any chemical it manufactures.
3. Any allegation identifying emissions, effluents, or other discharges from activities described above (again, see unit III. B. of this preamble).

Note that a manufacturer is responsible for any of its processing or distribution activities involving any chemical it manufactures. For any other chemical or mixture it may process, the company is treated just like any other person who processes chemicals manufactured by someone else. See unit C. regarding processors subject to this rule.

B. Manufacturers Not Subject to the Rule

The Agency has decided to exclude certain manufacturers and sites of manufacture from the requirements of this rule. Exempt are firms or sites whose sole business activities can be classified within the "extractive" industry. More specifically, exempt firms or sites are those whose sole business activities are to mine mineral ores, to extract petroleum or natural gas, to quarry non-metallic minerals (including extraction of salts from seawater or brines), to mine or otherwise extract coal, or to separate gases from the atmosphere. Firms or sites primarily engaged in activities of the type listed within SIC Division B—Mining, or SIC 2813—Industrial Gases, may be exempt from the requirements of this rule. By sole business activity the Agency means that no further processing or refinement of the extracted material occurs at the site. Such further processing or refinement is considered manufacturing subject to this rule. For example, the mining of oil shale

ore is not subject to this rule but the retorting of the ore to produce shale oil is manufacturing subject to this rule.

This exemption is an administrative decision that is in part an outgrowth of the Agency's experience with the TSCA section 8(a) Preliminary Assessment Information rule (47 FR 26992). Persons who manufacture chemicals listed in that rule are required to report certain production-related information to the Agency. However, the rule exempts those who produce the substances only as part of mined substances of undefined or variable composition. Coverage by that rule begins with persons who process or refine the complex mixtures to produce a listed substance.

Technically, the act of extracting ore from the earth is "production" of a chemical substance. However, EPA considers that it would be both an inappropriate and an excessive regulatory burden to make the firms or sites solely engaged in extractive activities subject to the recordkeeping and reporting provisions of this rule. Several factors contributed to this decision.

First, the inclusion of firms in the extractive industry would affect many thousands of businesses, most of which are small, independent operations. Bureau of the Census statistics indicate that there are 22,358 firms in SIC Division B—Mining, a figure that is more than double the total number of firms that the Agency estimates will be subject to the rule as chemical manufacturers and processors. Census data show that of the total number of firms, approximately 21,000 are single unit operations that in total account for only 14 percent of sales within this industry group.

Second, the vast majority of substances produced by the extractive industry are substances that have been produced for many years. Consequently, a substantial volume of information has developed in the scientific and medical literature regarding the adverse effects of mined materials on health and the environment. This statement about such known effects is not meant to downplay the seriousness of occupational diseases such as black lung or asbestosis. It only means that, because these are known effects, they would not appear in a company's section 8(c) file were such firm subject to the rule. Therefore, the Agency considers it unreasonable to subject firms in the extractive industry to an additional recordkeeping requirement that may never see an entry.

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Third, the Agency considers that for the purposes of this rule other federal regulatory activities adequately oversee occurrences of occupational illness within the extractive industry. Mine operators are currently required to keep records and to report instances of occupational injury and illness to the Mine Safety and Health Administration (30 CFR Subchapter M, Part 50). Producers of oil and natural gas are subject to similar regulations administered by the Occupational Safety and Health Administration.

Fourth, this exemption will not mean a loss of recordable allegations regarding extracted materials or the inability to obtain specific information as required. The Agency realizes that not all adverse effects of currently extracted materials may be known. It is also possible that previously undeveloped natural resources (e.g. oil shale) could present risks to health and the environment. However, any recordable significant adverse reactions to extracted materials are also likely to occur (perhaps even more likely to occur) during further processing or refinement steps. As stated above, such further processing or refinement is subject to this rule. Also, if necessary, the Agency can require reporting on specific substances by persons in the extractive industry under authority of TSCA section 8(a).

Finally, even though firms in the extractive industry may be exempt from this rule, they are still subject to the substantial risk notification requirements of TSCA section 8(e). This provision requires reporting of information that reasonably supports the conclusion of substantial risk of injury to health or the environment. The Agency has received submissions from mining concerns under section 8(e) and we expect this type of reporting activity to continue.

C. Processors Subject to the Rule

There are two types of processors subject to this rule.

If a company is processing a chemical it manufactures, that company must collect allegations on any of its processing or distribution in commerce activities involving that chemical. See A of this unit.

If a company is processing a chemical it does not manufacture, that company must collect allegations involving that chemical only for those activities described in Standard Industrial Classification (SIC) Major Group 28—Chemicals and Allied Products, or SIC code 2911—Petroleum Refining. It also must collect allegations relating to any further processing or distribution in

commerce of any products resulting from such processing activities.

Thus, a firm that processes chemical substances but that is not a manufacturer can be subject to this rule. However, the Agency has decided to limit the applicability of the rule where this type of processor is concerned. The Agency has concluded that the best approach is to concentrate the recordkeeping responsibility with those firms that have at least one plant site engaged in activities within the mainstream of the chemical industry. The Agency believes that such processors are likely to be among the firms that have the greatest stake in recording and if appropriate, taking positive or corrective action with respect to allegations received. The Agency feels that by focusing the recordkeeping responsibility with these processors the rule enhances the concept of product stewardship, a growing practice within the chemical industry that continually assesses the potential health and safety risks of substances at each stage from development through disposal.

Again, the Agency considers it necessary to outline for processors subject to this rule their specific responsibility regarding collection of allegations. Such processors must collect:

1. Any allegation identifying any chemical substance, mixture, or article resulting only from processing activities as described in SIC 28 or SIC 2911, or identifying the operations involved in making such products (see unit III. B. of this preamble and § 717.10 of the rule).

2. Any allegation identifying any of its own further processing or distribution in commerce activities of the products described in 1. above.

3. Any allegation identifying emissions, effluents, or other discharges from activities described above.

Note that if a company is not a manufacturer of a chemical substance, but is only a processor, it is only required to collect allegations relating to products resulting from activities described in SIC codes 28 and 2911. A processor subject to this rule is not required to collect allegations involving substances it does not produce. For example, an allegation specifically involving a mixture component bought from some other company does not have to be collected (although allegations involving the processing of the component or the new product created would be collected by the processor). As with manufacturers, the Agency believes that processors have a strong incentive to forward allegations on a mixture component to the supplier of

that component. The Agency strongly encourages this passback activity.

At this juncture, the Agency wishes to make clear two very important points relating to processing operations and the use of SIC codes in this preamble and rule. First, when a company is deciding whether it is "engaged in activities described" in SIC codes, it must refer to the descriptions that appear after each four digit code. The company should not rely solely on the listing of substances that appears after the descriptions. These descriptions are generic in nature and refer to the production of categories of chemicals, mixtures, or other chemical products. It is quite possible that a company may be processing chemicals to produce a substance or product that does not specifically appear in the list of substances that follows the generic description. However, the company's activities would be subject to categories contained in the generic description.

The second point is that terms used in the SIC codes are not necessarily the same as those used in this rule. For the purpose of this rule, the TSCA definitions of "manufacture" and "process" apply. Activities described in SIC codes 28 and 2911 are categorized by the SIC system as "manufacturing." This term is broader than the TSCA definition of manufacture and encompasses activities referred to as "processing" under this rule. For example, a company referred to under SIC code 2851 as engaged in the activity of manufacturing paints is, for the purposes of this rule, a processor of the chemicals used to make the paints. Thus, it is subject to this rule as a chemical "processor" engaged in an activity described in SIC code 28. (The company is also a mixture manufacturer under TSCA definitions.) Accordingly, section 717.5(c) of the rule provides that where there is a conflict between the SIC code use of a term and the definition of that term in this rule, the rule definition applies.

D. Processors Not Subject to the Rule

A processor, who is not also a manufacturer, is not subject to this rule if none of the sites it owns or controls is engaged in activities described in SIC 28 or SIC 2911. The TSCA definition of processor is such that tens of thousands of firms could be made subject to recordkeeping responsibilities of section 8(c). For example, a shoemaker that applies a dye to shoes is, technically, a processor because of the incorporation of that chemical dye into an article for distribution in commerce. Likewise, a

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hardware store that adds a pigment to premixed paint is a processor.

Such "processing" permeates the economy. To include firms engaged in activities of this nature under the rule would create a vast recordkeeping requirement. The economic analysis for the proposed rule estimated that some 543,000 establishments outside of SIC 28 or 2911 could be made subject to this rule as processors. Requiring these establishments to collect allegations would be an administrative nightmare. Further, the public health concerns of section 8(c) would not be harmed by excluding these establishments because they would have a strong incentive to refer complaints about chemicals they "process" to the suppliers of those chemicals—firms that are likely to be subject to this rule.

In this final rulemaking the Agency did consider making such "other" processors subject but with an alternative compliance method. The purpose would be to promote the passback of allegations to those required to maintain records. In brief, such firms could be required to record allegations or they could discharge this responsibility by forwarding such allegations to their supplier. This would be similar to the alternative compliance mechanism for distributors as outlined in the proposed rule.

After evaluating this alternative compliance method the Agency has determined that such a requirement could actually inhibit allegation passback as much as it could enhance it. If this regulatory requirement were imposed, such firms may take the path of least resistance to satisfy the requirement. Basically, it would be less of an administrative burden to file automatically any complaint or allegation received than it would be to evaluate the allegation, determine to whom such allegation should be sent and do the paperwork, including keeping a copy of all this correspondence. Added to these considerations is the fact that subjecting these numerous processors to an alternative compliance method is still adding substantially to the overall burden of the rule.

As a result, the Agency is not implementing an alternative compliance method for processors solely engaged in processing activities outside of SIC 28 and 2911. The Agency is not ruling out the future implementation of such a provision. However, EPA prefers at this time to support the concept of product stewardship as previously discussed. We strongly encourage those manufacturers and processors that are subject to the rule to educate their customers regarding TSCA section 8(c),

and to stress the importance of passing back any potentially recordable allegations.

E. Retailer and Sole Distributor Exemptions

As defined by the rule, a retailer is a person who distributes in commerce a chemical substance, mixture, or article to ultimate purchasers who are not commercial entities. The proposed rule exempted retailers, unless such firms were already subject to the rule as a manufacturer or a processor. This exemption of retailers is retained in the final rule and is expanded to exempt other companies whose sole function is to distribute chemical substances. By sole function the Agency means that such company is not also a manufacturer or processor subject to this rule. For example, a "distributor" who repackages chemical substances is actually "processing for commercial purposes" and, therefore, is a processor. Sole distributors may include wholesale distributors of chemicals as classified in SIC 5161—Chemicals and Allied Products, SIC 5171—Petroleum Bulk Stations and Terminals, and SIC 5172—Petroleum and Petroleum Products Wholesalers.

As stated in the proposed rule, retailers are exempt because the potential for retail employees being exposed is limited, since they generally handle packaged products. Also, highly developed communications exist between retailers and their suppliers regarding consumer complaints. Another factor is that the large number of such retail firms would create a highly dispersed records situation that would not serve one of the purposes of this rule, i.e., the ability to detect patterns of adverse effects. EPA requested comment on whether retailers should be made subject to the rule but no comments convinced the Agency that such inclusion would make the rule substantially more effective.

There are a number of reasons why the exemption should be expanded to include all sole distributors.

First, the incidence of recordable allegations made to such firms is likely to be very low. As commenters have pointed out, the same rationale for exempting retailers could be applied to wholesale distributors. That is, the potential for worker exposure is minimized because the workers normally handle packaged or containerized substances.

Second, wholesale distributors receive few customer or consumer-type allegations, and any that are received are forwarded to the manufacturer or other supplier. This point was made

clear by the economic analysis for the proposed rule to implement section 16(b) of the Consumer Product Safety Act (see item 21 of the public record).

Third, exempting these sole distributors from the rule does not necessarily create a gap in Federal government information gathering regarding adverse reactions to human health or the environment. The Agency believes that warehousing accidents and accidental spills related to transporting chemicals are likely to be the major causes of adverse reactions to distributor employees, or the environment. Thus, these incidents would be verified events and are not likely to be the subject of allegation. They would be recordable in many cases under the Occupational Safety and Health Act, or reportable to EPA or to the Department of Transportation/ U.S. Coast Guard under one of several authorities. However, if an employee of a distributor alleges that normal handling of a certain substance caused a repeated adverse reaction, then the affected person can submit an allegation to the substance's manufacturer. The distributor can also make such an allegation on behalf of its employees.

The Agency proposed an alternative compliance method for distributors similar to the alternative compliance method considered for "other" processors (see D. above). Under this proposal, distributors would be required to keep allegations or they could discharge that responsibility by forwarding such allegations to the appropriate manufacturer or processor. It appears, as explained earlier, that such an alternative compliance method could actually be counterproductive. Also, it is the standard business practice of such distributors to forward complaints to their suppliers. Therefore, the Agency has concluded that imposition of an alternative compliance method is unnecessary.

F. Standard Industrial Classification (SIC) System

The Agency is using the Standard Industrial Classification (SIC) system to help firms determine whether or not they may be subject to this rule. The Bureau of the Census within the U.S. Department of Commerce currently has responsibility for the SIC system. Among other important functions, these SIC codes are a standard reference for categorizing basic business activities throughout the U.S. economy.

Detailed descriptions of substances or business activities as they relate to certain SIC codes are given in the Standard Industrial Classification

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Manual, 1972 available from the U.S. Government Printing Office, Washington, D.C., 20402—stock number 4101-0066, and the 1977 Supplement—stock number 003-005-0176-0. Information regarding the SIC system may also be obtained through the regional offices of the Bureau of the Census, U.S. Department of Commerce.

V. Recordkeeping Requirements

There are two basic differences between the proposed and final rule regarding recordkeeping requirements. First, records are to be located at the company's headquarters or at any other appropriate location central to their chemical operations rather than being kept at each plant site. The Agency agreed with comments stating that centralized recordkeeping would be more efficient for a company and would have a greater potential to exhibit patterns of adverse reactions. In addition, such centralized recordkeeping will allow more efficient inspections of records by the Agency.

Second, the Agency is not including a specific form to be used for either recordkeeping or reporting. The Agency agreed with comments that the firms subject to the rule should be allowed to keep information in a format of their own choosing so long as the required information is present.

The following required information must be readily accessible under this rule as the allegation record:

1. The original allegation as received.
2. An abstract of the allegation and other pertinent information as follows:
 - a. The name and address of the plant site that received the allegation.
 - b. The date the allegation was received.
 - c. The implicated substance, mixture, article, company process or operation, or site effluent, emission or other discharge.
 - d. A description of the alleged (e.g., company employee, individual consumer, plant neighbors, etc.). If the allegation involves a health effect, the sex and year of birth of the affected individual should be recorded, if ascertainable.
 - e. A description of the health effect(s). The description must relate how the health effects became known and the route of exposure, if explained in the allegation.
 - f. A description of the environmental effect(s), identifying the affected plant and/or animal species, or contaminated portion of the environment.
3. The results of any self-initiated investigation of the allegation. The regulation does not require a company to perform any investigation in

connection with allegations received. However, if a company chooses to investigate the circumstances of an allegation, then the results of that investigation must be included in the record.

4. Copies of any further required reports or records relating to the allegation. If a company is required to keep any other record or make any other report relating to the allegation (e.g., Occupational Safety and Health Administration Form 101), then a copy of that record or report must also be placed in the file. This does not include internal records or reports developed or maintained by a company except as provided above.

Allegation records are to be readily accessible according to the alleged cause of the significant adverse reaction. Therefore allegations must be filed according to chemical identity, or one of the following if the chemical is not named: mixture identity, article identity, company process or operation, or site effluent, emission or other discharge.

The statute requires that records of adverse reactions to the health of employees shall be retained for a period of 30 years from the date such reactions were first reported to or known by the person maintaining such records. The Agency interprets this provision to require firms subject to the rule to retain all such employee health-related allegations, whether or not the allegation was submitted by that firm's own employee.

For example, an employee of firm A can submit an allegation to firm B regarding B's chemical that he handles in his own workplace. This is an allegation relating to the health of an employee and, in the Agency's view, such allegation must be retained for 30 years by the producer of the substance in question. Other allegations such as from consumers or those relating to environmental reactions must be retained for a period of five years.

Firms are not required to incorporate existing records (i.e., allegations or similar complaints on file before the effective date of this rule) into their section 8(c) records. Allegations subject to this rule are those received on or after the effective date of this rule. However, the Agency encourages firms to correlate any allegations subject to this rule with their existing records so that any patterns of adverse reactions can be identified at the earliest possible stage.

VI. Inspection and Reporting Requirements

Section 8(c) of TSCA states that upon request of any duly designated

representative of the Administrator, each person who is required to keep records shall permit the inspection of such records and shall submit copies of such records.

A. Inspections

The inspection of section 8(c) records will serve three purposes. First, this records inspection will be a means of monitoring basic compliance with the rule. Agency compliance monitoring staff will conduct inspections of TSCA section 8(c) records on a routine basis. Records for selected chemicals or industry segments also will be inspected on a case-by-case basis. Along with required reporting discussed below, inspections of section 8(c) records will be used to carry out one of the basic purposes of the rule, the identification of patterns of adverse effects. Information obtained during inspections will be correlated with information the Agency obtains through other inspections, reports required under sections 8(d) and 8(e) of TSCA, and other information in the Agency's possession.

The third purpose of inspections is to aid in the evaluation of the rule itself. The Agency intends to do an ongoing evaluation of the rule (see Unit IX) since section 8(c) requires long-term maintenance of unique information.

Comments on the proposed rule expressed concern that the rule did not provide adequate procedural safeguards. Inspections under this rule will be done in full compliance with the requirements of section 11 of TSCA.

B. Reporting

The preamble of the proposed rule discussed the inclusion of an automatic reporting system. Under this proposal, a company would be required to forward records to the Agency if it recorded three or more allegations in one year regarding the same substance.

The Agency received a considerable amount of comment on the issue of automatic reporting. Environmental and labor groups generally supported the concept of automatic reporting as a means to detect patterns of adverse effects. Some wanted the reporting trigger made more stringent, e.g., if three similar allegations were accumulated over a period of three to five years, rather than one year.

Comments received from chemical companies and industry groups opposed automatic reporting. They pointed toward the increased burden such a requirement would place upon recordkeepers. Commenters claimed that, due to the unsubstantiated nature of allegations, such a system would

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flood the Agency with information of questionable quality and usefulness. If any type of automatic reporting system were to be promulgated, companies much preferred submission of an annual statistical summary of allegations—an alternative discussed in the preamble of the proposal.

After having considered the many comments received, the Agency has decided not to institute an automatic reporting provision at this time. The Agency has concluded that it is not feasible to design an appropriate automatic reporting system until we can determine what kinds of records are being kept under the rule and in what volume.

This does not mean, however, that information placed in a section 8(c) file will languish until such file may be inspected. First, the Agency expects that the accumulation of several similar allegations may contribute to the development of a notification of substantial risk as required by TSCA section 8(c). The Agency has received section 8(e) notices where allegations from workers or customers served as the first indication of a possible problem. Along with subsequently developed test data, these allegations formed part of the information that gave the company a reasonable basis to conclude that their product could pose a substantial risk of injury to health or the environment. The agency believes that the formalization of allegation recordkeeping by this rule will heighten a company's awareness of potential problems with their products and that these allegation records will not exist in a vacuum.

Second, the Agency will use reporting authority under section 8(c) to call in records that may relate to substances or classes of substances already under review. Such substances may be the specific recommendations of the Interagency Testing Committee or those that enter the Agency's evaluation process via other avenues such as section 8(c) submissions. For example, if a company submits a section 8(e) notice on a substance that is also produced by several other firms, it would be valuable to know if those other firms have allegations on file regarding that same substance.

The rule provides that when reporting of records is required, firms will be notified by letter or by a notice in the Federal Register.

VII. Confidentiality

When firms are required to submit records of allegations, they may assert a claim of business confidentiality for all or part of the information in those records. Any information covered by a

claim will be disclosed by EPA only to the extent, and by means of the procedures, set forth in 40 CFR Part 2.

Any claims of confidentiality must be made at the time of submission, as provided in 40 CFR 2.203(a)(2) and in the manner specified in § 717.17 of this regulation. This rule requires submission of two copies of allegation records—one copy indicating what information is claimed as confidential and a second copy in which this confidential information has been deleted. EPA will presumptively consider failure to submit the second copy as a waiver of the confidentiality claim. However, EPA will notify respondents who claim parts of records confidential that they did not submit the required second copy. This provision affords such persons the opportunity to correct errors within 30 days.

Many commenters objected to providing substantiation of confidentiality claims at the time that records of allegations are submitted to the Agency. They asserted that such substantiation is burdensome and only necessary if the allegation becomes subject to a Freedom of Information Act (FOIA) request. After considering these comments the Agency has concluded that a requirement for "up-front" substantiation is not necessary.

However, the claim must still be explained briefly at the time of submission indicating the reason for omitting certain facts in the allegation, e.g., that a worker's exposure to the substance in question during a certain processing step "reveals confidential process information." The Agency believes that this brief statement is necessary because EPA needs some understanding of the claims to have a basis for initial denial or granting of FOIA requests and to protect the information. This decision is consistent with confidentiality requirements of the TSCA section 8(d) rule (47 FR 38780, 40 CFR Part 716—Subpart A) for reporting unpublished health and safety studies and the TSCA section 8(e) policy statement (43 FR 11110) regarding notices of substantial risk.

VIII. Economic Impact

Commenters were critical of the estimates and methodology of the economic analysis published in conjunction with the proposed rule. Many said that the analysis grossly underestimated the cost of review, handle, and report allegations given the breadth of the proposed rule. Also, no estimate made of "start-up" costs, i.e., cost to set up a file system and train responsible personnel in the disposition of section 8(c) notices.

The economic analysis for the final rule takes into consideration several basic changes from the proposed rule, e.g., the reduced number of firms subject to the rule and no automatic reporting provision. It includes a first year industry-wide administrative (start-up) cost estimate of approximately \$15 million. This cost includes establishment of a file system, training appropriate company officials, and educating workers regarding the rule's provisions. The estimates for the amount of time and cost for reviewing and processing individual allegations have also been reevaluated. The ongoing annual cost to industry for processing and filing allegations under the rule is estimated to be between \$1.4 million and \$2.1 million.

A separate document titled "Economic Impact Analysis of the TSCA Section 8(c) Significant Adverse Reaction Recordkeeping Rule" explains in more detail the estimated costs and administrative burdens of this rule. This document is available to the public in the public record of this rulemaking.

IX. Records Evaluation

After enough time has elapsed for the accumulation of some records (approximately 12-18 months from the rule's effective date) the Agency plans to inspect a representative sample of records maintained by both manufacturers and processors in different size categories. A survey of companies' experiences with the rule may also be part of this evaluation. The objective of this evaluation will be to determine the quality and quantity of records being maintained and whether the rule as currently written meets its stated objectives.

For example, one area of concern will be whether or not to retain the "known effects" exemption. The Agency will be interested in how often and in what kinds of cases the known effects exemption was applied. The Agency will look to see whether this exemption will have the effect commenters project that it will have, i.e., preventing the company's section 8(c) file from being filled with commonly occurring or well known adverse effects of substances. However, an adverse reaction must first pass the test of being "significant" before it is filed. Therefore, the Agency may wish to revisit the question of whether it would, in the long run, also be valuable to have a record of such significant adverse reaction allegations even if they are "known effects".

Also, the Agency may reconsider the need for such an exemption if, in the companies' experience, the exemption was seldom applicable or proved to be

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more resource intensive to apply than simply filing any significant adverse reaction allegation received.

