

permanent until the circumstances of the taxpayer change. A taxpayer whose status changes (for example, a nonresident alien individual with a social security number becomes a U.S. resident alien) must notify the Internal Revenue Service of the change of status under such procedures as the Internal Revenue Service shall prescribe, including the use of a form as the Internal Revenue Service may specify.

(3) *Waiver of prohibition to disclose taxpayer information when acceptance agent acts.* As part of its request for an IRS individual taxpayer identification number or submission of proof of foreign status with respect to any taxpayer identifying number, where the foreign person acts through an acceptance agent, the foreign person will agree to waive the limitations in section 6103 regarding the disclosure of certain taxpayer information. However, the waiver will apply only for purposes of permitting the Internal Revenue Service and the acceptance agent to communicate with each other regarding matters related to the assignment of a taxpayer identifying number and change of foreign status.

(h) *Effective date.* The provisions of this section generally are effective for any return, statement, or other document to be filed after December 31, 1995. However, the provision of paragraph (a)(1)(ii) of this section that requires an estate to obtain an employer identification number applies on and after January 1, 1984.

Margaret Milner Richardson,

Commissioner of Internal Revenue.

[FR Doc. 95-13818 Filed 6-7-95; 8:45 am]

BILLING CODE 4830-01-U

ENVIRONMENTAL PROTECTION AGENCY

40 CFR Part 52

[UT24-1-7036b; FRL-5218-5]

Determination of Attainment of Ozone Standard for Salt Lake and Davis Counties, Utah, and Determination Regarding Applicability of Certain Reasonable Further Progress and Attainment Demonstration Requirements

AGENCY: Environmental Protection Agency (EPA).

ACTION: Proposed rule.

SUMMARY: The EPA proposes to determine that the Salt Lake and Davis Counties ozone nonattainment area has attained the National Ambient Air Quality Standard (NAAQS) for ozone

and that certain reasonable further progress and attainment demonstration requirements, along with certain other related requirements, of Part D of Title 1 of the Clean Air Act are not applicable to the area for so long as the area continues to attain the ozone NAAQS. In the Final Rules section of this **Federal Register**, EPA is making these determinations without prior proposal. A detailed rationale for the action is set forth in the direct final rule. If no adverse comments are received in response to that direct final rule, no further activity is contemplated in relation to this proposed rule. If EPA receives adverse comments, EPA will withdraw the direct final rule and address the comments in a subsequent final rule based on this proposed rule. EPA will not institute a second comment period on this notice. Any parties interested in commenting on this notice should do so at this time.

DATES: Comments on this action must be received by July 10, 1995.

ADDRESSES: Written comments should be addressed to: Douglas M. Skie, Chief, Air Programs Branch (8ART-AP), United States Environmental Protection Agency, Region 8, 999 18th Street, Suite 500, Denver, Colorado 80202-2466.

A copy of the air quality data and EPA's analysis are available for inspection at the following address: United States Environmental Protection Agency, Region 8, Air Programs Branch, 999 18th Street, Suite 500, Denver, Colorado 80202-2466.

FOR FURTHER INFORMATION CONTACT: Tim Russ, Air Programs Branch (8ART-AP), United States Environmental Protection Agency, Region 8, 999 18th Street, Suite 500, Denver, Colorado 80202-2466
Phone: (303) 293-1814

SUPPLEMENTARY INFORMATION: For additional information, see the direct final rule published in the Final Rules section of this **Federal Register**.

Dated: May 31, 1995.

William P. Yellowtail,
Regional Administrator.

[FR Doc. 95-14066 Filed 6-7-95; 8:45 am]

BILLING CODE 6560-50-P

40 CFR Part 455

[FRL-5214-7]

RIN 2040-AC21

Pesticide Chemicals Category, Formulating, Packaging and Repackaging Effluent Limitations Guidelines, Pretreatment Standards, and New Source Performance Standards; Supplemental Notice

AGENCY: Environmental Protection Agency.

ACTION: Supplemental notice to proposed rule.

SUMMARY: EPA is publishing this Supplemental Notice to obtain public comment on two topics for which comments were received on the proposed rulemaking (59 FR 17850, April 14, 1994) for the Pesticides Formulating, Packaging and Repackaging (PFPR) Industry. EPA seeks comment on the scope and applicability of the rulemaking as they pertain to commenters' requests for the exemption of certain pesticide active ingredients (PAIs) and certain wastewater discharges from the rulemaking.

In addition, EPA is soliciting comment on a regulatory option under consideration by the Agency that is comprised of two alternatives between which industry may choose: (1) Achieving zero discharge or (2) incorporating specific pollution prevention (or best management) practices and treatment technologies and achieving an allowable discharge of small quantities of pollutants.