If this evaluation indicates a need to expand or reduce the requirements of this rule EPA will initiate appropriate procedures to modify the rule.

X. Public Record

EPA has established a public record for this rulemaking (ducket number OPTS 83001). The record, along with a complete index, is available for inspection from 8:00 a.m. to 4:00 p.m., Monday through Friday, except legal holidays, in the OPTS Reading Room, Rm. E-107, 401 M St., SW., Washington, D.C. 20460. This record includes basic information that the Agency considered in developing this rule. The record includes the following documents:

1. This final rule.
2. The document "Economic Impact Analysis of TSCA Section 8(c) Significant Adverse Reactions Recordkeeping Rule."
3. Final rule concept paper.
4. Minutes of the Administrator's Toxic Substances Advisory Committee (ATSAC) meetings of July 8, 1982, and September 9, 1982, at which issues related to the above concept paper were discussed.
5. ATSAC comments and recommendation on the approach to the final TSCA 8(c) rule.
6. Letters to ATSAC from the Chemical Manufacturers Association (September 8, 1982) and the National Paints and Coatings Association (September 9, 1982).
7. The proposed rule.
8. All comments on the proposed rule.
9. Written summaries of telephone comments on the proposed rule.
10. Transcripts of public meetings on the proposed rule held in Washington, D.C., Newark, N.J., and Houston, Texas.
11. The document titled "Responses to Individual Comments on the TSCA Section 8(c) Rule" which supplements this preamble and provides responses to substantive individual comments on the proposed rule.
12. The Advance Notice of Proposed Rulemaking published in the Federal Register on March 11, 1977 (42 FR 13579).
13. All comments on that Advance Notice.
14. A draft of the proposed rule, dated October 12, 1978, sent to selected industry, labor, and public interest groups.
15. All letters of transmittal sent with that draft, and comments received on it.
16. Minutes of a November 13, 1978, meeting with industry and special

interest groups to discuss the TSCA section 8(c) draft rule.

17. "Notification of Substantial Risk Under Section 8(e)," March 16, 1978 (43 FR 11110).

18. Occupational Safety and Health Administration regulations on "Recording and Reporting Occupational Injuries and Illnesses" (29 CFR Part 1904), and forms revised in 1978.

19. Consumer Product Safety Commission proposed reporting requirements regarding recordkeeping of consumer product safety complaints, November 3, 1977 (42 FR 57642).

20. Consumer Product Safety Commission interpretation of policy for "Reports of Substantial Product Hazards," August 7, 1978 (43 FR 34988).

21. "Final Report on the Economic Impact of Proposed Recordkeeping Rules to Deputy Associate Executive Directorate for Economic Analysis, U.S. Consumer Product Safety Commission," Battelle, Columbus, Ohio, March 19, 1979.

22. Minutes of an August 15, 1979, meeting with industry and special interest groups to discuss the TSCA section 8(c) draft rule.

23. Any comments received from the Office of Management and Budget during its review of this rule regarding compliance with the Paperwork Reduction Act or Executive Order 12291 and any EPA response to those comments.

24. Miscellaneous Agency comments, corrections, and correspondence relating to the rule.

EPA requests that persons who believe there are any errors or omissions in the Public Record notify the Agency within 30 days of the date of publication. Address all correspondence to: TSCA Public Information Office (TS-793), Office of Pesticides and Toxic Substances, Environmental Protection Agency, Rm. E-108, 401 M St., SW., Washington, D.C. 20460.

XI. Regulatory Assessment Requirements

A. Executive Order 12291

Under Executive Order 12291, EPA must judge whether a regulation is "major" and therefore subject to the requirements of a Regulatory Impact Analysis. EPA has determined that this regulation is not major because it does not have an effect of \$100 million or more on the economy. It is expected to have a first year maximum cost of \$17.3 million and maximum yearly cost thereafter of \$2.01 million. It does not have a significant effect on competition, employment, investment, productivity, innovation, or ability of U.S.-based

enterprises to compete with foreign-based enterprises in domestic or export markets. This regulation 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 response to those comments will be available for public inspection in the record for this rulemaking.

B. Regulatory Flexibility Act

Since this rule was proposed before the effective date of the Regulatory Flexibility Act, 5 U.S.C. 601 *et seq.*, the Act's requirements do not apply. Even so, the economic analysis for the rule indicates that, under Agency criteria, the rule will not have a significant impact on a substantial number of small businesses.

C. Paperwork Reduction Act

Under the Paperwork Reduction Act of 1980, 44 USC 3501 *et seq.*, the information provisions of this rule will be submitted for approval to the Office of Management and Budget (OMB). They are not effective until OMB approves them. A notice of that approval will be published in the Federal Register.

List of Subjects in 40 CFR Part 717

Environmental protection, Hazardous materials, Chemicals Recordkeeping and reporting requirements, Significant adverse reactions.

Dated: August 11, 1983.

William D. Ruckelshaus,
Administrator.

Therefore, 40 CFR Chapter I is amended by adding a new Part 717 to read as follows:

PART 717—RECORDS AND REPORTS OF ALLEGATIONS THAT CHEMICAL SUBSTANCES CAUSE SIGNIFICANT ADVERSE REACTIONS TO HEALTH OR THE ENVIRONMENT

SUBPART A—GENERAL PROVISIONS

Sec.

- 717.1 Scope and compliance.
- 717.3 Definitions.
- 717.5 Persons subject to this Part.
- 717.7 Persons not subject to this Part.
- 717.10 Allegations subject to this Part.
- 717.12 Significant adverse reactions that must be recorded.
- 717.15 Recordkeeping requirements.
- 717.17 Inspection and reporting requirements.
- 717.19 Confidentiality.

Authority: Sec. 8(c), Pub. L. 94-469, 90 Stat. 2029 (15 U.S.C. 2607(c)).

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Subpart A—General Provisions**§ 717.1 Scope and compliance.**

Section 8(c) of the Toxic Substances Control Act (TSCA) requires manufacturers, processors, and distributors of chemical substances and mixtures:

(a) To keep "records of significant adverse reactions to health or the environment, as determined by the Administrator by rule, alleged to have been caused by the substance or mixture."

(b) To "permit inspection and submit copies of such records", upon request of any designated representative of the Administrator. This rule implements section 8(c) of TSCA. It describes the records to be kept and prescribes the conditions under which certain firms must submit or make the records available to a duly designated representative of the Administrator.

§ 717.3 Definitions.

The definitions set forth in section 3 of TSCA and the following definitions apply to this Part:

(a) "Allegation" means a statement, made without formal proof or regard for evidence, that a chemical substance or mixture has caused a significant adverse reaction to health or the environment.

(b) "Firm" or "company" means any person, that is subject to this Part, as defined in § 717.5.

(c)(1) "Known human effects" means a commonly recognized human health effect of a particular substance or mixture as described either in:

(i) Scientific articles or publications abstracted in standard reference sources.

(ii) The firm's product labeling or material safety data sheets (MSDS).

(2) However, an effect is not a "known human effect" if it:

(i) Was a significantly more severe toxic effect than previously described.

(ii) Was a manifestation of a toxic effect after a significantly shorter exposure period or lower exposure level than described.

(iii) Was a manifestation of a toxic effect by an exposure route different from that described.

(d) "Manufacture" or "process" means to manufacture or process for commercial purposes.

(e)(1) "Manufacture for commercial purposes" means to import, produce, or manufacture with the purpose of obtaining an immediate or eventual commercial advantage for the manufacturer, and includes, among other things, such "manufacture" of any amount of a chemical substance or mixture:

(i) For distribution in commerce, including for test marketing.

(ii) For use by the manufacturer, including use for product research and development, or as an intermediate.

(2) "Manufacture for commercial purposes" also applies to substances that are produced *coincidentally* during the manufacture, processing, use, or disposal of another substance or mixture, including both byproducts that are separated from that other substances or mixture and impurities that remain in that substance or mixture. Such byproducts and impurities may, or may not, in themselves have commercial value. They are nonetheless produced for the purpose of obtaining a commercial advantage since they are part of the manufacture of a chemical product for a commercial purpose.

(f) "Person" includes any individual, firm, company, corporation, joint venture, partnership, sole proprietorship, association, or any other business entity, any State or political subdivision thereof, and any department, agency, or instrumentality of the Federal Government.

(g) "Process for commercial purposes" means the preparation of a chemical substance or mixture, after its manufacture, for distribution in commerce with the purpose of obtaining an immediate or eventual commercial advantage for the processor. Processing of any amount of a chemical substance or mixture is included. If a chemical substance or mixture containing impurities is processed for commercial purposes, then those impurities are also processed for commercial purposes.

(h) "Retailer" means a person who distributes in commerce a chemical substance, mixture, or article to ultimate purchasers who are not commercial entities.

(i) "Significant adverse reactions" are reactions that may indicate a substantial impairment of normal activities, or long-lasting or irreversible damage to health or the environment.

(j) "Site" means a contiguous property unit. Property divided only by a public right-of-way is considered one site. There may be multiple manufacturing, processing, or distribution activities occurring within a single site.

(k) "Substance" means a chemical substance or mixture unless otherwise indicated.

§ 717.5 Persons subject to this Part.

(a) *Manufacturers.* (1) All manufacturers of chemical substances are subject to this Part except as provided in § 717.7(a). If manufacture of a chemical substance occurs at any site

owned or controlled by a firm then that firm is subject to this Part.

(2) A manufacturer must collect:

(i) Any allegation identifying a chemical substance it manufactures and any allegation identifying the operations in the manufacture of any chemical substance it manufactures.

(ii) Any allegation identifying any of its own processing or distribution in commerce activities with respect to any chemical substance it manufactures.

(iii) Any allegation identifying emissions, effluents, or other discharges from activities described in this paragraph.

(3) For the purpose of this Part, owned or controlled means ownership of 50 percent or more of a firm's voting stock or other equity rights, or the power to control the management and policies of that firm.

(b) *Processors.* (1) A person who processes chemical substances, who is not also a manufacturer of those substances, is subject to this Part if such person is engaged in activities described in Standard Industrial Classification (SIC) Major Group 28—Chemicals and Allied Products, and SIC code 2911—Petroleum Refining.

(2) As a processor subject to this Part such person must collect:

(i) Any allegation identifying any chemical substance, mixture, or article resulting only from processing activities as described in SIC 28 or SIC 2911, and any allegation identifying the operational steps involved in producing such products.

(ii) Any allegation identifying any of its own further processing or distribution in commerce activities of the products described in paragraph (b)(2)(i) of this section.

(iii) Any allegation identifying emissions, effluents, or other discharges from activities described in this paragraph.

(c) *SIC code.* SIC codes applicable to this Part are published in Standard Industrial Classification Manual—1972 and the 1977 Supplement. This manual and supplement may be obtained from the U.S. Government Printing Office, Washington, D.C. 20402—stock number 4101-0006 and stock number 003-005-0170-0 respectively. Where there is a conflict between the SIC code use of a term and the definition of that term in this Part, the definition in this Part applies.

§ 717.7 Persons not subject to this Part.

(a) *Manufacturers.* Persons or site activities are exempt from this Part if the means by which they manufacture a chemical substance solely involves

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mining or other solely extractive functions, e.g., those companies or sites within a company whose sole function is to mine mineral ores, extract petroleum or natural gas, quarry non-metallic minerals (including extraction of salts from seawater or brines), mine or otherwise extract coal, or separate gases from the atmosphere. This exemption may include, but is not necessarily limited to, firms engaged in activities as described in SIC Division B—Mining and SIC Code 2813—Industrial Gases.

(b) *Processors.* A processor, who is not also a manufacturer, is not subject to this Part if none of the sites that processor owns or controls is engaged in activities as described in SIC 28 or SIC 2911.

(c) *Sole distributors.* A person solely engaged in the distribution of chemical substances is exempt from this Part, unless such person is also a manufacturer or processor subject to this Part. For example, a "distributor" who repackages chemical substances or mixtures is considered to be a processor and, thus, is not a sole distributor. Sole distributors may include, but are not limited to, those firms that distribute chemical substances as described in the wholesale trade SIC codes 5161—Chemicals and Allied Products, 5171—Petroleum Bulk Stations and Terminals, and 5172—Petroleum and Petroleum Products Wholesalers, Except Bulk Stations and Terminals.

(d) *Retailers.* A person who is a retailer is exempt from this Part unless such person is also a manufacturer or a processor subject to this Part.

§ 717.10 Allegations subject to this Part.

(a) Allegations subject to this part are those allegations received on or after November 21, 1983 by persons subject to this Part.

(b) Allegations subject to this Part are those that:

(1) Are submitted either in writing and are signed by the allegor, or are submitted orally. In the case of an oral allegation, the firm must transcribe the allegation into written form, or it must inform the allegor that such allegation may be subject to this Part and request that the allegor submit such allegation to the firm in writing and signed.

(2) Implicate a substance that caused the stated significant adverse reaction by one of the following:

- (i) Naming the specific substance.
- (ii) Naming a mixture that contains a specific substance.
- (iii) Naming an article that contains a specific substance.

(iv) Naming a company process or operation in which substances are involved.

(v) Identifying an effluent, emission, or other discharge from a site of manufacturing, processing or distribution of a substance.

(c) Allegations subject to this Part may be made to a firm by any person, such as an employee of the firm, individual consumer, a neighbor of the firm's plant, another firm on behalf of its employees or an organization on behalf of its members.

(d) EPA intends that firms should, to the maximum practical extent, provide allegors with information regarding the ultimate disposition of their allegations. For example, firms could provide a brief notice to the allegor stating that a record was created under this Part based upon their allegation, or that a record was not created and briefly explain the reasons why not.

§ 717.12 Significant adverse reactions that must be recorded.

(a) Except as provided in paragraph (b) of this section, significant adverse reactions to human health that must be recorded include but are not limited to:

- (1) Long-lasting or irreversible damage, such as cancer or birth defects.
- (2) Partial or complete impairment of bodily functions, such as reproductive disorders, neurological disorders or blood disorders.

(3) An impairment of normal activities experienced by all or most of the persons exposed at one time.

(4) An impairment of normal activities which is experienced each time an individual is exposed.

(b) Firms are not required to record significant adverse reactions that are known human effects as defined in § 717.3(c).

(c) Except as provided in paragraph (d) of this section, significant adverse reactions to the environment that must be recorded, even if restricted to the environs of a plant or disposal site, include but are not limited to:

(1) Gradual or sudden changes in the composition of animal life or plant life, including fungal or microbial organisms, in an area.

(2) Abnormal number of deaths of organisms (e.g., fish kills).

(3) Reduction of the reproductive success or the vigor of a species.

(4) Reduction in agricultural productivity, whether crops or livestock.

(5) Alterations in the behavior or distribution of a species.

(6) Long lasting or irreversible contamination of components of the physical environment, especially in the case of ground water, and surface water

and soil resources that have limited self-cleansing capability.

(d) Firms are not required to record a significant adverse reaction to the environment if the alleged cause of that significant adverse reaction can be directly attributable to an accidental spill or other accidental discharge, emission exceeding permitted limits, or other incident of environmental contamination that has been reported to the Federal Government under any applicable authority.

§ 717.15 Recordkeeping requirements.

(a) *Establishment and location of records.* A firm subject to this Part shall establish and maintain records of significant adverse reactions alleged to have been caused by chemical substances or mixtures manufactured or processed by the firm. Such records shall be kept at the firm's headquarters or at any other appropriate location central to the firm's chemical operations.

(b) *Content of records.* The record shall consist of the following:

(1) The original allegation as received.

(2) An abstract of the allegation and other pertinent information as follows:

- (i) The name and address of the plant site which received the allegation.
- (ii) The date the allegation was received at that site.

(iii) The implicated substance, mixture, article, company process or operation, or site discharge.

(iv) A description of the allegor (e.g., "company employee," "individual consumer," "plant neighbor"). If the allegation involves a health effect, the sex and year of birth of the individual should be recorded, if ascertainable.

(v) A description of the alleged health effect(s). The description must relate how the effect(s) became known and the route of exposure, if explained in the allegation.

(vi) A description of the nature of the alleged environmental effect(s), identifying the affected plant and/or animal species, or contaminated portion of the physical environment.

(3) The results of any self-initiated investigation with respect to an allegation. (EPA does not require persons subject to this Part to investigate allegations received, and no provision of this Part shall be construed to imply that EPA recommends, encourages or requires such investigation.)

(4) Copies of any further required records or reports relating to the allegation. For example, if an employee allegation results in a requirement for the firm to record the case on Occupational Safety and Health Form

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101 or appropriate substitute (sec 29 CFR Part 1904 for requirements under the Occupational Safety and Health Act of 1970), a copy of that OSHA record must be included in the allegation record.

(c) *File structure.* Records must be retrievable by the alleged cause of the significant adverse reaction, which cause may be one of the following:

- (1) A specific chemical identity.
- (2) A mixture.
- (3) An article.
- (4) A company process or operation.
- (5) A site emission, effluent or other discharge.

(d) *Retention period.* Records of significant adverse reactions to the health of employees shall be retained for a period of 30 years from the date such reactions were first reported to or known by the person maintaining such records. This provision requires persons subject to this Part to retain for 30 years an employee health related allegation, arising from any employment related exposure, whether or not such allegation was submitted by or on the behalf of that recordkeeper's own employee. Any other record of significant adverse reactions shall be maintained for a period of five years from the date the information contained in the record was first reported to or known by the person maintaining the record.

(e) *Transfer of records.* (1) If a firm ceases to do business, the successor must receive and keep all the records that must be kept under this Part.

(2) If a firm ceases to do business and there is no successor to receive and keep the records for the prescribed period, these records must be transmitted to EPA. See § 717.17(c) for

the address to which such records must be sent.

§ 717.17 Inspection and reporting requirements.

(a) *Inspection.* Firms must make records of allegations available for inspection by any duly designated representative of the Administrator.

(b) *Reporting.* Each person who is required to keep records under this Part must submit copies of those records to the Agency as required by the EPA Administrator or appropriate designee. EPA will notify those responsible for reporting by letter or will announce any such requirements for submitting copies of records by a notice in the Federal Register. Such letter or notice will be signed by the Administrator or appropriate designee, and will specify which records or portion of records must be submitted. The reporting period will be specified by the letter or notice but in no case will such reporting period be less than 45 days from the date of the letter or the effective date of the notice.

(c) *How to report.* When required to report, firms must submit copies of records (preferably by certified mail) to the Document Control Officer, Office of Pesticides and Toxic Substances (TS-793), Environmental Protection Agency, Washington, DC 20460.

§ 717.19 Confidentiality.

(a) Any person submitting copies of records may assert a business confidentiality claim covering all or part of the submitted information. Any information covered by a claim will be disclosed by EPA only as provided in procedures set forth at Part 2 of this title.

(b) If no claim accompanies a document at the time it is submitted to EPA, the document will be placed in an open file available to the public without further notice to the respondent.

(c) To assert a claim of confidentiality for information contained in a submitted record, the respondent must submit two copies of the document.

(1) One copy must be complete. In that copy, the respondent must indicate what information, if any, is claimed as confidential by marking the specific information on each page with a label such as "confidential", "proprietary", or "trade secret" and briefly state the basis of the claim.

(2) If some information is claimed as confidential, the respondent must submit a second copy of the record. The second copy must be complete, except that all information claimed as confidential in the first copy must be deleted.

(3) The first copy will be for internal use by EPA. The second copy will be placed in an open file to be available to the public.

(4) Failure to furnish a second copy when information is claimed as confidential in the first copy will be considered a presumptive waiver of the claim of confidentiality. EPA will notify the respondent by certified mail that a finding of a presumptive waiver of the claim of confidentiality has been made. The respondent will be given 30 days from the date of receipt of notification to submit the required second copy. If the respondent fails to submit the second copy within the 30 days, EPA will place the first copy in the public file.

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ENVIRONMENTAL PROTECTION AGENCY REGULATIONS FOR IDENTIFYING HAZARDOUS WASTE

(40 CFR 261; 45 33119, May 19, 1980, Effective November 19, 1980; Amended by 45 FR 47833, July 16, 1980; 45 FR 72028, 72037, 72039, 72041, October 30, 1980; 45 FR 74890, November 12, 1980; 45 FR 76620, 76623, November 19, 1980; 45 FR 78529, 78531, 78541, November 25, 1980; 45 FR 80287, December 4, 1980; 46 FR 4617, January 16, 1981)

[Editor's note: New Parts 122, 123 and 124, EPA's consolidated permit program regulations, are published in Environment Reporter — Federal Regulations — I, at 101:0701, 101:0751, and 101:0801, respectively.]

EPA January 16 issued a final list of 13 hazardous wastes from specific sources (46 FR 4614)

Persons who generate, transport, treat, store or dispose of wastes which were listed in 261.32 as interim final July 16, 1980, and as final on January 16 — KO71, KO73, and KO83 through KO87 — must comply immediately with all applicable standards in 40 CFR 262—266 and 40 CFR 122—124, those persons without I.D. numbers who handle wastes proposed for listing in 261.32 on July 16, 1980, and adopted January 16 — K101 through K106 — must file a notification by April 16, 1981, to qualify for interim status under Section 3005(e) of the Resource Conservation and Recovery Act, and must file a permit application and be in compliance with all applicable standards by July 16, 1981.

The agency also deferred action on one waste and suspended the effective dates of nine wastes which previously were listed in interim final form. These wastes are discussed in the January 16 notice.]

PART 261—IDENTIFICATION AND LISTING OF HAZARDOUS WASTE

Subpart A—General

Sec.

- 261.1 Purpose and scope.
- 261.2 Definition of solid waste.
- 261.3 Definition of hazardous waste.
- 261.4 Exclusions.
- 261.5 Special requirements for hazardous waste produced by small quantity generators.
- 261.6 Special requirements for hazardous waste which is used, re-used, recycled or reclaimed.

Subpart B—Criteria for Identifying the Characteristics of Hazardous Waste and for Listing Hazardous Wastes

- 261.10 Criteria for identifying the characteristics of hazardous wastes.
- 261.11 Criteria for listing hazardous waste.

Subpart C—Characteristics of Hazardous Wastes

- 261.20 General.
- 261.21 Characteristic of ignitability.
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- 261.23 Characteristic of reactivity.
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Subpart D—Lists of Hazardous Wastes

- 261.30 General.
- 261.31 Hazardous wastes from non-specific sources.
- 261.32 Hazardous wastes from specific sources.
- 261.33 Discarded commercial chemical products and associated off-specification materials, containers and spill residues.

Appendices

- Appendix I—Representative Sampling Methods
- Appendix II—EP Toxicity Test Procedures
- Appendix III—Chemical Analysis Test Methods
- Appendix IV—[Reserved for Radioactive Waste Test Methods]
- Appendix V—[Reserved for Infectious Waste Treatment Specifications]
- Appendix VI—[Reserved for Etiologic Agents]

Appendix VII—Basis for Listing
Appendix VIII—Hazardous Constituents
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, 6921 and 6922).

Subpart A—General

§ 261.1 Purpose and scope.

(a) This Part identifies those solid wastes which are subject to regulation as hazardous wastes under Parts 262 through 265 and Parts 122 through 124 of this Chapter and which are subject to the notification requirements of Section 3010 of RCRA. In this Part:

(1) Subpart A defines the terms "solid waste" and "hazardous waste," identifies those wastes which are excluded from regulation under Parts 262 through 265 and 122 through 124 and establishes special management requirements for hazardous waste produced by small quantity generators and hazardous waste which is used, re-used, recycled or reclaimed.

(2) Subpart B sets forth the criteria used by EPA to identify characteristics of hazardous waste and to list particular hazardous wastes.

(3) Subpart C identifies characteristics of hazardous waste.

(4) Subpart D lists particular hazardous wastes.

(b) This Part identifies only some of the materials which are hazardous wastes under Sections 3007 and 7003 of RCRA. A material which is not a hazardous waste identified in this part is still a hazardous waste for purposes of those sections if:

(1) In the case of Section 3007, EPA has reason to believe that the material may be a hazardous waste within the meaning of Section 1004(5) of RCRA.

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

(c) A material is "discarded" if it is abandoned (and not used, re-used, reclaimed or recycled) by being:

(1) Disposed of; or

§ 261.2 Definition of solid waste.

(a) A solid waste is any garbage, refuse, sludge or any other waste material which is not excluded under § 261.4(a). [Interim final]

(b) An "other waste material" is any solid, liquid, semi-solid or contained gaseous material, resulting from industrial, commercial, mining or agricultural operations, or from community activities which:

(1) Is discarded or is being accumulated, stored or physically, chemically or biologically treated prior to being discarded; or

(2) Has served its original intended use and sometimes is discarded; or

(3) Is a manufacturing or mining by-product and sometimes is discarded.

(c) A material is "discarded" if it is abandoned (and not used, re-used, reclaimed or recycled) by being:

(1) Disposed of; or

[Sec. 261.2(b)(3)]

(2) Burned or incinerated, except where the material is being burned as a fuel for the purpose of recovering usable energy; or

(3) Physically, chemically, or biologically treated (other than burned or incinerated) in lieu of or prior to being disposed of.

(d) A material is "disposed of" if it is discharged, deposited, injected, dumped, spilled, leaked or placed into or on any land or water so that such material or any constituent thereof may enter the environment or be emitted into the air or discharged into ground or surface waters.

(e) A "manufacturing or mining by-product" is a material that is not one of the primary products of a particular manufacturing or mining operation, is a secondary and incidental product of the particular operation and would not be solely and separately manufactured or mined by the particular manufacturing or mining operation. The term does not include an intermediate manufacturing or mining product which results from one of the steps in a manufacturing or mining process and is typically processed through the next step of the process within a short time.

§ 261.3 Definition of hazardous waste.

(a) A solid waste, as defined in § 261.2, is a hazardous waste if:

(1) It is not excluded from regulation as a hazardous waste under § 261.4(b); and

(2) It meets any of the following criteria:

(i) It is listed in Subpart D and has not been excluded from the lists in Subpart D under §§ 260.20 and 260.22 of this Chapter.

(ii) It is a mixture of solid waste and one or more hazardous wastes listed in Subpart D and has not been excluded from this paragraph under §§ 260.20 and 260.22 of this Chapter.

(iii) It exhibits any of the characteristics of hazardous waste identified in Subpart C.

(b) A solid waste which is not excluded from regulation under paragraph (a)(1) of this section becomes a hazardous waste when any of the following events occur:

(1) In the case of a waste listed in Subpart D, when the waste first meets the listing description set forth in Subpart D.

(2) In the case of a mixture of solid waste and one or more listed hazardous wastes, when a hazardous waste listed in Subpart D is first added to the solid waste.

(3) In the case of any other waste (including a waste mixture), when the waste exhibits any of the characteristics identified in Subpart C.

(c) Unless and until it meets the criteria of paragraph (d):

(1) A hazardous waste will remain a hazardous waste.

(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.

(d) Any solid waste described in paragraph (c) of this section is not a hazardous waste if it meets the following criteria:

(1) In the case of any solid waste, it does not exhibit any of the characteristics of hazardous waste identified in Subpart C.

(2) In the case of a waste which is a listed waste under Subpart D, contains a waste listed under Subpart D or is derived from a waste listed in Subpart D, it also has been excluded from paragraph (c) under §§ 260.20 and 260.22 of this Chapter.

§ 261.4 Exclusions.

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

(1) (i) Domestic sewage; and
(ii) Any mixture of domestic sewage and other wastes that passes through a sewer system to a publicly-owned treatment works for treatment.

"Domestic sewage" means untreated sanitary wastes that pass through a sewer system. *[Interim final]*

(2) Industrial wastewater discharges that are point source discharges subject to regulation under Section 402 of the Clean Water Act, as amended.

[Comment: This exclusion applies only to the actual point source discharge. It does not exclude industrial wastewaters while they are being collected, stored or treated before discharge, nor does it exclude sludges that are generated by industrial wastewater treatment.]

(3) Irrigation return flows.

(4) Source, special nuclear or by-product material as defined by the Atomic Energy Act of 1954, as amended, 42 U.S.C. 2011 *et seq.*

(5) Materials subjected to in-situ mining techniques which are not removed from the ground as part of the extraction process.

(b) *Solid wastes which are not hazardous wastes.* The following solid wastes are not hazardous wastes:

(1) Household waste, including household waste that has been collected, transported, stored, treated, disposed, recovered (e.g., refuse-derived fuel) or reused. "Household waste" means any waste material (including garbage, trash and sanitary wastes in septic tanks) derived from households (including single and multiple residences, hotels and motels.)

(2) Solid wastes generated by any of the following and which are returned to the soils as fertilizers:

(i) The growing and harvesting of agricultural crops.

(ii) The raising of animals, including animal manures.

(3) Mining overburden returned to the mine site.

(4) Fly ash waste, bottom ash waste, slag waste, and flue gas emission control waste generated primarily from the combustion of coal or other fossil fuels.

(5) Drilling fluids, produced waters, and other wastes associated with the exploration, development, or production of crude oil, natural gas or geothermal energy.

[261.4(b)(6) added by 45 FR 72037, October 30, 1980]

(6) (i) Wastes which fail the test for the characteristic of EP toxicity because chromium is present or are listed in Subpart D due to the presence of chromium, which do not fail the test for the characteristic of EP toxicity for any other constituent or are not listed due to the presence of any other constituent, and which do not fail the test for any other characteristic, if it is shown by a waste generator or by waste generators that:

(A) The chromium in the waste is exclusively (or nearly exclusively) trivalent chromium; and

(B) The waste is generated from an industrial process which uses trivalent chromium exclusively (or nearly

exclusively) and the process does not generate hexavalent chromium; and

(C) The waste is typically and frequently managed in non-oxidizing environments.

(ii) Specific wastes which meet the standard in (i)(A), (B) and (C) (so long as they do not fail the test for the characteristic of EP toxicity, and do not fail the test for any other characteristic) are

(A) Chrome (blue) trimmings generated by the following subcategories of the leather tanning and finishing industry: hair pulp/chrome tan/retan/wet finish; hair save/chrome tan/retan/wet finish; retan/wet finish; no beamhouse; through-the-blue; and shearling.

(B) Chrome (blue) shavings generated by the following subcategories of the leather tanning and finishing industry: hair pulp/chrome tan/retan/wet finish; hair save/chrome tan/retan/wet finish; retan/wet finish; no beamhouse; through-the-blue; and shearling.

(C) Buffing dust generated by the following subcategories of the leather tanning and finishing industry: hair pulp/chrome tan/retan/wet finish; hair save/chrome tan/retan/wet finish; retan/wet finish; no beamhouse; through-the-blue; and shearling.

(D) Sewer screenings generated by the following subcategories of the leather tanning and finishing industry: hair pulp/chrome tan/retan/wet finish; hair save/chrome tan/retan/wet finish; retan/wet finish; no beamhouse; through-the-blue; and shearling.

(E) Wastewater treatment sludges generated by the following subcategories of the leather tanning and finishing industry: hair pulp/chrome tan/retan/wet finish; hair save/chrome tan/retan/wet finish; retan/wet finish; no beamhouse; through-the-blue; and shearling.

(F) Wastewater treatment sludges generated by the following subcategories of the leather tanning and finishing industry: hair pulp/chrome tan/retan/wet finish; hair save/chrome tan/retan/wet finish; and through-the-blue.

(G) Waste scrap leather from the leather tanning industry, the shoe manufacturing industry, and other leather product manufacturing industries.

(H) Wastewater treatment sludges from the production of TiO_2 pigment using chromium-bearing ores by the chloride process.

(6) Solid waste from the extraction, beneficiation and processing of ores and minerals (including coal), including phosphate rock and overburden from the mining of uranium ore.

[The second 261.4(b)(6) was added by 45 FR 76620, November 19, 1980]

(7) Cement kiln dust waste. [261.4(b)(7) added by 45 FR 76620, November 19, 1980]

(8) Solid waste which consists of discarded wood or wood products which fails the test for the characteristic of EP toxicity and which is not a hazardous waste for any other reason if the waste is generated by persons who utilize the arsenical-treated wood and wood products for these materials' intended end use. [261.4(b)(8) added by 45 FR 78531, November 25, 1980]

(c) Hazardous wastes which are exempted from certain regulations. A hazardous waste which is generated in a product or raw material storage tank, a product or raw material transport vehicle or vessel, a product or raw material pipeline, or in a manufacturing process unit or an associated non-waste-treatment-manufacturing unit, is not subject to regulation under Parts 262 through 265 and Parts 122 through 124 of this chapter or to the notification requirements of Section 3010 of RCRA until it exits the unit in which it was generated, unless the unit is a surface impoundment, or unless the hazardous waste remains in the unit more than 90 days after the unit ceases to be operated for manufacturing, or for storage or transportation of product or raw materials.

[261.4(c) added by 45 FR 72028, October 30, 1980; amended by 45 FR 80287, December 4, 1980]

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

[261.5 revised by 45 FR 76623, November 19, 1980]

(a) A generator is a small quantity generator in a calendar month if he generates less than 1000 kilograms of hazardous waste in that month.

(b) Except for those wastes identified in paragraphs (e) and (f) of this section,

a small quantity generator's hazardous wastes are not subject to regulation under Parts 262 through 265 and Parts 122 and 124 of this chapter, and the notification requirements of Section 3010 of RCRA, provided the generator complies with the requirements of paragraph (g) of this section.

(c) Hazardous waste that is beneficially used or re-used or legitimately recycled or reclaimed and that is excluded from regulation by § 261.6(a) 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(b) is included in the quantity determinations of this section and is subject to the requirements of this section.

(d) In determining the quantity of hazardous waste he generates, a generator need not include:

(1) His hazardous waste when it is removed from on-site storage; or

(2) Hazardous waste produced by on-site treatment of his hazardous waste

(e) If a small quantity generator generates acutely hazardous waste in a calendar month in quantities greater than set forth below, all quantities of that acutely hazardous waste are subject to regulation under Parts 262 through 265 and Parts 122 and 124 of this chapter, and the notification requirements of Section 3010 of RCRA:

(1) A total of one kilogram of a commercial chemical products and manufacturing chemical intermediates having the generic names listed in § 261.33(e), and off-specification commercial chemical products and manufacturing chemical intermediates which, if they met specifications, would have the generic names listed in § 261.33(e); or

(2) A total of 100 kilograms of any residue or contaminated soil, water or other debris resulting from the clean-up of a spill, into or on any land or water, of any commercial chemical products or manufacturing chemical intermediates having the generic names listed in § 261.33(e).

(f) A small quantity generator may accumulate hazardous waste on-site. If he accumulates at any time more than a total of 1000 kilograms of his hazardous waste, or his acutely hazardous wastes

(Sec. 261.6(f))

in quantities greater than set forth in paragraphs (e)(1) or (e)(2) of this section, all of those accumulated wastes for which the accumulation limit was exceeded are subject to regulation under Parts 262 through 265 and Parts 122 and 124 of this chapter, and the notification requirements of Section 3010 of RCRA. The time period of § 262.34 for accumulation of wastes on-site begins for a small quantity generator when the accumulated wastes exceed the applicable exclusion level.

(g) In order for hazardous waste generated by a small quantity generator to be excluded from full regulation under this section, the generator must:

(1) Comply with § 262.11 of this chapter;

(2) If he stores his hazardous waste on-site, store it in compliance with the requirements of paragraph (f) of this section; and

(3) Either treat or dispose of his hazardous waste in an on-site facility, or ensure delivery to an off-site storage, treatment or disposal facility, either of which is:

(i) Permitted under Part 122 of this chapter;

(ii) In interim status under Parts 122 and 265 of this chapter;

(iii) Authorized to manage hazardous waste by a State with a hazardous waste management program approved under Part 123 of this chapter;

(iv) Permitted, licensed or registered by a State to manage municipal or industrial solid waste; or

(v) A facility which:

(A) Beneficially uses or re-uses, or legitimately recycles or reclaims his waste; or

(B) Treats his waste prior to beneficial use or re-use, or legitimate recycling or reclamation.

(h) Hazardous waste subject to the reduced requirements of this section may be mixed with non-hazardous waste and remain subject to these reduced requirements even though the resultant mixture exceeds the quantity limitations identified in this section, unless the mixture meets any of the characteristics of hazardous wastes identified in Subpart C.

(i) If a small quantity generator mixes a solid waste with a hazardous waste that exceeds a quantity exclusion level of this section, the mixture is subject to full regulation.

§ 261.6 Special requirements for hazardous waste which is used, re-used, recycled or reclaimed.

(a) Except as otherwise provided in paragraph (b) of this section, a hazardous waste which meets either of the following criteria is not subject to regulation under Parts 262 through 265 or Parts 122 through 124 of this Chapter and is not subject to the notification requirements of Section 3010 of RCRA until such time as the Administrator promulgates regulations to the contrary:

(1) It is being beneficially used or re-used or legitimately recycled or reclaimed.

(2) It is being accumulated, stored or physically, chemically or biologically treated prior to beneficial use or re-use or legitimate recycling or reclamation.

(b) A hazardous waste which is a sludge, or which is listed in Subpart D, or which contains one or more hazardous wastes listed in Subpart D; and which is transported or stored prior to being used, re-used, recycled or reclaimed is subject to the following requirements with respect to such transportation or storage:

(1) Notification requirements under Section 3010 RCRA.

(2) Part 262 of this Chapter.

(3) Part 263 of this Chapter.

(4) Subparts A, B, C, D and E of Part 264 of this Chapter.

(5) Subparts A, B, C, D, E, G, H, I, J and L of Part 265 of this Chapter.

(6) Parts 122 and 124 of this Chapter, with respect to storage facilities.

§ 261.7 Residues of hazardous waste in empty containers.

[261.7 added by 45 FR 78529, November 25, 1980]

(a)(1) Any hazardous waste remaining in either (i) an empty container or (ii) an inner liner removed from an empty container, as defined in paragraph (b) of this section, is not subject to regulation under Parts 261 through 265, or Part 122 or 124 of this chapter or to the notification requirements of Section 3010 of RCRA.

(2) Any hazardous waste in either (i) a container that is not empty or (ii) an inner liner removed from a container that is not empty, as defined in paragraph (b) of this section, is subject to regulation under Parts 261 through 265, and Parts 122 and 124 of this

chapter and to the notification requirements of Section 3010 of RCRA.

(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 in § 261.33(c) of this chapter, is empty if:

(i) all wastes have been removed that can be removed using the practices commonly employed to remove materials from that type of container, e.g., pouring, pumping, and aspirating, and

(ii) no more than 2.5 centimeters (one inch) of residue remain on the bottom of the container or inner liner.

(2) A container that has held a hazardous waste that is a compressed gas is empty when the pressure in the container approaches atmospheric.

(3) A container or an inner liner removed from a container that has held a hazardous waste identified in § 261.33(c) of this chapter is empty if:

(i) the container or inner liner has been triple rinsed using a solvent capable of removing the commercial chemical product or manufacturing chemical intermediate;

(ii) the container or inner liner has been cleaned by another method that has been shown in the scientific literature, or by tests conducted by the generator, to achieve equivalent removal; or

(iii) in the case of a container, the inner liner that prevented contact of the commercial chemical product or manufacturing chemical intermediate with the container, has been removed.

Subpart B—Criteria for Identifying the Characteristics of Hazardous Waste and for Listing Hazardous Waste

§ 261.10 Criteria for identifying the characteristics of hazardous waste.

(a) The Administrator shall identify and define a characteristic of hazardous waste in Subpart C only upon determining that:

(1) A solid waste that exhibits the characteristic may:

(i) Cause, or significantly contribute to, an increase in mortality or an increase in serious irreversible, or incapacitating reversible, illness; or

(ii) Pose a substantial present or potential hazard to human health or the

environment when it is improperly treated, stored, transported, disposed of or otherwise managed; and

(2) The characteristic can be:

- (i) Measured by an available standardized test method which is reasonably within the capability of generators of solid waste or private sector laboratories that are available to serve generators of solid waste; or
- (ii) Reasonably detected by generators of solid waste through their knowledge of their waste.

§261.11 Criteria for listing hazardous waste. [Interim final]

(a) The Administrator shall list a solid waste as a hazardous waste only upon determining that the solid waste meets one of the following criteria:

(1) It exhibits any of the characteristics of hazardous waste identified in Subpart C.

(2) It has been found to be fatal to humans in low doses or, in the absence of data on human toxicity, it has been shown in studies to have an oral LD 50 toxicity (rat) of less than 50 milligrams per kilogram, an inhalation LC 50 toxicity (rat) of less than 2 milligrams per liter, or a dermal LD 50 toxicity (rabbit) of less than 200 milligrams per kilogram or is otherwise capable of causing or significantly contributing to an increase in serious irreversible, or incapacitating reversible, illness. (Waste listed in accordance with these criteria will be designated Acute Hazardous Waste.)

(3) It contains any of the toxic constituents listed in Appendix VIII unless, after considering any of the following factors, the Administrator concludes that the waste is not capable of posing a substantial present or potential hazard to human health or the environment when improperly treated, stored, transported or disposed of, or otherwise managed:

(i) The nature of the toxicity presented by the constituent.

(ii) The concentration of the constituent in the waste.

(iii) The potential of the constituent or any toxic degradation product of the constituent to migrate from the waste into the environment under the types of improper management considered in paragraph (a)(3)(vii) of this section.

(iv) The persistence of the constituent or any toxic degradation product of the constituent.

(v) The potential for the constituent or any toxic degradation product of the constituent to degrade into non-harmful constituents and the rate of degradation.

(vi) The degree to which the constituent or any degradation product of the constituent bioaccumulates in ecosystems.

(vii) The plausible types of improper management to which the waste could be subjected.

(viii) The quantities of the waste generated at individual generation sites or on a regional or national basis.

(ix) The nature and severity of the human health and environmental damage that has occurred as a result of the improper management of wastes containing the constituent.

(x) Action taken by other governmental agencies or regulatory programs based on the health or environmental hazard posed by the waste or waste constituent.

(xi) Such other factors as may be appropriate.

Substances will be listed on Appendix VIII only if they have been shown in scientific studies to have toxic, carcinogenic, mutagenic or teratogenic effects on humans or other life forms.

(Wastes listed in accordance with these criteria will be designated Toxic wastes.)

(b) The Administrator may list classes or types of solid waste as hazardous waste if he has reason to believe that individual wastes, within the class or type of waste, typically or frequently are hazardous under the definition of hazardous waste found in Section 1004(5) of the Act.

(c) The Administrator will use the criteria for listing specified in this section to establish the exclusion limits referred to in § 261.5(c).

Subpart C—Characteristics of Hazardous Waste

§ 261.20 General.

(a) A solid waste, as defined in § 261.2, which is not excluded from regulation as a hazardous waste under § 261.4(b), is a hazardous waste if it

exhibits any of the characteristics identified in this Subpart.

[Comment: § 262.11 of this Chapter sets forth the generator's responsibility to determine whether his waste exhibits one or more of the characteristics identified in this Subpart.]

(b) A hazardous waste which is identified by a characteristic in this subpart, but is not listed as a hazardous waste in Subpart D, is assigned the EPA Hazardous Waste Number set forth in the respective characteristic in this Subpart. This number must be used in complying with the notification requirements of Section 3010 of the Act and certain recordkeeping and reporting requirements under Parts 262 through 265 and Part 122 of this Chapter.

(c) For purposes of this Subpart, the Administrator will consider a sample obtained using any of the applicable sampling methods specified in Appendix I to be a representative sample within the meaning of Part 260 of this Chapter.

[Comment: Since the Appendix I sampling methods are not being formally adopted by the Administrator, a person who desires to employ an alternative sampling method is not required to demonstrate the equivalency of his method under the procedures set forth in §§ 260.20 and 260.21.]

§ 261.21 Characteristic of ignitability.

(a) A solid waste exhibits the characteristic of ignitability if a representative sample of the waste has any of the following properties:

(1) It is a liquid, other than an aqueous solution containing less than 24 percent alcohol by volume, and has a flash point less than 60°C (140°F), as determined by a Pensky-Martens Closed Cup Tester, using the test method specified in ASTM Standard D-93-79, or a Setaflash Closed Cup Tester, using the test method specified in ASTM standard D-3278-78, or as determined by an equivalent test method approved by the Administrator under the procedures set forth in §§ 260.20 and 260.21.¹

¹ ASTM Standards are available from ASTM, 1916 Race Street, Philadelphia, PA 19106.

(2) It is not a liquid and is capable, under standard temperature and pressure, of causing fire through friction, absorption of moisture or spontaneous chemical changes and, when ignited, burns so vigorously and persistently that it creates a hazard.

(3) It is an ignitable compressed gas as defined in 49 CFR 173.300 and as determined by the test methods described in that regulation or equivalent test methods approved by the Administrator under §§ 260.20 and 260.21.

(4) It is an oxidizer as defined in 49 CFR 173.151.

(b) A solid waste that exhibits the characteristic of ignitability, but is not listed as a hazardous waste in Subpart D, has the EPA Hazardous Waste Number of D001.

§ 261.22 Characteristic of corrosivity.

(a) A solid waste exhibits the characteristic of corrosivity if a representative sample of the waste has either of the following properties:

(1) It is aqueous and has a pH less than or equal to 2 or greater than or equal to 12.5, as determined by a pH meter using either the test method specified in the "Test Methods for the Evaluation of Solid Waste, Physical/Chemical Methods" ² (also described in "Methods for Analysis of Water and Wastes" EPA 600/4-79-020, March 1979), or an equivalent test method approved by the Administrator under the procedures set forth in §§ 260.20 and 260.21.

(2) It is a liquid and corrodes steel (SAE 1020) at a rate greater than 6.35 mm (0.250 inch) per year at a test temperature of 55°C (130°F) as determined by the test method specified in NACE (National Association of Corrosion Engineers) Standard TM-01-69 ³ as standardized in "Test Methods for the Evaluation of Solid Waste, Physical/Chemical Methods," or an equivalent test method approved by the Administrator under the procedures set forth in §§ 260.20 and 260.21.

(b) A solid waste that exhibits the characteristic of corrosivity, but is not listed as a hazardous waste in Subpart D, has the EPA Hazardous Waste Number of D002.

² This document is available from Solid Waste Information, U.S. Environmental Protection Agency, 26 W. St. Clair Street, Cincinnati, Ohio 45268.

³ The NACE Standard is available from the National Association of Corrosion Engineers, P.O. Box 986, Katy, Texas 77450.

§ 261.23 Characteristic of reactivity.

(a) A solid waste exhibits the characteristic of reactivity if a representative sample of the waste has any of the following properties:

(1) It is normally unstable and readily undergoes violent change without detonating.

(2) It reacts violently with water.

(3) It forms potentially explosive mixtures with water.

(4) When mixed with water, it generates toxic gases, vapors or fumes in a quantity sufficient to present a danger to human health or the environment.

(5) It is a cyanide or sulfide bearing waste which, when exposed to pH conditions between 2 and 12.5, can generate toxic gases, vapors or fumes in a quantity sufficient to present a danger to human health or the environment.

(6) It is capable of detonation or explosive reaction if it is subjected to a strong initiating source or if heated under confinement.

(7) It is readily capable of detonation or explosive decomposition or reaction at standard temperature and pressure.