EPA's addition of the pollution prevention alternative to achieving zero discharge provides benefits to the environment by reducing the cross-media impacts that would otherwise occur from hauling and incinerating the non-reusable portion of PFPR wastewaters. The provision of an alternative compliance method also provides flexibility to industry in meeting the effluent limitations guidelines and standards. Reducing the scope of the rule will reduce regulatory burden without compromising environmental protection. This notice also solicits comment on various means of implementing a pollution prevention alternative to zero discharge.

EPA has estimated the compliance costs and economic impacts expected to result from a rule comprised of a zero discharge and a pollution prevention alternative (referred to as the Zero/P2 Option) as specified in this notice. The Agency has determined that the Zero/P2 Option will result in a similar removal of toxic pound equivalents per year

(approximately 30 million toxic pound equivalents) as the proposed zero discharge option alone. At the same time, the Zero/P2 Option is expected to result in a reduced annualized cost (\$32.7 million in \$1988 or \$39.4 million in \$1995) and fewer facility closures (no facility closures) and line closures (162) than would result from the zero discharge option in the proposed rule. EPA has determined that the Zero/P2 Option is economically achievable.

DATES: Comments on the proposed rule must be received in writing by July 10, 1995 at the following address.

ADDRESSES: Send comments in writing to Ms. Shari H. Zuskin, Engineering & Analysis Division (4303), U.S. EPA, 401 M Street SW., Washington, DC 20460.

The complete record for this rulemaking is available for review at EPA's Water Docket; 401 M Street, SW., Washington, DC 20460. For access to Docket materials, call (202) 260-3027 between 9 a.m. and 3:30 p.m. for an appointment. The EPA public information regulation (40 CFR part 2) provides that a reasonable fee may be charged for copying.

FOR FURTHER INFORMATION CONTACT: For additional technical information write or call Ms. Zuskin at (202) 260-7130. For additional information on the economic impact analyses contact Dr. Lynne G. Tudor at the above address or by calling (202) 260-5834.

SUPPLEMENTARY INFORMATION:

- I. Background
- II. Changes to Scope
 - A. Sanitizers
 - B. Pool Chemicals
 - C. Other Pesticide Active Ingredients
 - 1. Microorganisms
 - 2. Mixtures
 - 3. PAIs That Have Been Determined Not To Pass Through
 - D. Wastewater Sources
 - E. Clarification of Definitions
- III. Pollution Prevention Alternative
 - A. Authority
 - B. Background
 - C. Structure of the Alternative
 - 1. Alternative to Zero
 - 2. Definition of Pollution Prevention Allowable Discharge
 - 3. Description of Specified Practices
 - 4. Implementation of the Pollution Prevention Alternative
- IV. Costing Methodology
- V. Estimated Costs, Economic Impacts, and Cost-Effectiveness
- VI. Unfunded Mandates Reform Act
- VII. Solicitation of Comment
- Appendix A—PAIs Considered for Exemption
- Appendix B—Sample Regulatory Text Considered for the Final Rule
- Appendix C—List of PAI Specific Treatment Technologies
- Appendix D—List of Acronyms

I. Background

In a Notice of Proposed Rulemaking on April 14, 1994 (59 FR 17850), EPA proposed effluent limitations guidelines and standards for the control of wastewater pollutants from the Pesticide Formulating, Packaging and Repackaging (PFPR) industry. This proposed rulemaking would have established a zero discharge limitation of wastewater pollutants for almost all of the formulating, packaging and repackaging of FIFRA registered pesticide active ingredients. Only a small number of PAIs were not completely covered by the proposed zero discharge.

As result of disproportionate economic impacts, EPA proposed a partial exemption for the exterior wastewaters¹ from small sanitizer facilities. Small sanitizer facilities were defined as those facilities which formulate, package or repackage 265,000 lbs/yr or less of all FIFRA registered products containing one or more sanitizer active ingredients (listed in Table 8 of the regulation) and no other active ingredients at a single pesticide producing establishment (i.e., a single PFPR facility). The production cutoff of 265,000 lbs/yr represents the production level (of these sanitizer products) at the largest facility that would experience economic impacts if there was no exemption of wastewater treatment requirements for non-interior wastewater sources. (See Section II.A. of this notice for a description of revisions made to this exemption).