(8) It is a forbidden explosive as defined in 49 CFR 173.51, or a Class A explosive as defined in 49 CFR 173.53 or a Class B explosive as defined in 49 CFR 173.58.

(b) A solid waste that exhibits the characteristic of reactivity, but is not listed as a hazardous waste in Subpart D, has the EPA Hazardous Waste Number of D003.

§ 261.24 Characteristic of EP Toxicity.

(a) A solid waste exhibits the characteristic of EP toxicity if, using the test methods described in Appendix II or equivalent methods approved by the Administrator under the procedures set forth in §§ 260.20 and 260.21, the extract from a representative sample of the waste contains any of the contaminants listed in Table I at a concentration equal to or greater than the respective value given in that Table. Where the waste contains less than 0.5 percent filterable solids, the waste itself, after filtering, is considered to be the extract for the purposes of this section.

(b) A solid waste that exhibits the characteristic of EP toxicity, but is not listed as a hazardous waste in Subpart D, has the EPA Hazardous Waste Number specified in Table I which corresponds to the toxic contaminant causing it to be hazardous.

Table I.—Maximum Concentration of Contaminants for Characteristic of EP Toxicity—Continued

EPA hazardous waste number	Contaminant	Maximum concentration (milligrams per liter)
D004	Arsenic	5.0
D005	Barium	100.0
D006	Cadmium	1.0
D007	Chromium	5.0
D008	Lead	5.0
D009	Mercury	0.2
D010	Selenium	1.0
D011	Silver	5.0
D012	Endrin (1,2,3,4,10,10-hexachloro-1,7-epoxy-1,4,4a,5,8,7,8,8a-octahydro-1,4-endo, endo-5,8-dimethano naphthalene)	0.02
D013	Lindane (1,2,3,4,5,6-hexachlorocyclohexane, gamma isomer)	0.4
D014	Methoxychlor (1,1,1-Trichloro-2,2-bis (p-methoxyphenyl)ethane)	10.0
D015	Toxaphene (C ₁₂ H ₈ Cl ₆ , Technical chlorinated camphene, 67-69 percent chlorine)	0.5
D016	2,4-D (2,4-Dichlorophenoxyacetic acid)	10.0
D017	2,4,5-TP Silver (2,4,5-Trichlorophenoxypropionic acid)	1.0

Subpart D—Lists of Hazardous Wastes (Interim final)

§ 261.30 General.

(a) A solid waste is a hazardous waste if it is listed in this Subpart, unless it has been excluded from this list under §§ 260.20 and 260.22.

(b) The Administrator will indicate his basis for listing the classes or types of wastes listed in this Subpart by employing one or more of the following Hazard Codes:

Ignitable Waste	(I)
Corrosive Waste	(C)
Reactive Waste	(R)
EP Toxic Waste	(E)
Acute Hazardous Waste	(A)
Toxic Waste	(T)

Appendix VII identifies the constituent which caused the Administrator to list the waste as an EP Toxic Waste (E) or Toxic Waste (T) in §§ 261.31 and 261.32.

(c) Each hazardous waste listed in this Subpart is assigned an EPA Hazardous Waste Number which precedes the name of the waste. This number must be used in complying with the notification requirements of Section 3010 of the Act and certain recordkeeping and reporting requirements under Parts 262 through 265 and Part 122 of this Chapter.

(d) The following hazardous wastes listed in §261.31 or §261.32 are subject to the exclusion limits for acutely hazardous wastes established in §261.5: (Reserved) [261.30(d) revised by 45 FR 74890, November 12, 1980]

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§261.31 Hazardous waste from nonspecific sources.

Industry and EPA hazardous waste No.	Hazardous waste	Hazard code
Generic		
F001	The following spent halogenated solvents used in degreasing: tetrachloroethylene, trichloroethylene, methylene chloride, 1,1,1-trichloroethane, carbon tetrachloride, and chlorinated fluorocarbons, and sludges from the recovery of these solvents in degreasing operations.	(T)
F002	The following spent halogenated solvents: tetrachloroethylene, methylene chloride, trichloroethylene, 1,1,1-trichloroethane, chlorobenzene, 1,1,2-trichloro-1,2,2-trifluoroethane, ortho-dichlorobenzene, and trichlorofluoromethane, and the still bottoms from the recovery of these solvents.	(I)
F003	The following spent non-halogenated solvents: xylene, acetone, ethyl acetate, ethyl benzene, ethyl ether, methyl isobutyl ketone, n-butyl alcohol, cyclohexanone, and methanol; and the still bottoms from the recovery of these solvents.	(I)
F004	The following spent non-halogenated solvents: creosole and cresylic acid, and nitrobenzene, and the still bottoms from the recovery of these solvents.	(T)
Industry and EPA hazardous waste No.	Hazardous waste	Hazard code
F005	The following spent non-halogenated solvents: toluene, methyl ethyl ketone, carbon disulfide, isobutanol, and pyridine; and the still bottoms from the recovery of these solvents.	(I, T)
F006	Wastewater treatment sludges from electroplating operations except from the following processes: (1) sulfuric acid anodizing of aluminum, (2) tin plating on carbon steel, (3) zinc plating (segregated basis) on carbon steel, (4) aluminum or zinc-aluminum plating on carbon steel, (5) cleaning/stripping associated with tin, zinc and aluminum plating on carbon steel, and (6) chemical etching and milling of aluminum.	(T)
F009	Wastewater treatment sludges from the chemical conversion coating of aluminum.	(T)
F007	Spent cyanide plating bath solutions from electroplating operations (except for precious metals electroplating spent cyanide plating bath solutions).	(R, T)
F008	Plating bath sludges from the bottom of plating baths from electroplating operations where cyanides are used in the process (except for precious metals electroplating plating bath sludges).	(R, T)
F009	Spent stripping and cleaning bath solutions from electroplating operations where cyanides are used in the process (except for precious metals electroplating spent stripping and cleaning bath solutions).	(R, T)
F010	Quenching bath sludge from oil baths from metal heat treating operations where cyanides are used in the process (except for precious metals heat-treating quenching bath sludges).	(R, T)
F011	Spent cyanide solutions from salt bath pot cleaning from metal heat treating operations (except for precious metals heat treating spent cyanide solutions from salt bath pot cleaning).	(R, T)
F012	Quenching wastewater treatment sludges from metal heat treating operations where cyanides are used in the process (except for precious metals heat treating quenching wastewater treatment sludges).	(T)
F014	Cyanidation wastewater treatment tailing pond sediment from mineral metals recovery operations.	(T)
F015	Spent cyanide bath solutions from mineral metals recovery operations.	(R, T)

[261.31 amended by 45 FR 47833, July 16, 1980; revised by 45 FR 74890, November 12, 1980; 46 FR 4617, January 16, 1981]

[Sec. 261.31]

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§ 261.32 Hazardous waste from specific sources.

Industry and EPA hazardous waste No.	Hazardous waste	Hazard code
Wood Preservation:		
K001	Bottom sediment sludge from the treatment of wastewaters from wood preserving processes that use creosote and/or pentachlorophenol	(T)
Inorganic Pigments:		
K002	Wastewater treatment sludge from the production of chrome yellow and orange pigments	(T)
K003	Wastewater treatment sludge from the production of molybdate orange pigments	(T)
K004	Wastewater treatment sludge from the production of zinc yellow pigments	(T)
K005	Wastewater treatment sludge from the production of chrome green pigments	(T)
K006	Wastewater treatment sludge from the production of chrome oxide green pigments (anhydrous and hydrated)	(T)
K007	Wastewater treatment sludge from the production of iron blue pigments	(T)
K008	Oven residue from the production of chrome oxide green pigments	(T)
Organic Chemicals:		
K009	Distillation bottoms from the production of acetaldehyde from ethylene	(T)
K010	Distillation side cuts from the production of acetaldehyde from ethylene	(T)
K011	Bottom stream from the wastewater stripper in the production of acrylonitrile	(R, T)
K013	Bottom stream from the acetonitrile column in the production of acrylonitrile	(R, T)
K014	Bottoms from the acetonitrile purification column in the production of acrylonitrile	(T)
K015	Still bottoms from the distillation of benzyl chloride	(T)
K016	Heavy ends or distillation residues from the production of carbon tetrachloride	(T)
K017	Heavy ends (still bottoms) from the purification column in the production of epichlorohydrin	(T)
K018	Heavy ends from the fractionation column in ethyl chloride production	(T)
K019	Heavy ends from the distillation of ethylene dichloride in ethylene dichloride production	(T)
K020	Heavy ends from the distillation of vinyl chloride in vinyl chloride monomer production	(T)
K021	Aqueous spent antimony catalyst waste from fluoromethanes production	(T)
K022	Distillation bottom tars from the production of phenol/acetone from cumene	(T)
K023	Distillation light ends from the production of phthalic anhydride from naphthalene	(T)
K024	Distillation bottoms from the production of phthalic anhydride from naphthalene	(T)
K025	Distillation light ends from the production of phthalic anhydride from ortho-xylene	(T)
K026	Distillation bottoms from the production of phthalic anhydride from ortho-xylene	(T)
K027	Stripping still tails from the production of methyl ethyl pyridines	(T)
K028	Centrifuge and distillation residues from toluene diisocyanate production	(R, T)
K029	Spent catalyst from the hydrochlorination reactor in the production of 1,1,1-trichloroethane	(T)
K030	Waste from the product steam stripper in the production of 1,1,1-trichloroethane	(T)
K031	Distillation bottoms from the production of 1,1,1-trichloroethane	(T)
K032	Heavy ends from the heavy ends column from the production of 1,1,1-trichloroethane	(T)
K033	Column bottoms or heavy ends from the combined production of trichloroethylene and perchloroethylene	(T)
K034	Distillation bottoms from aniline production	(T)
K035	Process residues from aniline extraction from the production of aniline	(T)
K036	Combined wastewater streams generated from chlorobenzene/aniline production	(T)
K037	Distillation or fractionation column bottoms from the production of chlorobenzene	(T)
K038	Separated aqueous stream from the reactor product washing step in the production of chlorobenzene	(T)
Inorganic Chemicals:		
K071	Brine purification muds from the mercury cell process in chlorine production, where separately prepurified brine is not used	(T)
K072	Chlorinated hydrocarbon waste from the purification step of the diaphragm cell process using graphite anodes in chlorine production	(T)
K106	Wastewater treatment sludge from the mercury cell process in chlorine production	(T)
Pesticides:		
K031	By-product salts generated in the production of MSMA and cacodylic acid	(T)
K032	Wastewater treatment sludge from the production of chlordane	(T)
K033	Wastewater and scrub water from the chlorination of cyclopentadiene in the production of chlordane	(T)
K034	Filter solids from the filtration of hexachlorocyclopentadiene in the production of chlordane	(T)
K037	Vacuum stripper discharge from the chlordane chlorinator in the production of chlordane	(T)
K035	Wastewater treatment sludges generated in the production of creosote	(T)
K036	Still bottoms from toluene reclamation distillation in the production of disulfoton	(T)
K037	Wastewater treatment sludges from the production of disulfoton	(T)
K038	Wastewater from the washing and stripping of phosphate production	(T)
K039	Filter cake from the filtration of diethylphosphorodithioic acid in the production of phosphate	(T)
K040	Wastewater treatment sludge from the production of phosphate	(T)
K041	Wastewater treatment sludge from the production of toxaphene	(T)
K042	Untreated process wastewater from the production of toxaphene	(T)
K043	Heavy ends or distillation residues from the distillation of tetrachlorobenzene in the production of 2,4,5-T	(T)
K044	2,6-Dichlorophenol waste from the production of 2,4-D	(T)
K045	Untreated wastewater from the production of 2,4-D	(T)
Explosives:		
K044	Wastewater treatment sludges from the manufacturing and processing of explosives	(R)
K045	Spent carbon from the treatment of wastewater containing explosives	(R)
K046	Wastewater treatment sludges from the manufacturing, formulation and loading of lead-based initiating compounds	(R)
K047	Pink/red water from TNT operations	(R)
Petroleum Refining:		
K048	Dissolved air flotation (DAF) float from the petroleum refining industry	(T)
K049	Slip or emulsion solids from the petroleum refining industry	(T)
K050	Heat exchanger bundle cleaning sludge from the petroleum refining industry	(T)
K051	API separator sludge from the petroleum refining industry	(T)
K052	Tank bottoms (lead) from the petroleum refining industry	(T)
Iron and Steel:		
K061	Emission control dust/sludge from the primary production of steel in electric furnaces	(T)
K062	Spent pickle liquor from steel finishing operations	(C, T)

Industry and EPA hazardous waste No.	Hazardous waste	Hazard code
Primary Copper:		
K084	Acid plant blowdown slurry/sludge resulting from the thickening of blowdown slurry from primary copper production	(T)
Primary Lead:		
K085	Surface impoundment solids contained in and dredged from surface impoundments at primary lead smelting facilities	(T)
Primary Zinc:		
K086	Sludge from treatment of process wastewater and/or acid plant blowdown from primary zinc production	(T)
K087	Electrolytic anode slimes/sludges from primary zinc production	(T)
K088	Cadmium plant leachate residue (iron oxide) from primary zinc production	(T)
Secondary Lead:		
K089	Emission control dust/sludge from secondary lead smelting	(T)
K100	Waste leaching solution from acid leaching of emission control dust/sludge from secondary lead smelting	(T)
Veterinary Pharmaceuticals:		
K084	Wastewater treatment sludges generated during the production of veterinary pharmaceuticals from arsenic or organo-arsenic compounds	(T)
K101	Distillation tar residues from the distillation of aniline-based compounds in the production of veterinary pharmaceuticals from arsenic or organo-arsenic compounds	(T)
K102	Residue from the use of activated carbon for decolorization in the production of veterinary pharmaceuticals from arsenic or organo-arsenic compounds	(T)
Ink Formulation:		
K086	Solvent washes and sludges, caustic washes and sludges, or water washes and sludges from cleaning tube and equipment used in the formulation of ink from pigments, driers, soaps, and stabilizers containing chromium and lead	(T)
Coking:		
K090	Ammonia still lime sludge from coking operations	(T)
K087	Decanter tank tar sludge from coking operations	(T)

[261.32 amended by 45 FR 47833, July 16, 1980; 45 FR 72039, October 30, 1980; revised by 45 FR 74980, November 12, 1980; 46 FR 4617, January 16, 1981]

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

[261.33 revised by 45 FR 78541, November 25, 1980]

The following materials or items are hazardous wastes if and when they are discarded or intended to be discarded:

(a) Any commercial chemical product or manufacturing chemical intermediate having the generic name listed in paragraphs (e) or (f) of this section.

(b) Any off-specification commercial chemical product or manufacturing chemical intermediate which, if it met specifications, would have the generic name listed in paragraphs (e) or (f) of this section.

[Editor's Note: EPA November 25, 1980, revised 261.33(c) twice. Both versions follow:]

(c) Any residue remaining in a container or an inner liner removed from a container that has held any commercial chemical product or manufacturing chemical intermediate having the generic name listed in paragraph (e) of this section, unless the container is empty as defined in § 261.7(b)(3) of this chapter. [Comment: Unless the residue is being beneficially

used or reused, or legitimately recycled or reclaimed; or being accumulated, stored, transported or treated prior to such use, re-use, recycling or reclamation, EPA considers the residue to be intended for discard, and thus a hazardous waste. An example of a legitimate re-use of the residue would be where the residue remains in the container and the container is used to hold the same commercial chemical product or manufacturing chemical intermediate it previously held. An example of the discard of the residue would be where the drum is sent to a drum reconditioner who reconditions the drum but discards the residue.] [261.33(c) revised by 45 FR 78529, November 25, 1980]

(c) Any container or inner liner removed from a container that has been used to hold any commercial chemical product or manufacturing chemical intermediate having the generic name listed in paragraph (e) of this section, unless:

(1) The container or inner liner has been triple rinsed using a solvent capable of removing the commercial chemical product or manufacturing chemical intermediate; or

(2) The container or inner liner has been cleansed by another method that has been shown in the scientific literature, or by tests conducted by the generator, to achieve equivalent removal; or

(3) In the case of a container, the inner liner that prevented contact of the commercial chemical product or manufacturing chemical intermediate with the container, has been removed. [The second 261.33(c) was revised by 45 FR 78541, November 25, 1980]

(d) Any residue or contaminated soil, water or other debris resulting from the cleanup of a spill, into or on any land or water, of any commercial chemical product or manufacturing chemical intermediate having the generic name listed in paragraphs (e) or (f) of this Section. [Comment: The phrase "commercial chemical product or manufacturing chemical intermediate having the generic name listed in" refers to a chemical substance which is manufactured or formulated for commercial or manufacturing use which consists of the commercially pure grade of the chemical, any technical grades of the chemical that are produced or marketed, and all formulations in which

[Sec. 261.33(d)]

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the chemical is the sole active ingredient. It does not refer to a material, such as a manufacturing process waste, that contains any of the substances listed in paragraphs (e) or (f). Where a manufacturing process waste is deemed to be a hazardous waste because it contains a substance listed in paragraphs (e) or (f), such waste will be listed in either § 261.31 or 261.32 or will be identified as a hazardous waste by the characteristics set forth in Subpart C of this Part.]

(e) The commercial chemical products or manufacturing chemical intermediates, referred to in paragraphs (a) through (d) of this section, are identified as acute hazardous wastes (H) and are subject to the small quantity exclusion defined in § 261.5(e). [Comment: For the convenience of the regulated community the primary hazardous properties of these materials have been indicated by the letters T (Toxicity), and R (Reactivity). Absence of a letter indicates that the compound only is listed for acute toxicity.] These wastes and their corresponding EPA Hazardous Waste Numbers are:

Hazardous waste No.	Substance
P023	Acetaldehyde, chloro-
P002	Acetamide, N-(aminomethyl)-
P057	Acetamide, 2-fluoro-
P058	Acetic acid, fluoro-, sodium salt
P066	Acetimidic acid, N-[(methylcarbamoyl)oxy]thio-, methyl ester
P001	3-(alpha-acetonylbenzyl)-4-hydroxycoumarin and salts
P002	1-Acetyl-2-thiourea
P003	Acrolein
P070	Aldicarb
P004	Aldrin
P005	Allyl alcohol
P006	Aluminum phosphide
P007	5-(Aminomethyl)-3-isoxazole
P008	4-Aminopyridine
P009	Ammonium picrate (R)
P119	Ammonium vanadate
P010	Arsenic acid
P012	Arsenic (III) oxide
P011	Arsenic (V) oxide
P011	Arsenic pentoxide
P012	Arsenic trioxide
P038	Arsine, diethyl-
P054	Azidine
P013	Barium cyanide
P024	Benzenamine, 4-chloro
P077	Benzenamine, 4-nitro-
P026	Benzene, (chloromethyl)-
P042	1,2-Benzenediol, 4-[(1-hydroxy-2-(methylamino)ethyl)-
P014	Benzenethiol
P028	Benzyl chloride
P015	Beryllium dust
P016	Bis(chloromethyl) ether
P017	Bromocetone
P018	Brucine
P021	Calcium cyanide
P123	Camphene, octachloro-
P103	Carbimidoselenic acid
P022	Carbon bisulfide
P022	Carbon disulfide

Hazardous Waste No.	Substance
P095	Carbonyl chloride
P033	Chlorine cyanide
P023	Chloroacetaldehyde
P024	p-Chloroaniline
P026	1-(o-Chlorophenyl)thiourea
P027	3-Chloropropanitrile
P029	Copper cyanides
P030	Cyanides (soluble cyanide salts), not else-where specified
P031	Cyanogen
P033	Cyanogen chloride
P036	Dichlorophenylarsine
P037	Diiodine
P038	Diethylarsine
P039	O,O-Diethyl S-[2-(ethylthio)ethyl] phosphorodithioate
P041	Diethyl-p-nitrophenyl phosphite
P040	O,O-Diethyl O-pyrazinyl phosphorothioate
P043	Diisopropyl fluorophosphate
P044	Dimethoate
P045	3,3-Dimethyl-1-(methylthio)-2-butanone, O-[(methylamino)carbonyl] oxime
P071	O,O-Dimethyl O-p-nitrophenyl phosphorothioate
P062	Dimethylnitrosamine
P046	alpha, alpha-Dimethylphenethylamine
P047	4,6-Dinitro-o-cresol and salts
P034	4,6-Dinitro-o-cyclohexylphenol
P048	2,4-Dinitrophenol
P020	Dinoseb
P065	Diphosphoramide, octamethyl-
P039	Disulfoton
P039	2,4-Dithioburet
P109	Dithiophosphoric acid, tetraethyl ester
P050	Endosulfan
P088	Endosulfan
P041	Endrin
P042	Ephedrine
P046	Etanamine, 1,1-dimethyl-2-phenyl-
P084	Etanamine, N-methyl-N-nitroso-
P101	Ethyl cyanide
P054	Ethylamine
P197	Famphur
P058	Fluorine
P057	Fluoroacetamide
P058	Fluoroacetic acid, sodium salt
P065	Fulminic acid, mercury(II) salt (R,T)
P059	Heptachlor
P051	1,2,3,4,10,10-Hexachloro-6,7-epoxy-1,4,4a,5,8,7,8,8a-octahydro-endo,endo-1,4,5,8-dimethanonaphthalene
P037	1,2,3,4,10,10-Hexachloro-6,7-epoxy-1,4,4a,5,8,7,8,8a-octahydro-endo,exo-1,4,5,8-dimethanonaphthalene
P060	1,2,3,4,10,10-Hexachloro-1,4,4a,5,8,8a-hexahydro-1,4,5,8-endo,endo-dimethanonaphthalene
P004	1,2,3,4,10,10-Hexachloro-1,4,4a,5,8,8a-hexahydro-1,4,5,8-endo,exo-dimethanonaphthalene
P060	Hexachlorohexahydro-exo,exo-dimethanonaphthalene
P062	Hexaethyl tetraphosphate
P116	Hydrazinecarbothioamide
P068	Hydrazine, methyl-
P063	Hydrocyanic acid
P063	Hydrogen cyanide
P096	Hydrogen phosphide
P064	Isocyanic acid, methyl ester
P007	3(2H)-Isosazoline, 5-(aminomethyl)-
P092	Mercury, (acetato-O)phenyl-
P065	Mercury fulminate (R,T)
P016	Methane, oxybis(chloro)-
P112	Methane, tetranitro- (R)
P118	Methanethiol, trichloro-
P059	4,7-Methano-1H-indene, 1,4,5,6,7,8,8-hap-tachloro-3a,4,7,7a-tetrahydro-
P066	Methomyl
P067	2-Methylaziridine
P066	Methyl hydrazine
P064	Methyl isocyanate
P069	2-Methylsacetonitrile
P071	Methyl parathion
P072	alpha-Naphthylthiourea
P073	Nickel carbonyl

Hazardous Waste No.	Substance
P074	Nickel cyanide
P074	Nickel(II) cyanide
P073	Nickel tetracarbonyl
P075	Nicotine and salts
P076	Nitric oxide
P077	p-Nitroaniline
P078	Nitrogen dioxide
P078	Nitrogen(II) oxide
P078	Nitrogen(IV) oxide
P081	Nitroglycerine (R)
P082	N-Nitrosodimethylamine
P084	N-Nitrosomethylamine
P050	5-Norbornene-2,3-dimethanol, 1,4,5,6,7,7-hexachloro, cyclic sulfate
P085	Octamethylpyrophosphoramide
P067	Osmium oxide
P087	Osmium tetroxide
P088	7-Oxabicyclo[2.2.1]heptane-2,3-dicarboxylic acid
P089	Parathion
P034	Phenol, 2-cyclohexyl-4,6-dinitro-
P048	Phenol, 2,4-dinitro-
P047	Phenol, 2,4-dinitro-6-methyl-
P020	Phenol, 2,4-dinitro-6-(1-methylpropyl)-
P006	Phenol, 2,4,6-trinitro-, ammonium salt (R)
P036	Phenyl dichloroarsine
P082	Phenylmercuric acetate
P093	N-Phenylthiourea
P094	Phosgene
P095	Phosphene
P096	Phosphine
P041	Phosphoric acid, diethyl, p-nitrophenyl ester
P044	Phosphorodithioic acid, O,O-dimethyl S-(2-(methylamino)-2-oxoethyl)ester
P043	Phosphorothioic acid, bis(1-methylethyl)-ester
P094	Phosphorothioic acid, O,O-diethyl S-(ethylthio)methyl ester
P059	Phosphorothioic acid, O,O-diethyl O-(p-nitrophenyl) ester
P040	Phosphorothioic acid, O,O-diethyl O-pyrazinyl ester
P097	Phosphorothioic acids, O,O-dimethyl O-(p-((dimethylamino)sulfonyl)phenyl)ester
P110	Plumbane, tetraethyl-
P098	Potassium cyanide
P099	Potassium silver cyanide
P070	Propanal, 2-methyl-2-(methylthio)-, O-[(methylamino)carbonyl]oxime
P101	Propanenitrile
P027	Propanenitrile, 3-chloro-
P069	Propanenitrile, 2-hydroxy-2-methyl-
P081	1,2,3-Propanetriol, trinitrate- (R)
P017	2-Propanone, 1-cromo-
P102	Propargyl alcohol
P003	2-Propanol
P035	2-Propan-1-ol
P067	1,2-Propylenimine
P102	2-Propyn-1-ol
P008	4-Pyridamine
P075	Pyridine, (S)-3-(1-methyl-2-pyrridinyl)-, and salts
P111	Pyrophosphoric acid, tetraethyl ester
P103	Selenourea
P104	Silver cyanide
P105	Sodium azide
P106	Sodium cyanide
P107	Strontium sulfide
P108	Strychnidin-10-one, and salts
P018	Strychnidin-10-one, 2,3-dimethoxy-
P106	Strychnine and salts
P115	Sulfuric acid, thallium(I) salt
P109	Tetraethylthiopyrophosphate
P110	Tetraethyl lead
P111	Tetraethylpyrophosphate
P112	Tetraethylpyrophosphate
P062	Tetraphosphoric acid, hexaethyl ester
P113	Thallic oxide
P113	Thallium(III) oxide
P114	Thallium(I) selenate
P115	Thallium(I) sulfate
P045	Thioformic acid
P048	Thiomidocarbonic diamide

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Hazardous waste No.	Substance
P014	Thiourea
P116	Thiosemicarbazide
P026	Thiourea, 1,2-chlorophenyl
P072	Thiourea, 1,4-naphthyl
P083	Thiourea, phenyl
P123	Toxaphene
P118	Trichloromethanol
P118	Vanadic acid, ammonium salt
P120	Vanadium pentoxide
P120	Vanadium(V) oxide
P001	Wartsun
P121	Zinc cyanide
P122	Zinc phosphide (R,T)

(f) The commercial chemical products or manufacturing chemical intermediates, referred to in paragraphs (a), (b), and (d) of this section, are identified as toxic wastes (T) unless otherwise designated and are subject to the small quantity exclusion defined in § 261.5(a) and (f). [Comment: For the convenience of the regulated community, the primary hazardous properties of these materials have been indicated by the letters T (Toxicity), R (Reactivity), I (Ignitability) and C (Corrosivity). Absence of a letter indicates that the compound is only listed for toxicity.] These wastes and their corresponding EPA Hazardous Waste Numbers are:

Hazardous Waste No.	Substance
U001	Acetaldehyde (I)
U034	Acetaldehyde, dichloro-
U187	Acetaminide, N-(4-ethoxyphenyl)-
U005	Acetaminide, N-9H-fluorene 2-yl-
U112	Acetic acid, ethyl ester (I)
U144	Acetic acid, lead salt
U214	Acetic acid, thallium(I) salt
U002	Acetone (I)
U003	Acetonitrile (I,T)
U004	Acetophenone
U005	2-Acetylaminofluorene
U006	Acetyl chloride (C,R,T)
U007	Acrylamide
U008	Acrylic acid (I)
U009	Acrylonitrile
U150	Alanine, 3-(p-bis(2-chloroethyl)amino) phenyl-L-
U011	Amtriole
U012	Aniline (I,T)
U014	Auramine
U015	Azaserine
U010	Azinox(2,3,5,4-pyrazole) 2-azindole-4,7-dione, 5-amino-6-(diaminocarbonyl)oxymethyl-1,1a,2,8,8a,8b-hexahydro-6a-methoxy-5-methyl-
U157	Benz[1,2,3,4-cd]pyrene, 1,2-dihydro-3-methyl-
U016	Benz[1,2,3,4-cd]pyrene
U016	3,4-Benzocyclopentadiene
U017	Benz[1,2,3,4-cd]pyrene
U018	Benz[1,2,3,4-cd]pyrene
U018	1,2-Benzanthracene, 7,12-dimethyl-
U094	Benzanthracene (I,T)
U012	Benzeneamine (I,T)
U014	Benzeneamine, 4,4'-carbonimidoylbis(N,N-dimethyl-)
U049	Benzeneamine, 4-chloro-2-methyl-
U093	Benzeneamine, N,N-dimethyl-4-phenylazo-

Hazardous waste No.	Substance
U156	Benzeneamine, 4,4'-methylenebis(2-chloro-)
U222	Benzeneamine, 2-methyl- hydrochloride
U181	Benzeneamine, 2-methyl-5-nitro-
U018	Benzeneamine (I,T)
U038	Benzenesulfo acid, 4-chloro-alpha-(4-chlorophenyl)-alpha-hydroxy, ethyl ester
U030	Benzene, 1-bromo-4-phenyl-
U037	Benzene, chloro-
U190	1,2-Benzenedicarboxylic acid anhydride
U028	1,2-Benzenedicarboxylic acid, (bis(2-ethyl-hexyl)) ester
U089	1,2-Benzenedicarboxylic acid, dibutyl ester
U088	1,2-Benzenedicarboxylic acid, diethyl ester
U102	1,2-Benzenedicarboxylic acid, dimethyl ester
U107	1,2-Benzenedicarboxylic acid, di-n-ethyl ester
U070	Benzene, 1,2-dichloro-
U071	Benzene, 1,3-dichloro-
U072	Benzene, 1,4-dichloro-
U017	Benzene, (dichloromethyl)-
U223	Benzene, 1,3-dicyanatomethyl- (R,T)
U238	Benzene, dimethyl-(I,T)
U201	1,3-Benzenediol
U127	Benzene, hexachloro-
U058	Benzene, hexahydro- (I)
U188	Benzene, hydroxy-
U220	Benzene, methyl-
U109	Benzene, 1-methyl-1,2,4-dinitro-
U106	Benzene, 1-methyl-2,6-dinitro-
U203	Benzene, 1,2-methylenedioxy-4-ethyl-
U141	Benzene, 1,2-methylenedioxy-4-propyl-
U090	Benzene, 1,2-methylenedioxy-4-propyl-
U055	Benzene, (1-methyl-ethyl)- (I)
U189	Benzene, nitro- (I,T)
U183	Benzene, pentachloro-
U185	Benzene, pentachloro-nitro-
U020	Benzenesulfonic acid chloride (C,R)
U020	Benzenesulfonfyl chloride (C,R)
U207	Benzene, 1,2,4,5-tetrachloro-
U023	Benzene, (trichloromethyl)- (C,R,T)
U234	Benzene, 1,3,5-trinitro- (R,T)
U021	Benzidine
U202	1,2-Benzisothiazolin-3-one, 1,1-dioxide
U120	Benzol[1,2-k]fluorene
U022	Benzol[a]pyrene
U022	3,4-Benzopyrene
U197	p-Benzquinone
U023	Benzotrichloride (C,R,T)
U050	1,2-Benzophenanthrene
U085	2,2'-Biphenyl (I,T)
U021	(1,1'-Biphenyl)-4,4'-diamine
U073	(1,1'-Biphenyl)-4,4'-diamine, 3,3'-dichloro-
U091	(1,1'-Biphenyl)-4,4'-diamine, 3,3'-dimethoxy-
U095	(1,1'-Biphenyl)-4,4'-diamine, 3,3'-dimethyl-
U024	Bis(2-chloroethoxy) methane
U027	Bis(2-chloropropoxy) ether
U244	Bis(dimethylthiocarbonyl) disulfide
U026	Bis(2-ethylhexyl) phthalate
U246	Bromine cyanide
U225	Bromotorm
U039	4-Bromophenyl phenyl ether
U128	1,3-Butadiene, 1,1,2,3,4,4-hexachloro-
U172	1-Butanamine, N-butyl-N-nitroso-
U035	Butanoic acid, 4-(bis(2-chloroethyl)amino) benzene-
U031	1-Butanol (I)
U159	2-Butanone (I,T)
U185	2-Butanone peroxide (R,T)
U053	2-Butene
U074	2-Butene, 1,4-dichloro- (I,T)
U031	n-Butyl alcohol (I)
U136	Calcodylic acid
U032	Calcium chromate
U238	Carbamoyl acid, ethyl ester
U178	Carbamoyl acid, methylthio-, ethyl ester
U178	Carbamoyl, N-ethyl-N-nitroso-
U177	Carbamoyl, N-methyl-N-nitroso-
U219	Carbamoyl, thio-
U097	Carbamoyl chloride, dimethyl-
U215	Carbonic acid, diethanol(I) salt
U158	Carbonochloridic acid, methyl ester (I,T)
U033	Carbon oxyfluoride (R,T)
U211	Carbon tetrachloride

Hazardous waste No.	Substance
U033	Carbonyl fluoride (R,T)
U034	Chloral
U035	Chlorambucil
U046	Chlorobenzene, ethyl-
U046	Chlorobenzene
U037	Chlorobenzene
U245	1-(p-Chlorobenzoyl)-5-methoxy-2-methylindole-3-acetic acid
U039	4-Chloro-m-cresol
U041	1-Chloro-2,3-epoxypropene
U042	2-Chloroethyl vinyl ether
U044	Chloroform
U046	Chloromethyl methyl ether
U047	beta-Chloronaphthalene
U048	alpha-Chlorophenol
U049	4-Chloro-p-toluidine, hydrochloride
U032	Chromic acid, cesium salt
U050	Chrysene
U051	Cresol
U052	Cresol
U052	Cresylic acid
U053	Crotonaldehyde
U055	Cumene (I)
U246	Cyanogen bromide
U197	1,4-Cyclohexadienedione
U056	Cyclohexane (I)
U057	Cyclohexanone (I)
U130	1,3-Cyclopentadiene, 1,2,3,4,5,5-hexachloro-
U058	Cyclophosphamide
U240	2,4,4-D, salts and esters
U059	Daunomycin
U060	DDT
U061	DDT
U142	Decachlorocyclohexa-1,3,4-metheno-2H-cyclobut[2,3-d]-penten-2-one
U062	Diallate
U133	Diamine (R,T)
U221	Diaminobenzene
U063	Dibenz[a,h]anthracene
U083	1,2,5,6-Dibenzanthracene
U084	1,2,7,8-Dibenzopyrene
U084	Dibenz[a,j]pyrene
U086	1,2-Dibromo-3-chloropropane
U088	Dibutyl phthalate
U082	S-(2,3-Dichloroethyl) disopropylthiocarbamate
U070	o-Dichlorobenzene
U071	m-Dichlorobenzene
U072	p-Dichlorobenzene
U073	3,3'-Dichlorobenzidine
U074	1,4-Dichloro-2-butene (I,T)
U075	Dichlorodifluoromethane
U192	3,5-Dichloro-N-(1,1-dimethyl-2-propenyl) benzamide
U060	Dichloro diphenyl dichloroethane
U061	Dichloro diphenyl trichloroethane
U078	1,1-Dichloroethylene
U079	1,2-Dichloroethylene
U025	Dichloroethyl ether
U081	2,4-Dichlorophenol
U082	2,6-Dichlorophenol
U240	2,4-Dichlorophenoxyacetic acid, salts and esters
U083	1,2-Dichloropropane
U084	1,3-Dichloropropane
U085	1,2,3,4-Dichlorobutene (I,T)
U108	1,4-Dichloro diol
U086	N,N-Diethylhydrazine
U087	O,O-Diethyl-S-methyl-dithiophosphate
U088	Diethyl phthalate
U088	Diethylstilbestrol
U148	1,2-Dihydro-3,6-pyridinedione
U090	Dihydroestron
U091	3,3'-Dimethoxybenzidine
U092	Dimethylamine (I)
U093	Dimethylaminoazobenzene
U094	7,18-Dimethylbenz[a]anthracene
U095	3,3'-Dimethylbenzidine
U096	alpha,beta-Dimethylbenzylhydropoxide (I)
U097	Dimethylcarbamoyl chloride
U098	1,1-Dimethylhydrazine
U099	1,2-Dimethylhydrazine
U101	2,4-Dimethylphenol
U102	Dimethyl phthalate

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Hazardous Waste No.	Substance	Hazardous Waste No.	Substance	Hazardous Waste No.	Substance
U103.	Dimethyl sulfate	U142.	Kepon	U181.	5-Nitro-o-toluidine
U105.	2,4-Dinitrotoluene	U143.	Lasiocarpine	U183.	1,2-Oxathiolane, 2,2-dioxide
U106.	2,6-Dinitrotoluene	U144.	Lead acetate	U058.	2H-1,3,2-Oxazaphosphorine, 2-[(bis(2-chloro-ethyl)amino)]tetrahydro-, oxide 2-
U107.	Di-n-octyl phthalate	U145.	Lead phosphate	U115.	Oxirane (I,T)
U108.	1,4-Dioxane	U146.	Lead subacetate	U041.	Oxirane, 2-(chloromethyl)-
U109.	1,2-Diphenylhydrazine	U129.	Urdane	U182.	Pentadiene
U110.	Dipropylamine (I)	U147.	Maleic anhydride	U183.	Pentachlorobenzene
U111.	Di-N-propylpyridylamine	U148.	Maleic hydrazide	U184.	Pentachlorobenzene
U001.	Ethanol (I)	U149.	Malononitrile	U185.	Pentachlorobenzene
U174.	Ethanolamine, N-ethyl-N-nitroso-	U150.	Methylal	U242.	Pentachlorophenol
U087.	Ethene, 1,2-dibromo-	U151.	Mercaptan	U186.	1,3-Pentadiene (I)
U078.	Ethene, 1,1-dichloro-	U152.	Methacrylonitrile (I,T)	U187.	Phenacetin
U077.	Ethene, 1,2-dichloro-	U092.	Methanamine, N-methyl- (I)	U188.	Phenol
U114.	1,2-Ethanedithiocarbamodithioic acid	U029.	Methane, bromo-	U048.	Phenol, 2-chloro-
U131.	Ethene, 1,1,1,2,2,2-hexachloro-	U045.	Methane, chloro- (I,T)	U036.	Phenol, 4-chloro-3-methyl-
U024.	Ethene, 1,1'-(methylenedioxy)bis(2-chloro-	U048.	Methane, chloromethoxy-	U081.	Phenol, 2,4-dichloro-
U003.	Ethanimine (I, T)	U050.	Methane, dichloro-	U082.	Phenol, 2,5-dichloro-
U117.	Ethane, 1,1'-oxybis (I)	U075.	Methane, dichlorodifluoro-	U101.	Phenol, 2,4-dimethyl-
U025.	Ethane, 1,1'-oxybis(2-chloro-	U119.	Methanesulfonic acid, ethyl ester	U170.	Phenol, 4-nitro-
U184.	Ethane, pentachloro-	U211.	Methane, tetrachloro-	U242.	Phenol, pentachloro-
U208.	Ethane, 1,1,1,2-tetrachloro-	U121.	Methane, trichlorodifluoro-	U212.	Phenol, 2,3,4,6-tetrachloro-
U209.	Ethane, 1,1,2,2-tetrachloro-	U153.	Methanethiol (I,T)	U230.	Phenol, 2,4,5-trichloro-
U218.	Ethanedithioamide	U225.	Methane, tribromo-	U231.	Phenol, 2,4,6-trichloro-
U227.	Ethane, 1,1,2-trichloro-	U044.	Methane, trichloro-	U137.	1,10-(1,2-phenylene)pyrene
U043.	Ethane, chloro-	U121.	Methane, trichlorodifluoro-	U145.	Phosphoric acid, Lead salt
U042.	Ethane, 2-chloroethoxy-	U123.	Methanoic acid (C,T)	U087.	Phosphorodithioic acid, 0,0-diethyl-, S-methyl ester
U076.	Ethane, 1,1-dichloro-	U036.	4,7-Methanocandian, 1,2,4,5,6,7,8,8-octa-chloro-3a,4,7,7a-tetrahydro-	U189.	Phosphorus sulfide (R)
U079.	Ethane, trans-1,2-dichloro-	U184.	Methanol (I)	U190.	Phthalic anhydride
U210.	Ethane, 1,1,2,2-tetrachloro-	U155.	Methoxybenzene	U191.	2-Picoline
U173.	Ethanol, 2,2'-(nitrooximino)bis-	U154.	Methyl alcohol (I)	U192.	Promide
U004.	Ethanone, 1-phenyl-	U029.	Methyl bromide	U194.	1-Propanamine (I,T)
U005.	Ethanoyl chloride (C,R,T)	U186.	1-Methylbutadiene (I)	U110.	1-Propanamine, N-propyl- (I)
U112.	Ethyl acetate (I)	U046.	Methyl chloride (I,T)	U088.	Propane, 1,2-dibromo-3-chloro-
U113.	Ethyl acrylate (I)	U158.	Methyl chlorocarbonate (I,T)	U149.	Propanedinitrile
U236.	Ethyl carbamate (urethane)	U226.	Methylchloroform	U171.	Propane, 2-nitro- (I)
U038.	Ethyl 4,4'-dichlorobenzate	U157.	3-Methylcholanthrene	U027.	Propane, 2,2'-oxybis(2-chloro-
U114.	Ethylenebis(dithiocarbamic acid)	U158.	4,4'-Methylenabis(2-chloroaniline)	U193.	1,3-Propane sultone
U087.	Ethylene dibromide	U132.	2,2'-Methylenabis(3,4,8-trichlorophenol)	U235.	1-Propanol, 2,3-dibromo-, phosphate (3:1)
U077.	Ethylene dichloride	U068.	Methylene bromide	U126.	1-Propanol, 2,3-epoxy-
U115.	Ethylene oxide (I,T)	U060.	Methylene chloride	U140.	1-Propanol, 2-methyl- (I,T)
U116.	Ethylene thioether	U122.	Methylene oxide	U002.	2-Propanone (I)
U117.	Ethyl ether (I)	U159.	Methyl ethyl ketone (I,T)	U007.	2-Propanamide
U078.	Ethylene dichloride	U180.	Methyl ethyl ketone peroxide (R,T)	U084.	Propane, 1,3-dichloro-
U118.	Ethylmethacrylate	U138.	Methyl iodide	U243.	1-Propane, 1,1,2,3,3,3-hexachloro-
U119.	Ethyl methanesulfonate	U161.	Methyl isobutyl ketone (I)	U009.	2-Propanenitrile
U139.	Ferri dextran	U162.	Methyl methacrylate (I,T)	U152.	2-Propanenitrile, 2-methyl- (I,T)
U120.	Fluoranthene	U163.	N-Methyl-N'-nitro-N-nitrosoguanidine	U008.	2-Propenoic acid (I)
U122.	Formaldehyde	U161.	4-Methyl-2-pentanone (I)	U113.	2-Propenoic acid, ethyl ester (I)
U123.	Formic acid (C,T)	U164.	Methylthiouracil	U118.	2-Propenoic acid, 2-methyl-, ethyl ester
U124.	Furan (I)	U010.	Monomycin C	U162.	2-Propenoic acid, 2-methyl-, methyl ester (I,T)
U125.	2-Furancarboxaldehyde (I)	U059.	5,12-Nachthausenedione, (8S-ox)-9-acetyl-10-[(3-amino-2,3,6-trideoxy-alpha-L-lyxo-hexopyranosyl)oxy]-7,8,9,10-tetrahydro-6,8,11-trihydroxy-1-methoxy-	U233.	Propionic acid, 2-(2,4,6-trichlorophenyl)-n-propylamine (I,T)
U147.	2,5-Furandione	U165.	Naphthalene	U194.	n-Propylamine (I,T)
U213.	Furan, tetrahydro- (I)	U047.	Naphthalene, 2-chloro-	U083.	Propylene dichloride
U128.	Furkural (I)	U166.	1,4-Naphthalenedione	U196.	Pyridine
U124.	Furkural (I)	U236.	2,7-Naphthalenedisulfonic acid, 3,3'-[(3,3'-dimethyl-(1,1'-biphenyl)-4,4'-diyl)]bis-(sulfonyl)-(5-amino-4-hydroxy)-, tetrasodium salt	U155.	Pyridine, 2-[(2-(dimethylamino)-2-thenyl-mino)-
U206.	D-Glucopyranose, 2-deoxy-2-(3-methyl-3-nitroacryloyl)-	U168.	1,4-Naphthoquinone	U179.	Pyridine, hexahydro-N-nitroso-
U128.	Glycidyl ether	U187.	1-Naphthylamine	U191.	Pyridine, 2-methyl-
U163.	Guandine, N-nitroso-N-methyl-N'-nitro-	U188.	2-Naphthylamine	U164.	4(1H)-Pyrimidinone, 2,3-dihydro-6-methyl-2-thioxo-
U127.	Hexachlorobenzene	U187.	alpha-Naphthylamine	U180.	Pyrolic, tetrahydro-N-nitroso-
U126.	Hexachlorobutadiene	U168.	beta-Naphthylamine	U200.	Reserpine
U129.	Hexachlorocyclohexane (gamma isomer)	U028.	2-Naphthylamine, N,N'-bis(2-chloro-methyl)-	U201.	Resorcinol
U130.	Hexachlorocyclopentadiene	U169.	Nitrobenzene (I,T)	U202.	Saccharin and salts
U131.	Hexachloroethane	U170.	p-Nitrophenol	U203.	Satrole
U132.	Hexachlorophene	U171.	2-Nitropropane (I)	U204.	Selenous acid
U243.	Hexachloropropene	U172.	N-Nitrosodimethylamine	U204.	Selenium dioxide
U133.	Hydrazine (R,T)	U173.	N-Nitrosodietylamine	U205.	Selenium disulfide (R,T)
U088.	Hydrazine, 1,2-diethyl-	U174.	N-Nitrosodiphenylamine	U015.	L-Serine, diazoacetate (ester)
U098.	Hydrazine, 1,1-dimethyl-	U111.	N-Nitroso-N-propylamine	U233.	Silver
U099.	Hydrazine, 1,2-dimethyl-	U176.	N-Nitroso-N-ethylurea	U089.	4,4'-Salbenediol, alpha, alpha'-diethyl-
U109.	Hydrazine, 1,2-diphenyl-	U177.	N-Nitroso-N-methylurea	U208.	Streptozotocin
U134.	Hydrofluoric acid (C,T)	U178.	N-Nitroso-N-methylurethane	U135.	Sulfur hydride
U134.	Hydrogen fluoride (C,T)	U179.	N-Nitrosopiperidine	U103.	Sulfuric acid, dimethyl ester
U135.	Hydrogen sulfide	U180.	N-Nitrosopyrrolidine	U188.	Sulfur phosphide (R)
U098.	Hydroperoxide, 1-methyl-1-phenylethyl- (R)			U205.	Sulfur tetratide (R,T)
U136.	Hydroxydimethylamine oxide			U232.	2,4,5-T
U116.	2-Imidazolidinone			U207.	1,2,4,5-Tetrachlorobenzene
U137.	Indenol, 1,2,3-oxa			U208.	1,1,1,2-Tetrachloroethane
U245.	Indomethacin			U209.	1,1,2,2-Tetrachloroethane
U139.	Iron dextran			U210.	Tetrachloroethylene
U140.	Isobutyl stathal (I,T)				
U141.	Isocaproic				

Hazardous Waste No.	Substance
U212.....	2,3,4,6-Tetrachlorophenol
U213.....	Tetrahydrofuran (l)
U214.....	Thallium(I) acetate
U215.....	Thallium(I) carbonate
U216.....	Thallium(I) chloride
U217.....	Thallium(I) nitrate
U218.....	Thioacetamide
U153.....	Thiomethanol (l,T)
U219.....	Thiourea
U244.....	Thiram
U220.....	Toluene
U221.....	Toluenediamine
U223.....	Toluene diisocyanate (R,T)
U222.....	O-Toluidine hydrochloride
U011.....	1H-1,2,4-Triazol-3-amine
U226.....	1,1,1-Trichloroethane
U227.....	1,1,2-Trichloroethane
U226.....	Trichloroethene
U226.....	Trichloroethylene
U121.....	Trichloromonoisobutylmethane
U230.....	2,4,5-Trichlorophenol
U231.....	2,4,6-Trichlorophenol
U232.....	2,4,6-Trichlorophenoxyacetic acid
U234.....	sym-Triisobutylbenzene (R,T)
U182.....	1,3,8-Trioxane, 2,4,5-trimethyl-
U235.....	Tri(2,3-dibromopropyl) phosphate
U236.....	Trypan blue
U237.....	Uracil, 5-bis(2-chloromethyl)amino-
U237.....	Uracil mustard
U043.....	Vinyl chloride
U239.....	Xylene (l)
U200.....	Yohimban-16-carboxylic acid, 11,17-dimethoxy-18-[(3,4,5-trimethoxybenzoyl)oxy]-, methyl ester,

Appendix I—Representative Sampling Methods

The methods and equipment used for sampling waste materials will vary with the form and consistency of the waste materials to be sampled. Samples collected using the sampling protocols listed below, for sampling waste with properties similar to the indicated materials, will be considered by the Agency to be representative of the waste.

Extremely viscous liquid—ASTM Standard D140–70 Crushed or powdered material—ASTM Standard D348–75 Soil or rock-like material—ASTM Standard D420–69 Soil-like material—ASTM Standard D1452–65 Fly Ash-like material—ASTM Standard D2234–76 (ASTM Standards are available from ASTM, 1916 Race St., Philadelphia, PA 19103)

Containerized liquid wastes—"COLIWASA" described in "Test Methods for the Evaluation of Solid Waste, Physical/Chemical Methods," U.S. Environmental Protection Agency, Office of Solid Waste, Washington, D.C. 20460. [Copies may be obtained from Solid Waste Information, U.S. Environmental Protection Agency, 26 W. 5 Clair St., Cincinnati, Ohio 45268]

Liquid waste in pits, ponds, lagoons, and similar reservoirs.—"Pond Sampler" described in "Test Methods for the Evaluation of Solid Waste, Physical/Chemical Methods,"¹

This manual also contains additional information on application of these protocols.

¹These methods are also described in "Samplers and Sampling Procedures for Hazardous Waste Streams," EPA 600/2-80-018, January 1980.

Appendix II—EP Toxicity Test Procedure

A. Extraction Procedure (EP)

1. A representative sample of the waste to be tested (minimum size 100 grams) should be obtained using the methods specified in Appendix I or any other methods capable of yielding a representative sample within the meaning of Part 260. [For detailed guidance on conducting the various aspects of the EP see "Test Methods for the Evaluation of Solid Waste, Physical/Chemical Methods," SW-846, U.S. Environmental Protection Agency Office of Solid Waste, Washington, D.C. 20460.¹]

2. The sample should be separated into its component liquid and solid phases using the method described in "Separation Procedure" below. If the solid residue² obtained using this method totals less than 0.5% of the original weight of the waste, the residue can be discarded and the operator should treat the liquid phase as the extract and proceed immediately to Step 8.

3. The solid material obtained from the Separation Procedure should be

¹Copies may be obtained from Solid Waste Information, U.S. Environmental Protection Agency, 26 W. St. Clair Street, Cincinnati, Ohio 45268.

²The percent solids is determined by drying the filter pad at 80° C until it reaches constant weight and then calculating the percent solids using the following equation:

$$\frac{(\text{weight of pad + solid}) - (\text{tare weight of pad})}{\text{initial weight of sample}} \times 100 = \% \text{ solids}$$

evaluated for its particle size. If the solid material has a surface area per gram of material equal to, or greater than, 3.1 cm² or passes through a 9.5 mm (0.375 inch) standard sieve, the operator should proceed to Step 4. If the surface area is smaller or the particle size larger than specified above, the solid material should be prepared for extraction by crushing, cutting or grinding the material so that it passes through a 9.5 mm [0.375 inch] sieve or, if the material is in a single piece, by subjecting the material to the "Structural Integrity Procedure" described below.

4. The solid material obtained in Step 3 should be weighed and placed in an extractor with 16 times its weight of deionized water. Do not allow the material to dry prior to weighing. For purposes of this test, an acceptable extractor is one which will impart sufficient agitation to the mixture to not only prevent stratification of the sample and extraction fluid but also insure that all sample surfaces are continuously brought into contact with well mixed extraction fluid.

5. After the solid material and deionized water are placed in the extractor, the operator should begin agitation and measure the pH of the solution in the extractor. If the pH is greater than 5.0, the pH of the solution should be decreased to 5.0 ± 0.2 by adding 0.5 N acetic acid. If the pH is equal to or less than 5.0, no acetic acid should be added. The pH of the solution should be monitored, as described below, during the course of the extraction and if the pH rises above 5.2, 0.5N acetic acid should be added to bring the pH down to 5.0 ± 0.2. However, in no event shall the aggregate amount of acid added to the solution exceed 4 ml of acid per gram of solid. The mixture should be agitated for 24 hours and maintained at 20°–40° C (68°–104° F) during this time. It is recommended that the operator monitor and adjust the pH during the course of the extraction with a device such as the Type 45-A pH Controller manufactured by Chemtrix, Inc., Hillsboro, Oregon 97123 or its equivalent, in conjunction with a metering pump and reservoir of 0.5N acetic acid. If such a system is not available, the following manual procedure shall be employed:

[Appendix II]

(a) A pH meter should be calibrated in accordance with the manufacturer's specifications.

(b) The pH of the solution should be checked and, if necessary, 0.5N acetic acid should be manually added to the extractor until the pH reaches 5.0 ± 0.2 . The pH of the solution should be adjusted at 15, 30 and 60 minute intervals, moving to the next longer interval if the pH does not have to be adjusted more than 0.5N pH units.

(c) The adjustment procedure should be continued for at least 6 hours.

(d) If at the end of the 24-hour extraction period, the pH of the solution is not below 5.2 and the maximum amount of acid (4 ml per gram of solids) has not been added, the pH should be adjusted to 5.0 ± 0.2 and the extraction continued for an additional four hours, during which the pH should be adjusted at one hour intervals.

6. At the end of the 24 hour extraction period, deionized water should be added to the extractor in an amount determined by the following equation:

$$V = (20)(W) - 16(W) - A$$

V = ml deionized water to be added

W = weight in grams of solid charged to extractor

A = ml of 0.5N acetic acid added during extraction

7. The material in the extractor should be separated into its component liquid and solid phases as described under "Separation Procedure."

8. The liquids resulting from Steps 2 and 7 should be combined. This combined liquid (or the waste itself if it has less than 1/2 percent solids, as noted in Step 2) is the extract and should be analyzed for the presence of any of the contaminants specified in Table I of § 261.24 using the Analytical Procedures designated below.

Separation Procedure

Equipment: A filter holder, designed for filtration media having a nominal pore size of 0.45 micrometers and capable of applying a 5.3 kg/cm^2 (75 psi) hydrostatic pressure to the solution being filtered shall be used. For mixtures containing nonabsorptive solids, where separation can be affected without imposing a 5.3 kg/cm^2 pressure differential, vacuum filters employing a

0.45 micrometers filter media can be used. (For further guidance on filtration equipment or procedures see "Test Methods for Evaluating Solid Waste, Physical/Chemical Methods.")

Procedure:

(i) Following manufacturer's directions, the filter unit should be assembled with a filter bed consisting of a 0.45 micrometer filter membrane. For difficult or slow to filter mixtures a prefilter bed consisting of the following prefilters in increasing pore size (0.65 micrometer membrane, fine glass fiber prefilter, and coarse glass fiber prefilter) can be used.

(ii) The waste should be poured into the filtration unit.

(iii) The reservoir should be slowly pressurized until liquid begins to flow from the filtrate outlet at which point the pressure in the filter should be immediately lowered to 10-15 psig. Filtration should be continued until liquid flow ceases.

(iv) The pressure should be increased stepwise in 10 psi increments to 75 psig and filtration continued until flow ceases or the pressurizing gas begins to exit from the filtrate outlet.

(v) The filter unit should be depressurized, the solid material removed and weighed and then transferred to the extraction apparatus.

or, in the case of final filtration prior to analysis, discarded. Do not allow the material retained on the filter pad to dry prior to weighing.

(vi) The liquid phase should be stored at 4°C for subsequent use in Step 8.

* This procedure is intended to result in separation of the "free" liquid portion of the waste from any solid matter having a particle size 0.45 um. If the sample will not filter, various other separation techniques can be used to aid in the filtration. As described above, pressure filtration is employed to speed up the filtration process. This does not alter the nature of the separation. If liquid does not separate during filtration, the waste can be centrifuged. If separation occurs during centrifugation the liquid portion (centrifugate) is filtered through the 0.45 um filter prior to becoming mixed with the liquid portion of the waste obtained from the initial filtration. Any material that will not pass through the filter after centrifugation is considered a solid and is extracted.

B. Structural Integrity Procedure

Equipment: A Structural Integrity Tester having a 3.18 cm (1.25 in.) diameter hammer weighing 0.33 kg (0.73 lbs.) and having a free fall of 15.24 cm (6 in.) shall be used. This device is available from Associated Design and Manufacturing Company, Alexandria, VA., 22314, as Part No. 125, or it may be fabricated to meet the specifications shown in Figure 1.

Procedure:

1. The sample holder should be filled with the material to be tested. If the sample of waste is a large monolithic block, a portion should be cut from the block having the dimensions of a 3.3 cm (1.3 in.) diameter x 7.1 cm (2.8 in.) cylinder. For a fixated waste, samples may be cast in the form of a 3.3 cm (1.3 in.) diameter x 7.1 cm (2.8 in.) cylinder for purposes of conducting this test. In such cases, the waste may be allowed to cure for 30 days prior to further testing.

2. The sample holder should be placed into the Structural Integrity Tester, then the hammer should be raised to its maximum height and dropped. This should be repeated fifteen times.

3. The material should be removed from the sample holder, weighed, and transferred to the extraction apparatus for extraction.

Analytical Procedures for Analyzing Extract Contaminants

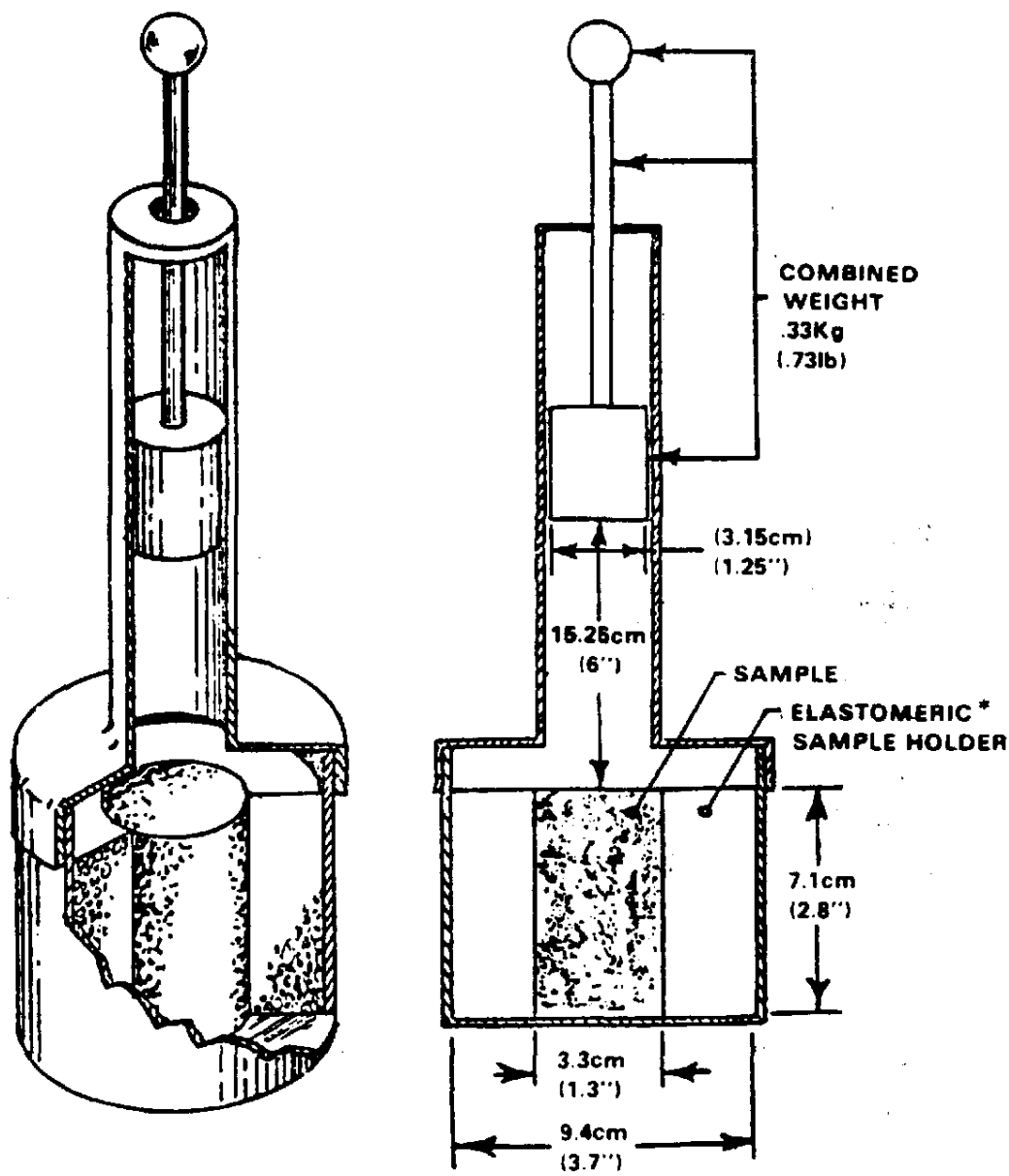
(Revised by 45 FR 72041, October 30, 1980)

The test methods for analyzing the extract are as follows:

(1) For arsenic, barium, cadmium, chromium, lead, mercury, selenium, silver, endrin, lindane, methoxychlor, toxaphene, 2,4-D [2,4-dichlorophenoxyacetic acid] or 2,4,5-TP [2,4,5-trichlorophenoxypropionic acid]: "Test Methods for the Evaluation of Solid Waste, Physical/Chemical Methods," (SW-846), U.S. Environmental Protection Agency, Office of Solid Waste, Washington, D.C. 20460.

(2) [Reserved]

For all analyses, the methods of standard addition shall be used for quantification of species concentration.



*ELASTOMERIC SAMPLE HOLDER FABRICATED OF MATERIAL FIRM ENOUGH TO SUPPORT THE SAMPLE

Figure 1
COMPACTION TESTER

Appendix III—Chemical Analysis Test Methods

Tables 1, 2 and 3 specify the appropriate analytical procedures, described in "Test Methods for Evaluating Solid Waste" (SW-846), which should be used in determining whether the waste in question contains a given toxic constituent. Table 1 identifies the analytical class and the approved measurement techniques for each organic chemical listed in Appendix VII. Table 2 identifies the corresponding methods for the inorganic

species. Table 3 identifies the specific sample preparation and measurement instrument introduction techniques which may be suitable for both the organic and inorganic species as well as the matrices of concern.

Prior to final selection of the analytical method the operator should consult the specific method descriptions in SW-846 for additional guidance on which of the approved methods should be employed for a specific waste analysis situation.

Table 1.—Analytical Characteristics of Organic

Compound	Sample handling class/fraction	Non-GC methods	Measurement techniques		
			GC/MS	GC	Conventional Detector
Acetonitrile	Volatile		8.24	8.03	NSD
Acrolein	Volatile		8.24	8.03	NSD
Acrylamide	Volatile		8.24	8.01	FID
Acrylonitrile	Volatile		8.24	8.03	NSD
Benzene	Volatile		8.24	8.02	PID
Benz(a)anthracene	Extractable/BN	8.10 (HPLC)	8.25	8.10	FID
Benz(a)pyrene	Extractable/BN	8.10 (HPLC)	8.25	8.10	FID
Benzotrifluoride	Extractable/BN		8.25	8.12	ECD
Benzyl chloride	Volatile or Extractable/BN		8.24	8.01	HSD
Benz(b)fluoranthene	Extractable/BN	8.10 (HPLC)	8.25	8.12	ECD
Bis(2-chloroethoxy)methane	Volatile		8.24	8.10	FID
Bis(2-chloroethoxy)ether	Volatile		8.24	8.01	HSD
Bis(2-chloroisopropyl)ether	Volatile		8.24	8.01	HSD
Carbon disulfide	Volatile		8.24	8.01	HSD
Carbon tetrachloride	Volatile		8.24	8.01	HSD
Chlorane	Extractable/BN		8.25	8.08	HSD
Chlorinated dibenzodioxins	Extractable/BN		8.25	8.08	ECD
Chlorinated biphenyls	Extractable/BN		8.25	8.08	HSD
Chloroacetaldehyde	Volatile		8.24	8.01	HSD
Chlorobenzene	Volatile		8.24	8.01	HSD
Chloroform	Volatile		8.24	8.01	PID
Chloromethane	Volatile		8.24	8.01	HSD
2-Chlorophenol	Extractable/BN		8.25	8.04	FID, ECD
Chrysene	Extractable/BN	8.10 (HPLC)	8.25	8.10	FID
Cresols	Extractable/BN		8.25	8.10	ECD
Cresol(s)	Extractable/A		8.25	8.04	FID, ECD
Cresylic acid(s)	Extractable/A		8.25	8.04	FID, ECD
Dichlorobenzene(s)	Extractable/BN		8.25	8.01	HSD
Dichloroethane(s)	Volatile		8.24	8.02	PID
Dichloromethane	Volatile		8.24	8.12	ECD
Dichlorophenyl-acetic acid	Extractable/A		8.25	8.01	HSD
Dichloropropene	Extractable/BN		8.25	8.40	HSD
2,4-Dimethylphenol	Extractable/A		8.25	8.12	ECD
Dinitrobenzene	Extractable/BN		8.25	8.04	FID, ECD
4,6-Dinitro-o-cresol	Extractable/A		8.25	8.09	FID, ECD
2,4-Dinitrotoluene	Extractable/BN		8.25	8.04	FID, ECD
Endrin	Extractable/P		8.25	8.09	FID, ECD
Ethyl ether	Volatile		8.24	8.08	HSD
Formaldehyde	Volatile		8.24	8.01	FID
Formic acid	Extractable/BN		8.25	8.02	FID
Heptachlor	Extractable/P		8.25	8.01	FID
Hexachlorobenzene	Extractable/BN		8.25	8.08	HSD
Hexachlorobutadiene	Extractable/BN		8.25	8.12	ECD
Hexachlorocyclopentadiene	Extractable/BN		8.25	8.12	ECD
Hexachlorocyclopentadiene	Extractable/BN		8.25	8.12	ECD
Undene	Extractable/P		8.25	8.12	ECD
Maleic anhydride	Extractable/BN		8.25	8.06	HSD
Methanol	Volatile		8.24	8.06	ECD, FID
Methomyl	Extractable/BN	8.32 (HPLC)	8.24	8.01	FID
Methyl ethyl ketone	Volatile		8.25	8.01	FID
Methyl isobutyl ketone	Volatile		8.25	8.02	FID
Naphthalene	Extractable/BN		8.25	8.01	FID
Naphthoquinone	Extractable/BN		8.25	8.08	FID
Nitrobenzene	Extractable/BN		8.25	8.06	ECD, FID
4-Nitrophenol	Extractable/A		8.24	8.09	ECD, FID
Paraldehyde (trimer of acetaldehyde)	Volatile		8.24	8.01	FID

Table 1.—Analytical Characteristics of Organic Chemicals—Continued

Compound	Sample handling class/fraction	Non-GC methods	Measurement techniques	
			GC/MS	Conventional GC Detector
Pentachlorophenol	Extractable/A		8.25	8.04 ECD
Phenol	Extractable/A		8.25	8.04 ECD, FID
Phonate	Extractable/BN			8.22 FPD
Phosphorodithioic acid esters	Extractable/BN			8.06 ECD, FID
				8.06 ECD, FID
				8.22 FPD
Phthalic anhydride	Extractable/BN		8.25	8.06 ECD, FID
				8.06 ECD, FID
2-Picoline	Extractable/BN		8.25	8.06 ECD, FID
				8.06 ECD, FID
Pyridine	Extractable/BN		8.25	8.06 ECD, FID
				8.06 ECD, FID
Tetrachlorobenzene(s)	Extractable/BN		8.25	8.12 ECD
Tetrachloroethene(s)	Volatile		8.24	8.01 HSD
Tetrachloroethane	Volatile		8.24	8.01 HSD
Tetrachlorophenol	Extractable/A		8.24	8.04 ECD
Toluene	Volatile		8.24	8.02 PID
Toluenediamine	Extractable/BN		8.25	
Toluene diisocyanate(s)	Extractable/nonaqueous		8.25	8.06 FID
Tosaphane	Extractable/P		8.25	8.06 HSD
Trichloroethane	Volatile		8.24	8.01 HSD
Trichloroethene(s)	Volatile		8.24	8.01 HSD
Trichlorofluoromethane	Volatile		8.24	8.01 HSD
Trichlorophenol(s)	Extractable/A		8.25	8.04 HSD
2,4,5-TP (Silver)	Extractable/A		8.25	8.40 HSD
Trichloropropane	Volatile		8.24	8.01 HSD
Vinyl chloride	Volatile		8.24	8.01 HSD
Vinylidene chloride	Volatile		8.24	8.01 HSD
Xylene	Volatile		8.24	8.02 PID

¹ Analyze for phenanthrene and carbazole; if these are present in a ratio between 1.4:1 and 5.1, creosote should be considered present.

ECD = Electron capture detector; FID = Flame ionization detector; FPD = Flame photometric detector; HSD = Halide specific detector; HPLC = High pressure liquid chromatography; NSD = Nitrogen-specific detector; PID = Photoionization detector.

Table 2.—Analytical Characteristics of Inorganic Species

Species	Sample handling class	Measurement technique	Method number
Antimony	Digestion	Atomic absorption—flame	8.50
Arsenic	Hydride	Atomic absorption—flame	8.51
Barium	Digestion	Atomic absorption—flame	8.52
Cadmium	Digestion	Atomic absorption—flame	8.53
Chromium	Digestion	Atomic absorption—flame	8.54
Cyanides	Hydrolysis	Atomic absorption—spectroscopy	8.55
Lead	Digestion	Atomic absorption—flame	8.56
Mercury	Cold Vapor	Atomic absorption	8.57
Nickel	Digestion	Atomic absorption—flame	8.58
Selenium	Hydride digestion	Atomic absorption—flame	8.59
Silver	Digestion	Atomic absorption—flame	8.60

Table 3.—Sample Preparation/Sample Introduction Techniques

Sample handling class	Physical characteristics of waste ¹		
	Fluid	Paste	Solid
Volatile	Purge and trap. Direct injection.	Purge and trap. Headspace	Headspace.
Semivolatile and nonvolatile.	Direct injection. Shake out	Shake out	Shake out. Soxhlet. Sonication.
Inorganic	Direct injection. Digestion Hydride	Digestion Hydride	Digestion. Hydride.

¹ For purposes of this Table, fluid refers to readily pourable liquids, which may or may not contain suspended particles. Paste-like materials, while fluid in the sense of flowability, can be thought of as being thixotropic or plastic in nature, e.g. paints. Solid materials are those wastes which can be handled without a container (i.e., can be piled up without appreciable sagging).

Procedure and Method Number(s)

Digestion—See appropriate procedure for element of interest.
Direct injection—8.80
Headspace—8.82
Hydride—See appropriate procedure for element of interest.
Purge & Trap—8.83
Shake out—8.84
Sonication—8.85
Soxhlet—8.86

[Appendix III]

Appendix VII.—Basis for Listing Hazardous Wastes

[Appendix VII amended by 45 FR 47833, July 16, 1980; revised by 45 FR 74890, November 12, 1980; 46 FR 4617, January 16, 1981]

Appendix VII—Basis for Listing Hazardous Waste

EPA hazardous waste No.	Hazardous constituents for which listed
F001	Tetrachloroethylene, methylene chloride, trichloroethylene, 1,1,1-trichloroethane, carbon tetrachloride, chlorinated fluorocarbons.
F002	Tetrachloroethylene, methylene chloride, trichloroethylene, 1,1,1-trichloroethane, chlorobenzene, 1,1,2-trichloro-1,2,2-trifluoroethane, ortho-dichlorobenzene, trichlorofluoromethane.
F003	N.A.
F004	Cresols and cresylic acid, nitrobenzene.
F005	Toluene, methyl ethyl ketone, carbon disulfide, isobutanol, pyridine.
F006	Cadmium, hexavalent chromium, nickel, cyanide (complexed).
F007	Cyanide (salts).
F008	Cyanide (salts).
F009	Cyanide (salts).
F010	Cyanide (salts).
F011	Cyanide (salts).
F012	Cyanide (complexed).
F014	Cyanide (complexed).
F015	Cyanide (salts).
F019	Hexavalent chromium, cyanide (complexed).
K001	Pentachlorophenol, phenol, 2-chlorophenol, p-chloro-m-cresol, 2,4-dimethylphenyl, 2,4-dinitrophenol, trichlorophenols, tetrachlorophenols, 2,4-dinitrophenol, cresosote, chrysene, naphthalene, fluoranthene, benzo(b)fluoranthene, benzo(a)pyrene, indeno(1,2,3-cd)pyrene, benzo(a)anthracene, dibenz(a)anthracene, scenaphthalene.
K002	Hexavalent chromium, lead.
K003	Hexavalent chromium, lead.
K004	Hexavalent chromium.
K005	Hexavalent chromium, lead.
K006	Hexavalent chromium.
K007	Cyanide (complexed), hexavalent chromium.
K008	Hexavalent chromium.
K009	Chloroform, formaldehyde, methylene chloride, methyl chloride, paraaldehyde, formic acid.
K010	Chloroform, formaldehyde, methylene chloride, methyl chloride, paraaldehyde, formic acid, chloroacetaldehyde.
K011	Acrylonitrile, acetonitrile, hydrocyanic acid.
K013	Hydrocyanic acid, acrylonitrile, acetonitrile.
K014	Acetonitrile, acrylonitrile.
K015	Benzyl chloride, chlorobenzene, toluene, benzotrichloride.
K016	Hexachlorobenzene, hexachlorobutadiene, carbon tetrachloride, hexachloroethane, perchloroethylene.
K017	Epichlorohydrin, chloroethers (bis(chloromethyl) ether and bis (2-chloroethyl) ethers), trichloropropane, dichloropropanols.

Appendix VII—Basis for Listing Hazardous Waste—Continued

EPA hazardous waste No.	Hazardous constituents for which listed
K018	1,2-dichloroethane, trichloroethylene, hexachlorobutadiene, hexachlorobenzene.
K019	Ethylene dichloride, 1,1,1-trichloroethane, 1,1,2-trichloroethane, tetrachloroethanes (1,1,2,2-tetrachloroethane and 1,1,1,2-tetrachloroethane), trichloroethylene, tetrachloroethylene, carbon tetrachloride, chloroform, vinyl chloride, vinylidene chloride.
K020	Ethylene dichloride, 1,1,1-trichloroethane, 1,1,2-trichloroethane, tetrachloroethanes (1,1,2,2-tetrachloroethane and 1,1,1,2-tetrachloroethane), trichloroethylene, tetrachloroethylene, carbon tetrachloride, chloroform, vinyl chloride, vinylidene chloride.
K021	Antimony, carbon tetrachloride, chloroform.
K022	Phenol, tars (polycyclic aromatic hydrocarbons).
K023	Phthalic anhydride, maleic anhydride.
K024	Phthalic anhydride, 1,4-naphthoquinone.
K025	Meta-dinitrobenzene, 2,4-dinitrotoluene.
K026	Paraaldehyde, pyridine, 2-picoline.
K027	Toluene diisocyanate, toluene-2, 4-diamine.
K028	1,1,1-trichloroethane, vinyl chloride.
K029	1,2-dichloroethane, 1,1,1-trichloroethane, vinyl chloride, vinylidene chloride, chloroform.
K030	Hexachlorobenzene, hexachlorobutadiene, hexachloroethane, 1,1,1,2-tetrachloroethane, 1,1,2,2-tetrachloroethane, ethylene dichloride.
K031	Arsenic.
K032	Hexachlorocyclopentadiene.
K033	Hexachlorocyclopentadiene.
K034	Hexachlorocyclopentadiene.
K035	Cresosote, chrysene, naphthalene, fluoranthene, benzo(b)fluoranthene, benzo(a)pyrene, indeno(1,2,3-cd) pyrene, benzo(a)anthracene, scenaphthalene.
K036	Toluene, phosphorodithioic acid and phosphorothioic acid esters.
K037	Toluene, phosphorodithioic acid and phosphorothioic acid esters.
K038	Phorale, formaldehyde, phosphorodithioic acid and phosphorothioic acid esters.
K039	Phosphorodithioic acid and phosphorothioic acid esters.
K040	Phorale, formaldehyde, phosphorodithioic acid and phosphorothioic acid esters.
K041	Toxaphene.
K042	Hexachlorobenzene, ortho-dichlorobenzene.
K043	2,4-dichlorophenol, 2,6-dichlorophenol, 2,4,6-trichlorophenol.
K044	N.A.
K045	N.A.
K046	Lead.

Appendix VII—Basis for Listing Hazardous Waste—Continued

EPA hazardous waste No.	Hazardous constituents for which listed
K047	N.A.
K048	Hexavalent chromium, lead.
K049	Hexavalent chromium, lead.
K050	Hexavalent chromium.
K051	Hexavalent chromium, lead.
K052	Lead.
K060	Cyanide, naphthalene, phenolic compounds, arsenic.
K061	Hexavalent chromium, lead, cadmium.
K062	Hexavalent chromium, lead.
K064	Lead, cadmium.
K065	Lead, cadmium.
K066	Lead, cadmium.
K067	Lead, cadmium.
K068	Lead, cadmium.
K069	Hexavalent chromium, lead, cadmium.
K071	Mercury.
K073	Chloroform, carbon tetrachloride, hexachloroethane, trichloroethylene, tetrachloroethylene, dichloroethylene, 1,1,2,2-tetrachloroethane.
K083	Aniline, diphenylamine, nitrobenzene, phenylhydrazine.
K084	Arsenic.
K085	Benzene, dichlorobenzene, toluene, tetrachlorobenzene, pentachlorobenzene, hexachlorobenzene, benzyl chloride.
K086	Lead, hexavalent chromium.
K087	Phenol, naphthalene.
K093	Phthalic anhydride, maleic anhydride.
K094	Phthalic anhydride.
K095	1,1,2-trichloroethane, 1,1,1,2-tetrachloroethane, 1,1,2,2-tetrachloroethane.
K096	1,2-dichloroethane, 1,1,1-trichloroethane, 1,1,2-trichloroethane.
K097	Chloroform, heptachlor.
K098	Toxaphene.
K099	2,4-dichlorophenol, 2,4,6-trichlorophenol.
K100	Hexavalent chromium, lead, cadmium.
K101	Arsenic.
K102	Arsenic.
K103	Aniline, nitrobenzene, phenylhydrazine.
K104	Aniline, benzene, diphenylamine, nitrobenzene, phenylhydrazine.
K105	Benzene, monochlorobenzene, dichlorobenzene, 2,4,6-trichlorophenol.
K106	Mercury.

N.A.—Waste is hazardous because it fails the test for the characteristic of ignitability, corrosivity, or reactivity.

Appendix VIII—Hazardous Constituents

[Appendix VIII amended by 45 FR 47833, July 16, 1980; 45 FR 74890, November 12, 1980; 45 FR 78541, November 25, 1980]

Acetaldehyde
Acetonitrile
3-(alpha-Acetylbenzyl)-4-hydroxycoumarin and salts
2-Acetylaminofluorene
Acetyl chloride
1-Acetyl-2-thiourea
Acrolein
Acrylamide
Acrylonitrile
Aflatoxins
Aldrin
Allyl alcohol
Aluminum phosphide
4-Aminobiphenyl
6-Amino-1,1a,2,8,8a,8b-hexahydro-8-(hydroxymethyl)-8a-methoxy-5-methylcarbamate azirino(2',3':3,4)pyrrolo(1,2-a)indole-4,7-dione (ester) (Mitomycin C)
5-(Aminomethyl)-3-isoxazolol
4-Aminopyridine
Amitrole
Aniline
Antimony and compounds, N.O.S.¹
Aramite
Arsenic and compounds, N.O.S.
Arsenic acid
Arsenic pentoxide
Arsenic trioxide
Auramine
Azaserine
Barium and compounds, N.O.S.
Barium cyanide
Benz[c]acridine
Benz[a]anthracene
Benzene
Benzenearsonic acid
Benzenethiol
Benzidine
Benzo[a]anthracene
Benzo[b]fluoranthene
Benzo[j]fluoranthene
Benzo[a]pyrene
Benzoquinone and isomers
[Added by 45 FR 74890, November 12, 1980]
Benzotrichloride
Benzyl chloride
Beryllium and compounds, N.O.S.
Bis(2-chloroethoxy)methane
Bis(2-chloroethyl) ether
N,N-Bis(2-chloroethyl)-2-naphthylamine
Bis(2-chloroisopropyl) ether
Bis(chloromethyl) ether
Bis(2-ethylhexyl) phthalate
Bromoacetone
Bromomethane
4-Bromophenyl phenyl ether

¹The abbreviation N.O.S. signifies those members of the general class "not otherwise specified" by name in this listing.

Brucine
2-Butanone peroxide
Butyl benzyl phthalate
2-sec-Butyl-4,6-dinitrophenol (DNBP)
Cadmium and compounds, N.O.S.
Calcium chromate
Calcium cyanide
Carbon disulfide
Chlorambucil
Chlordane (alpha and gamma isomers)
Chlorinated benzenes, N.O.S.
Chlorinated ethane, N.O.S.
Chlorinated fluorocarbons
[Added by 45 FR 74890, November 12, 1980]
Chlorinated naphthalene, N.O.S.
Chlorinated phenol, N.O.S.
Chloroacetaldehyde
Chloroalkyl ethers
p-Chloroaniline
Chlorobenzene
Chlorobenzilate
1-(p-Chlorobenzoyl)-5-methoxy-2-methylindole-3-acetic acid
p-Chloro-m-cresol
1-Chloro-2,3-epoxybutane
2-Chloroethyl vinyl ether
Chloroform
Chloromethane
Chloromethyl methyl ether
2-Chloronaphthalene
2-Chlorophenol
1-(o-Chlorophenyl)thiourea
3-Chloropropionitrile
alpha-Chlorotoluene
Chromium and compounds, N.O.S.
Chrysene
Citrus red No. 2
Coal Tars
[Added by 45 FR 74890, November 12, 1980]
Copper cyanide
Creosote
Cresol
[Added by 45 FR 74890, November 12, 1980]
Cresylic acid
[Added by 45 FR 74890, November 12, 1980]
Crotonaldehyde
Cyanides (soluble salts and complexes), N.O.S.
Cyanogen
Cyanogen bromide
Cyanogen chloride
Cycasin
2-Cyclohexyl-4,6-dinitrophenol
Cyclophosphamide
Daunomycin
DDD
DDE
DDT
Diallate
Dibenz[a,h]acridine
Dibenz[a,j]acridine
Dibenz[a,h]anthracene (Dibenzo[a,h]anthracene)
7H-Dibenzo[c,g]carbazole
Dibenzo[a,e]pyrene
Dibenzo[a,h]pyrene
Dibenzo[a,i]pyrene
1,2-Dibromo-3-chloropropane
1,2-Dibromoethane
Dibromomethane
Di-n-butyl phthalate
Dichlorobenzene, N.O.S.
3,3'-Dichlorobenzidine
1,1-Dichloroethane
1,2-Dichloroethane
trans-1,2-Dichloroethane
Dichloroethylene, N.O.S.
1,1-Dichloroethylene
Dichloromethane
2,4-Dichlorophenol
2,6-Dichlorophenol
2,4-Dichlorophenoxyacetic acid (2,4-D)
Dichloropropane
Dichlorophenylarsine
1,2-Dichloropropane
Dichloropropanol, N.O.S.
Dichloropropene, N.O.S.
1,3-Dichloropropene
Dieldrin
Diepoxybutane
Diethylarsine
0,0-Diethyl-S-(2-ethylthio)ethyl ester of phosphorothioic acid
1,2-Diethylhydrazine
0,0-Diethyl-S-methylester phosphorodithioic acid
0,0-Diethylphosphoric acid, O-p-nitrophenyl ester
Diethyl phthalate
0,0-Diethyl-O-(2-pyrazinyl)phosphorothioate
Diethylstilbestrol
Dihydrosafrole
3,4-Dihydroxy-alpha-(methylamino)-methylbenzyl alcohol
Di-isopropylfluorophosphate (DFP)
Dimethoate
3,3'-Dimethoxybenzidine
p-Dimethylaminoazobenzene
7,12-Dimethylbenz[a]anthracene
3,3'-Dimethylbenzidine
Dimethylcarbamoyl chloride
1,1-Dimethylhydrazine
1,2-Dimethylhydrazine
3,3-Dimethyl-1-(methylthio)-2-butanone-O-((methylamino) carbonyl)oxime
Dimethylnitrosoamine
alpha,alpha-Dimethylphenethylamine
2,4-Dimethylphenol
Dimethyl phthalate
Dimethyl sulfate
Dinitrobenzene, N.O.S.
4,6-Dinitro-o-cresol and salts
2,4-Dinitrophenol
2,4-Dinitrotoluene
2,6-Dinitrotoluene
Di-n-octyl phthalate
1,4-Dioxane
Diphenylamine
1,2-Diphenylhydrazine
Di-n-propylnitrosamine
Disulfoton
2,4-Dithiobiuret
Endosulfan
Endrin and metabolites

Epichlorohydrin	Mustard gas	2-Propyn-1-ol
Ethyl carbamate (urethan)	Naphthalene	Pyridine
[Added by 45 FR 74890, November 12, 1980]	1,4-Naphthoquinone	Reserpine
Ethyl cyanide	1-Naphthylamine	Reorcinol
Ethylenebisdithiocarbamate (EBDC)	2-Naphthylamine	[Added by 45 FR 74890, November 12, 1980]
Ethyleneimine	1-Naphthyl-2-thiourea	Saccharin
Ethylene oxide	Nickel and compounds, N.O.S.	Safrole
Ethylenethiourea	Nickel carbonyl	Selenious acid
Ethyl methanesulfonate	Nickel cyanide	Selenium and compounds, N.O.S.
Fluoranthene	Nicotine and salts	Selenium sulfide
Fluorine	Nitric oxide	Selenourea
2-Fluoroacetamide	p-Nitroaniline	Silver and compounds, N.O.S.
Fluoroacetic acid, sodium salt	Nitrobenzene	Silver cyanide
Formaldehyde	Nitrogen dioxide	Sodium cyanide
Glycidylaldehyde	Nitrogen mustard and hydrochloride salt	Streptozotocin
Halomethane, N.O.S.	Nitrogen mustard N-oxide and hydrochloride salt	Strontium sulfide
Heptachlor	Nitrogen peroxide	Strychnine and salts
Heptachlor epoxide (alpha, beta, and gamma isomers)	Nitrogen tetroxide	1,2,4,5-Tetrachlorobenzene
Hexachlorobenzene	Nitroglycerine	2,3,7,8-Tetrachlorodibenzo-p-dioxin (TCDD)
Hexachlorobutadiene	4-Nitrophenol	Tetrachloroethane, N.O.S.
Hexachlorocyclohexane (all isomers)	4-Nitroquinoline-1-oxide	1,1,1,2-Tetrachloroethane
Hexachlorocyclopentadiene	Nitrosamine, N.O.S.	1,1,2,2-Tetrachloroethane
Hexachloroethane	N-Nitrosodi-N-butylamine	Tetrachloroethene (Tetrachloroethylene)
1,2,3,4,10,10-Hexachloro-1,4,4a,5,8,8a-hexahydro-1,4:5,8-endo,endo-dimethanonaphthalene	N-Nitrosodiethanolamine	Tetrachloromethane
Hexachlorophene	N-Nitrosodiethylamine	2,3,4,6-Tetrachlorophenol
Hexachloropropene	N-Nitroso-N-ethylurea	Tetraethyldithiopyrophosphate
Hexaethyl tetraphosphate	N-Nitrosomethylethylamine	Tetraethyl lead
Hydrazine	N-Nitroso-N-methylurea	Tetraethylpyrophosphate
Hydrocyanic acid	N-Nitroso-N-methylurethane	Thallium and compounds, N.O.S.
Hydrofluoric acid	N-Nitrosomethylvinylamine	Thallic oxide
[Added by 45 FR 74890, November 12, 1980]	N-Nitrosomorpholine	Thallium (I) acetate
Hydrogen sulfide	N-Nitrososarcosine	Thallium (I) carbonate
Indeno(1,2,3-c,d)pyrene	N-Nitrosopiperidine	Thallium (I) chloride
Iodomethane	N-Nitrosopyrrolidine	Thallium (I) nitrate
Isoacetic acid, methyl ester	N-Nitrososarcosine	Thallium selenite
Iron Dextran	5-Nitro-o-toluidine	Thallium (I) sulfate
[Added by 45 FR 74890, November 12, 1980]	Octamethylpyrophosphoramide	Thioacetamide
Iso butyl alcohol	Osmium tetroxide	Thiosemicarbazide
[Added by 45 FR 78544, November 25, 1980]	7-Oxabicyclo[2.2.1]heptane-2,3-dicarboxylic acid	Thiourea
Isosafrole	Parathion	Thiuram
Kepone	Pentachlorobenzene	Toluene
Lasiocarpine	Pentachloroethane	Toluene diamine
Lead and compounds, N.O.S.	Pentachloronitrobenzene (PCNB)	o-Toluidine hydrochloride
Lead acetate	Pentachlorophenol	Tolylene diisocyanate
Lead phosphate	Phenacetin	Toxaphene
Lead subacetate	Phenol	Tribromomethane
Maleic anhydride	Phenylenediamine	1,2,4-Trichlorobenzene
Malononitrile	Phenyl dichloroarsine	1,1,1-Trichloroethane
Melphaan	Phenylmercury acetate	1,1,2-Trichloroethane
Mercury and compounds, N.O.S.	N-Phenylthiourea	Trichloroethene (Trichloroethylene)
Methapyrilene	2-Picoline	Trichloromethanethiol
Methomyl	[Added by 45 FR 74890m November 12, 1980]	2,4,5-Trichlorophenol
Methoxychlor	Phosgene	2,4,6-Trichlorophenol
[Added by 45 FR 74890, November 12, 1980]	Phosphine	2,4,5-Trichlorophenoxyacetic acid (2,4,5-T)
2-Methylaziridine	Phosphorothioic acid, O,O-dimethyl ester, O-ester with N,N-dimethyl benzene sulfonamide	2,4,5-Trichlorophenoxypropionic acid (2,4,5-TP) (Silvex)
3-Methylcholanthrene	Phthalic acid esters, N.O.S.	Trichloropropane, N.O.S.
4,4'-Methylene-bis-(2-chloroaniline)	Phthalic anhydride	1,2,3-Trichloropropane
Methyl ethyl ketone (MEK)	Polychlorinated biphenyl, N.O.S.	0,0,0-Triethyl phosphorothioate
Methyl hydrazine	Potassium cyanide	Trinitrobenzene
2-Methyl-lactonitrile	Potassium silver cyanide	Tris(1-aziridinyl)phosphine sulfide
Methyl methacrylate	Pronamide	Tris(2,3-dibromopropyl) phosphate
Methyl methanesulfonate	1,3-Propane sultone	Trypan blue
2-Methyl-2-(methylthio)propionaldehyde- α -(methylcarbonyl) oxime	Propionitrile	Uracil mustard
N-Methyl-N'-nitro-N-nitrosoguanidine	Propylthiouracil	Vanadic acid, ammonium salt
Methyl parathion		Vanadium pentoxide (dust)
Methylthiouracil		Vinyl chloride
		Vinylidene chloride
		Zinc cyanide
		Zinc phosphide

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EPA LIST OF OVER 450 CHEMICALS REQUIRED TO REPORT UNDER SUPERFUND

Chandler

The following draft list, now being reviewed by the Office of Management & Budget, comprises over 450 chemical substances for which EPA would require reporting under sections 103(a)-(b) of Superfund, covering hazardous releases. Over 100 hazardous constituents, originally included in the list by EPA, have been dropped (Inside EPA, March 20, p4).

Besides the list that follows, EPA also proposes to require reporting of Resource Conservation & Recovery Act hazardous wastes, by industry and chemicals contained in the waste, considered reportable because they exhibit at least one of the hazardous waste characteristics listed under RCRA section 3001: ignitability, corrosivity, reactivity, and toxicity. This list will appear in next week's issue of Inside EPA.

The following shows the chemicals required for reporting, alphabetically. The letter at the end of each listing corresponds to the minimum quantity released for which reporting is required, as follows: X = 1 lb.; A = 10 lbs.; B = 100 lbs.; C = 1,000 lbs.; D = 5,000 lbs.

Chemicals and minimum amounts for which Superfund reporting is required.

Material-Quantity

Acetaldehyde-C	Ammonium citrate, debasic-D	Arsenic trichloride-D	4-Bromophenyl phenyl ether-X
Acenaphthylene-X	Ammonium fluoborate-D	Arsenic trichloride-D	Butyl acetate-D
Acenaphthene-X	Ammonium fluoride-D	Arsenic trioxide-D	Butyl benzyl phthalate-X
Acetic acid-C	Ammonium hydroxide-C	Arsenic trisulfide-D	n-Butyl phthalate-B
Acetic anhydride-C	Ammonium oxalate-D	Asbestos-X	Butylamine-C
Acetone cyanohydrin-C	Ammonium silicofluoride-C	Barium cyanide-A	Butyric acid-D
Acetyl bromide-D	Ammonium sulfamate-D	Benz [a] anthracene-X	Cadmium-X
Acetyl chloride-D	Ammonium sulfide-D	Benzene-C	Cadmium acetate-B
Acrolein-X	Ammonium sulfite-D	Benzidine-X	Cadmium bromide-B
Acrylonitrile-B	Ammonium tartrate-D	Benzo [b] fluoranthene-X	Cadmium chloride-B
Adipic acid-D	Ammonium thiocyanate-D	Benzo [k] fluoranthene-X	Calcium arsenate-C
Aldrin-X	Ammonium thiosulfate-D	Benzo [ghi] perylene-X	Calcium arsenite-C
Allyl alcohol-B	Amyl acetate-C	Benzo [a] pyrene-X	Calcium carbide-D
Allyl chloride-C	Aniline-C	Benzoic Acid-D	Calcium chromate-C
Aluminum sulfate-D	Anthracene-X	Benzonitrile-C	Calcium cyanide-A
Ammonia-B	Antimony-X	Benzoyl chloride-C	Calcium dodecylbenzene sulfonate-C
Ammonium acetate-D	Antimony pentachloride-C	Benzyl chloride-B	Calcium hypochlorite-B
Ammonium benzoate-D	Antimony potassium tartrate-C	Beryllium-X	Captan-A
Ammonium bicarbonate-D	Antimony tribromide-C	Beryllium chloride-D	Carbaryl-B
Ammonium bichromate-C	Antimony trichloride-C	Beryllium fluoride-D	Carbofuran-A
Ammonium bisulfate-D	Antimony trifluoride-C	Beryllium nitrate-D	Carbon disulfide-D
Ammonium bisulfite-D	Antimony trioxide-D	Bis (2-chloroethoxy) methane-X	Carbon tetrachloride-D
Ammonium carbamate-D	Arsenic-X	Bis (2-chloroethyl) ether-X	Carbon tetrachloride-D
Ammonium carbonate-D	Arsenic acid-X	Bis (2-chloroisopropyl) ether-X	Chlordane-X
Ammonium chloride-D	Arsenic disulfide-D	Bromomethane-X	Chlorine-A
Ammonium chromate-C	Arsenic pentoxide-D	Bis (2-ethylhexyl) phthalate-X	

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Chlorobenzene-B
 Chlorodibromomethane-X
 p-Chloro-m-cresol-X
 Chloroethane-X
 2-Chloroethyl vinyl ether-X
 Chloroform-D
 Chloromethane-X
 Chloromethyl methyl ether-X
 Chloronaphthalene (all isomers)-X
 2-Chloronaphthalene-X
 Chlorophenol-X
 2-Chlorophenol-X
 4-Chlorophenyl phenyl ether-X
 Chlorosulfonic acid-C
 Chlorpyrifos-X
 Chromium-X
 Chromic acetate-C
 Chromic acid-C
 Chromic sulfate-C
 Chromous chloride-C
 Chrysene-X
 Cobaltous bromide-C
 Cobaltous formate-C
 Cobaltous sulfate-C
 Copper-X
 Copper cyanide-X
 Coumaphos-A
 Cresol-C
 Crotonaldehyde-B
 Cupric acetate-B
 Cupric acetoarsenite-B
 Cupric chloride-A
 Cupric nitrate-B
 Cupric oxalate-B
 Cupric sulfate-A
 Cupric sulfate ammoniated-B
 Cupric tartrate-B
 Cyanides-X
 Cyanogen chloride-A
 Cyclohexane-C
 2-Cyclohexyl-4,6-dinitrophenol-X
 2, 4-D Acid-B
 2, 4-D Esters-B
 DDD-X
 DDT-X
 DDE-X
 Diazinon-X
 Dibenz[a,h]anthracene
 (Dibenz[a,h]anthracene)-X
 Dibenzo[a,e]pyrene-X
 Dibenzo[a,h]pyrene-X
 Dibenz[a,i]pyrene-X
 Dibromomethane-X
 Di-n-butyl phthalate-B
 Dicamba-C
 Dichlobenil-C
 Dichlone-X
 Dichlorobenzene (all isomers)-B
 Dichlorobenzidine (all isomers)-X
 3,3'-Dichlorobenzidine-X
 Dichlorobromomethane-X
 Dichloroethane (all isomers)-X
 1,1-Dichloroethane-X
 1,2-Dichloroethane-X
 Dichloroethylene (all isomers)-D
 1,1-Dichloroethylene-D
 1,2-Dichloroethylene-D
 Dichloromethane-X
 Dichloronaphthalene (all isomers)-X
 Dichlorophenol (all isomers)-X
 2,4-Dichlorophenol-X
 2,6-Dichlorophenol-X
 Dichloropropane (all isomers)-D
 Dichloropropene
 Dichloropropane mixture-D
 Dichloropropene(s) (all isomers)-D
 1,3-Dichloropropene-D
 2,3-Dichloropropionic acid-D
 Dichlorvos-A
 Dieldrin-X
 Diepoxybutane-X
 Diethylamine-C
 Dimethylamine-C
 Diethylarsine-X
 Diethyl phthalate-X
 7,12-Dimethylbenz[a]anthracene-X

Dimethyl nitrosamine-X
 2,4-Dimethylphenol-C
 Dimethyl phthalate-X
 Dinitrobenzene (all isomers)-C
 4,6-Dinitro-o-cresol-X
 Dinitrophenol (all isomers)-C
 Dinitrotoluene (all isomers)-C
 2,4-Dinitrotoluene-C
 2,6-Dinitrotoluene-C
 Di-n-octyl phthalate-X
 Di-n-propylnitrosamine-X
 Diquat-C
 Disulfoton-X
 Diuron-B
 Dodecylbenzenesulfonic acid-C
 Endosulfan (all isomers)-X
 Endosulfan sulfate-X
 Endrin and metabolites-X
 Eipchlorohydrin-C
 Ethion-A
 Ethyl benzene-C
 Ethyl cyanide-X
 Ethylenediamine-C
 Ethylene dibromide-C
 Ethylene dichloride-D
 EDTA-D
 Ferric ammonium citrate-C
 Ferric ammonium oxalate-C
 Ferric chloride-C
 Ferric fluoride-B
 Ferric nitrate-C
 Ferric sulfate-C
 Ferrous ammonium sulfate-C
 Ferrous chloride-B
 Ferrous sulfate-C
 Fluoranthene-X
 Fluorene-X
 Formaldehyde-C
 Formic acid-D
 Fumaric acid-D
 Furfural-C
 Guthion-X
 Heptachlor-X
 Heptachlor epoxide-X
 Hexachlorobenzene-X
 Hexachlorobutadiene-X
 Hexachlorocyclohexane
 (all isomers)-X
 Hexachlorocyclopentadiene-X
 Hexachloroethane-X
 Hexachlorophene-X
 Hydrochloric acid-D
 (Hydrogen chloride)
 Hydrofluoric acid-D
 (Hydrogen fluoride)
 Hydrocyanic acid-A
 (Hydrogen chloride)
 Hydrosulfuric acid-B
 (Hydrogen sulfide)
 Indeno(1,2,3-cd)pyrene-X
 Iodomethane-X
 Isophorone-X
 Isoprene-C
 Isopropanolamine dodecylbenzenesulfonate-C
 Kelthane-D
 Kepone-X
 Lead-X
 Lead acetate-D
 Lead arsenate-D
 Lead chloride-D
 Lead fluoborate-D
 Lead fluoride-C
 Lead iodide-D
 Lead nitrate-D
 Lead phosphate-X
 Lead stearate-D
 Lead subacetate-X
 Lead sulfate-D
 Lead sulfide-D
 Lead thiocyanate-D
 Lindane-X
 Lithium chromate-C
 Malathion-A
 Maleic acid-D
 Maleic anhydride-D
 Mercaptodimethur-B
 Mercuric cyanide-X
 Mercuric nitrate-A

Mercuric sulfate-A
 Mercuric thiocyanate-A
 Mercurous nitrate-A
 Mercury-X
 Methoxychlor-X
 Methyl mercaptan-B
 Methyl methacrylate-D
 Methyl parathion-B
 Mevinphos-X
 Mexacarbate-C
 Monoethylamine-C
 Monomethylamine-C
 Naled-A
 Naphthalene-D
 Naphthenic acid-B
 Nickel-X
 Nickel ammonium sulfate-D
 Nickel chloride-D
 Nickel carbonyl-X
 Nickel cyanide-X
 Nickel hydroxide-C
 Nickel nitrate-D
 Nickel sulfate-D
 Nitric acid-C
 Nitrobenzene-C
 Nitrogen dioxide-C
 Nitrophenol (all isomers)-C
 3-Nitrophenol-C
 4-Nitrophenol-C
 N-Nitrosodi-n-butylamine-X
 N-Nitrosodiethanolamine-X
 N-Nitrosodiethylamine-X
 N-Nitrosodimethylamine-X
 N-Nitrosodiphenylamine-X
 N-Nitrosodi-n-propylamine-X
 N-Nitrosomethylethylamine-X
 N-Nitrosomethylvinylamine-X
 Nitrotoluene-C
 Octachloronaphthalene-X
 Paraformaldehyde-C
 Parathion-X
 Pentachlorobenzene-X
 Pentachloroethane-X
 Pentachlorophenol-A
 Phenanthrene-X
 Phenol-C
 Phenyl dichloroarsine-X
 Phenylmercury acetate-X
 Phosgene-D
 Phosphoric acid-D
 Phosphorus-X
 Phosphorus oxychloride-D
 Phosphorus pentasulfide-B
 Phosphorus trichloride-D
 Polychlorinated biphenyl(s)-A
 Potassium arsenate-C
 Potassium arsenite-C
 Potassium bichromate-C
 Potassium chromate-C
 Potassium cyanide-A
 Potassium hydroxide-C
 Potassium permanganate-B
 Potassium silver cyanide-X
 Propargite-A
 Propionic acid-D
 Propionic anhydride-D
 Propylene Oxide-D
 Pyrene-X
 Pyrethrin-C
 Quinoline-C
 Radionuclides-X
 Resorcinol-C
 Selenious acid-X
 Selenium-X
 Selenium oxide-C
 Selenium sulfide-X
 Silver-X
 Silver cyanide-X
 Silver nitrate-X
 Sodium-C
 Sodium arsenate-C
 Sodium arsenite-C
 Sodium bichromate-C
 Sodium bifluoride-D
 Sodium bisulfite-D
 Sodium chromate-C
 Sodium cyanide-A
 Sodium dodecylbenzene sulfonate-C

Sodium fluoride-D
 Sodium hydrosulfide-D
 Sodium hydroxide-C
 Sodium hypochlorite-B
 Sodium methylate-C
 Sodium nitrite-B
 Sodium phosphate, dibasic-D
 Sodium phosphate, tribasic-D
 Sodium selenite-C
 Strontium chromate-C
 Strychnine and salts-A
 Styrene-C
 Sulfuric acid-C
 Sulfur monochloride-C
 2,4,5-T acid-B
 2,4,5-T amine-B
 2,4,5-T esters-B
 2,4,5-T salts-B
 2,4,5-TP acid-B
 2,4,5-TP acid esters-B
 Tetrachlorobenzene-X
 1,2,4,5-Tetrachlorobenzene-X
 2,3,7,8-Tetrachlorodibenzo-p-dioxin-X
 Tetrachloroethane (all isomers)-X
 1,1,1,2-Tetrachloroethane-X
 1,1,2,2-Tetrachloroethane-X
 Tetrachloroethene
 (Tetrachloroethylene)-X
 Tetrachloromethane-D
 Tetrachlorophenol (all isomers)-X
 2,3,4,6-Tetrachlorophenol-X
 TDE-X
 Tetraethyl lead-B
 Tetraethyl pyrophosphate-B
 Thallium-X
 Thallous oxide-X
 Thallium (I) acetate-X
 Thallium (I) carbonate-X
 Thallium (I) chloride-X
 Thallium (I) nitrate-X
 Thallium (I) selenite-X
 Thallium (I) sulfate-C
 Toluene-C
 Toxaphene-X
 Tribromomethane-X
 Trichlorobenzene (all isomers)-X
 1,2,4-Trichlorobenzene-X
 Trichloron-C
 Trichloroethane (all isomers)-X
 1,1,1-Trichloroethane-X
 1,1,2-Trichloroethane-X
 Trichloroethylene-C
 Trichlorophenol (all isomers)-A
 2,4,5-Trichlorophenol-A
 2,4,6-Trichlorophenol-A
 Triethanolamine dodecylbenzenesulfonate-C
 Triethylamine-D
 Trimethylamine-C
 Uranyl acetate-D
 Uranyl nitrate-D
 Vanadium pentoxide-C
 Vanadyl sulfate-C
 Vinyl acetate-C
 Vinyl chloride-X
 Vinylidene chloride-D
 Xylene-C
 Xylenol-C
 Zinc-X
 Zinc acetate-C
 Zinc ammonium chloride-D
 Zinc borate-C
 Zinc bromide-D
 Zinc carbonate-C
 Zinc chloride-D
 Zinc cyanide-A
 Zinc fluoride-C
 Zinc formate-C
 Zinc hydrosulfite-C
 Zinc nitrate-D
 Zinc phenolsulfonate-D
 Zinc phosphide-C
 Zinc silicofluoride-D
 Zinc sulfate-C
 Zirconium nitrate-D
 Zirconium potassium fluoride-D
 Zirconium sulfate-D
 Zirconium tetrachloride-D

EPA'S LIST OF HAZAROUS WASTES SUBJECT TO SUPERFUND REPORTING REQUIREMENTS

The following list of Resource Conservation & Recovery Act (RCRA) hazardous wastes, now under review by the Office of Management & Budget (OMB), may be subject to reporting requirements under sections 103(a) and (b) of Superfund when released at quantities of at least one pound. The wastes are considered hazardous because they exhibit at least one of the hazardous waste characteristics listed under RCRA section 3001: ignitability, corrosivity, reactivity, and toxicity. (Last week's Inside EPA - March 27, p 9 - reported those chemicals for which releases in specified amounts would be included.)

Although several of the hazardous wastes in the following list may also be included in EPA's proposed list of chemical substances (Inside EPA, March 27, p9), the reportable quantities may differ from list to list. When a hazardous material occurs on both lists, "the nature of the material prior to" the release determines which reportable quantity is applicable, according to EPA's draft notification requirement, also under review by OMB (Inside EPA, March 27, p 1). For example, the release of 50 pounds of a chemical product which has a reportable quantity of 100 pounds is not subject to reporting requirements under section (a) and (b) if "after the release the substance becomes a hazardous waste," the draft notification requirement says. However, "a subsequent spill of one pound or more of that hazardous waste is considered a reportable event," according to the draft notice.

The following lists hazardous wastes by industry ("nonspecific sources"); the reportable quantity is one pound for all. The letter at the end of each section indicates the hazardous quality: I = ignitability, C = corrosivity, R = reactivity, and T = toxicity.

Hazardous waste from nonspecific sources

Generic

The following spent halogenated solvents used in degreasing: tetrachloroethylene, trichloroethylene, methylene chloride, 1, 1, 1-trichloroethane, carbon tetrachloride, and chlorinated fluorocarbons, and sludges from the recovery of these solvents in degreasing operations (T)

The following spent halogenated solvents: tetrachloroethylene, chlorobenzene, 1, 1, 2-trichloro-1, 2, 2-trifluoroethane, ortho-dichlorobenzene, and trichlorofluoromethane; and the still bottoms from the recovery of these solvents (T)

The following spent non-halogenated solvents: xylene, acetone, ethyl acetate, ethyl benzene, ethyl ether, methyl isobutyl ketone, n-butyl alcohol, cyclohexanone, and methanol; and the still bottoms from the recovery of these solvents (I)

The following spent non-halogenated solvents: cresols and creylic acid, and nitrobenzene; and the still bottoms from the recovery of these solvents (T)

The following spent non-halogenated solvents: toluene, methyl ethyl ketone, carbon disulfide, isobutanol, and pyridine; and the still bottoms from the recovery of these solvents (I, T)

Wastewater treatment sludges from electroplating operations except from the following processes: (1) sulfuric acid anodizing of aluminum; (2) tin plating on carbon steel; (3) zinc plating (segregated basin) on carbon steel; (4) aluminum or zinc-aluminum plating on carbon steel; (5) cleaning/stripping associated with tin, zinc and aluminum plating on carbon steel; and (6) chemical etching and milling of aluminum (T)

Wastewater treatment sludges from the chemical conversion coating of aluminum (T)

Spent cyanide plating bath solutions from electroplating operations (except for precious metals electroplating spent cyanide plating bath solutions) (R, T)

Plating bath sludges from the bottom of plating baths from electroplating operations where cyanides are used in the process (except for precious metals electroplating plating bath sludges) (R, T)

Spent stripping and cleaning bath solutions from electroplating operations where cyanides are used in the process (except for precious metals electroplating spent stripping and cleaning bath solutions) (R, T)

Quenching bath sludge from oil baths from metal heat treating operations where cyanides are used in the process (except for precious metals heat-treating quenching bath sludges) (R, T)

Spent cyanide solutions from salt bath pot cleaning from metal heat treating operations (except for precious metals heat treating spent cyanide solutions from salt bath pot cleaning) (R, T)

Quenching wastewater treatment sludges from metal heat treating operations where cyanides are used in the process (except for precious metals heat treating quenching wastewater treatment sludges) (T)

Spent cyanide bath solutions from mineral metals recovery operations (R, T)

Wood Preservation

Bottom sediment sludge from the treatment of wastewaters from wood preserving processes that use creosote and/or pentachlorophenol (T)

Inorganic Pigments

Wastewater treatment sludge from the production of chrome yellow and orange pigments (T)

Wastewater treatment sludge from the production of molybdate orange pigments (T)

Wastewater treatment sludge from the production of zinc yellow pigments (T)

Wastewater treatment sludge from the production of chrome green pigments (T)

Wastewater treatment sludge from the production of chrome oxide green pigments (anhydrous and hydrated) (T)

Wastewater treatment sludge from the production of iron blue pigments (T)

Oven residue from the production of chrome oxide green pigments (T)

Organic Chemicals

Distillation bottoms from the production of acetaldehyde from ethylene (T)

Distillation side cuts from the production of acetaldehyde from ethylene (T)

Bottom stream from the wastewater stripper in the production of acrylonitrile (R)

Bottom stream from the acetonitrile column in the production of acrylonitrile (R, T)

Bottoms from the acetonitrile purification column in the production of acrylonitrile (T)

Still bottoms from the distillation of benzyl chloride (T)

Heavy ends or distillation residues from the production of carbon tetrachloride (T)

Heavy ends (still bottoms) from the purification column in the production of epichlorohydrin (T)

Heavy ends from the fractionation column in ethyl chloride production (T)

Heavy ends from the distillation of ethylene dichloride in ethylene dichloride production (T)

Heavy ends from the distillation of vinyl chloride in vinyl chloride monomer production (T)

Aqueous spent antimony catalyst waste from fluoromethanes production (T)

Distillation bottom cuts from the production of phenol/acetone from cumene (T)

Distillation light ends from the production of phthalic anhydride from naphthalene (T)

Distillation light ends from the production of phthalic anhydride from ortho-xylene (T)
 Distillation bottoms from the production of phthalic anhydride from ortho-xylene (T)
 Distillation bottoms from the production of nitrobenzene by the nitration of benzene (T)
 Stripping still tails from the production of methyl ethyl pyridine (T)
 Centrifuge and distillation residues from toluene diisocyanate production (R, T)
 Spent catalyst from the hydrochlorinator reactor in the production of 1, 1, 1-trichloroethane (T)
 Waste from the product stream stripper in the production of 1, 1, 1-trichloroethane (T)
 Distillation bottoms from the production of 1, 1, 1-trichloroethane (T)
 Heavy ends from the heavy ends column from the production of 1, 1, 1-trichloroethane (T)
 Column bottoms or heavy ends from the combined production of trichloroethylene and perchloroethylene (T)
 Distillation bottoms from aniline production (T)
 Process residues from aniline extraction from the production of aniline (T)
 Combined wastewater streams generated from nitrobenzene/aniline production (T)
 Distillation or fractionation column bottoms from the production of chlorobenzenes (T)
 Separated aqueous stream from the reactor production washing step in the production of chlorobenzenes (T)

Inorganic Chemicals

Brine purification muds from the mercury cell process in chlorine production, where separately prepurified brine is not used (T)
 Chlorinated hydrocarbon waste from the purification step of the diaphragm cell process using graphite anodes in chlorine production (T)
 Wastewater treatment sludge from the mercury cell process in chlorine production (T)

Pesticides

B₁-product salts generated in the production of MSMA and cacodylic acid (T)
 Wastewater treatment sludge from the production of chlordane (T)
 Wastewater and scrub water from the chlorination of cyclopentadiene in the production of chlordane (T)
 Filter solids from the filtration of hexachlorocyclopentadiene in the production of chlordane (T)
 Vacuum stripper discharge from the chlordane chlorinator in the production of chlordane (T)
 Wastewater treatment sludges generated in the production of creosote (T)
 Still bottoms from toluene reclamation distillation in the production of disulfoton (T)
 Wastewater treatment sludges from the production of disulfoton (T)
 Wastewater from the washing and stripping of phorate production (T)
 Filter cake from the filtration of diethylphosphorodithioic acid in the production of phorate (T)

Wastewater treatment sludge from the production of phorate (T)
 Wastewater treatment sludge from the production of toxaphene (T)
 Untreated process wastewater from the production of toxaphene (T)
 Heavy ends or distillation residues from the distillation of tetra-chlorobenzene in the production of 2, 4, 5-T (T)
 2, 6-Dichlorophenol waste from the production of 2, 4-D (T)
 Untreated wastewater from the production of 2, 4-D (T)

Explosives

Wastewater treatment sludges from the manufacturing and processing of explosives (R)
 Spent carbon from the treatment of wastewater containing explosives (R)
 Wastewater treatment sludges from the manufacturing, formulation and loading of lead-based initiating compounds (T)
 Pink/red water from TNT operations (R)

Petroleum Refining

Dissolved air flotation (DAF) float from the petroleum refining industry (T)
 Slip oil emulsion solids from the petroleum refining industry (T)
 Heat exchanger bundle cleaning sludge from the petroleum refining industry (T)
 API separator sludge from the petroleum refining industry (T)
 Tank bottoms (loaded) from the petroleum refining industry (T)

Iron and Steel

Emission control dust/sludge from the primary production of steel in electric furnaces (T)
 Spent pickle liquor from steel finishing operations (C, T)

Secondary Lead

Emission control dust/sludge from secondary lead smelting (T)
 Waste leaching solution from acid leaching of emission control dust/sludge from secondary lead smelting (T)

Veterinary Pharmaceuticals

Wastewater treatment sludges generated during the production of veterinary pharmaceuticals from arsenic or organo-arsenic compounds (T)
 Distillation tar residues from the distillation of aniline-based compounds in the production of veterinary pharmaceuticals from arsenic or organoarsenic compounds (T)
 Residue from the use of activated carbon for decolorization in the production of veterinary pharmaceuticals from arsenic or organo-arsenic compounds (T)

Ink Formulation

Solvent washes and sludges, caustic washes and sludges, or water washes and sludges from cleaning tube and equipment used in the formulation of ink from pigments, driers, soaps, and stabilizers containing chromium and lead (T)

Coking

Ammonia still lime sludge from coking operations (T)
 Decanter tank tar sludge from coking operations (T)

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