EPA based the zero discharge limitation on pollution prevention, recycle/reuse and, when necessary, treatment through the Universal Treatment System (UTS) for reuse. EPA visualized the UTS as a flexible system consisting of a variety of treatment technologies that have been determined to be effective for treating PFPR wastewaters. In calculating compliance costs, EPA included costs for treatment technologies such as emulsion breaking, hydrolysis, chemical oxidation, metals precipitation and carbon adsorption. EPA also included costs for contract hauling treatment residuals (sludges) from the UTS for incineration. Because of the estimates of reduced wastewater volumes based on the increase in reuse/recycle practices, the overall volume of wastewaters being contract hauled off-site for incineration was not expected to

¹ At the time of proposal, exterior wastewaters included: exterior equipment cleaning water, floor wash, leak and spill cleanup water, safety equipment cleaning water, DOT aerosol test bath water, air pollution control scrubber water, laboratory rinsate and contaminated precipitation runoff.

increase. Thus, EPA did not include additional costs for contract hauling of PFPR wastewaters in the original proposal. Based on comments, revised costs for the proposed zero discharge option have been included in this notice.

The public comment on the proposed rule was originally 60 days and was extended for 30 additional days. EPA received 93 individual comment letters, including those requesting an extension of the comment period. The subject of the comments spanned a variety of topics, including changes to scope of the regulation, EPA's pesticide cross-contamination policy and its effect on the industry's ability to meet zero discharge, increased cross-media impacts due to contract hauling of wastewater for incineration to meet zero discharge, and requests for a discharge allowance when following specific pollution prevention practices.

II. Changes to Scope

A large portion of the comment letters addressed issues concerning the scope and applicability of the proposed regulation. Many commenters requested that the partial exemption of the listed sanitizer active ingredients be expanded to be a total exemption from the regulation for all antimicrobial active ingredients. Others requested that the exemption for sodium hypochlorite (bleach) be extended to other "pool chemicals." Commenters also requested that EPA exempt from the regulation certain low risk PAIs, such as cloves and citronella; specific wastewater sources such as aerosol leak test water, safety equipment cleaning water, laboratory equipment rinse water and storm water; and experimental/ research facilities. In response to the information and data supplied by commenters, EPA is considering whether to revise some aspects of the scope of the proposed PFPR effluent guidelines. EPA is using today's notice to solicit comment on these issues.

If the Agency determines to exclude any of the pollutants discussed in this section of the notice from the scope of the rule, PFPR facilities that discharge such pollutants directly into navigable waters (i.e., direct discharge PFPR/Manufacturers) will still need to comply with the general NPDES permitting requirements, including the possible establishment by the permitting authority of case-by-case effluent limitations based upon Best Professional Judgement (BPJ) under CWA section 402(a)(1)(B). (See 40 CFR 125.3). In addition, those PFPR facilities that indirectly discharge such excluded PAI pollutants to navigable waters through a

POTW would remain subject to the Pass Through and Interference prohibitions contained in the general pretreatment regulations (40 CFR 403.5(a)(1)). PFPR facilities that are indirect dischargers of the excluded PAIs could also be subject to local limits established by the POTW receiving the facility's wastewater (40 CFR 403.5(d)).

A. Sanitizers

A large number of the comments received by EPA were requests for an exemption for antimicrobial products from the scope of the regulation. Although EPA did propose to partially exempt a list of sanitizer active ingredients due to economic reasons (i.e., disproportionate economic impacts), commenters requested expansion of this list. In today's notice EPA is soliciting comment on the exemption of indoor/home use and similar institutional sanitizer products from the regulation in addition to those sanitizer active ingredients initially listed in Table 8 of the proposed regulation (See Appendix A to this notice). The exemption would apply to both interior and exterior wastewater sources and would no longer be limited by a maximum production level because it is no longer solely based on disproportionate impacts (see discussion on production cutoff in Section I). However, EPA is not planning to exempt sporicidals or industrial preservatives. EPA has also included, in Appendix A, a list of those PAIs that are considered, under FIFRA, to be inert ingredients when used with antimicrobial active ingredients.

In addition to economic impacts, EPA believes that there are a number of other factors to be considered in broadening the scope of the proposed sanitizer exemption. First, these indoor home use sanitizer products are formulated for the purposes of their labeled use to "go down the drain" (i.e., toilet bowl cleaners and tub and tile cleaners). All labels for registered products, including the use and disposal statements, are reviewed by EPA. Second, these same chemicals go to Publicly Owned Treatment Works (POTWs), possibly in higher concentrations and volumes, from their approved labeled use in homes than from equipment cleaning at PFPR facilities. Third, EPA has not been able to identify any reported upsets to POTWs caused by these sanitizer active ingredients. EPA did receive biodegradation data for some of these sanitizer active ingredients which supports a hypothesis that these PAIs also do not pass through POTWs. Finally, these sanitizer active ingredients represent a large portion of

the low toxicity PAIs considered for regulation at the time of proposal.

For the purpose of exempting indoor/home use (and similar institutional) sanitizers, EPA would make use of the following definition in the final regulation:

Sanitizer Products means pesticide products that (1) contain the sanitizer active ingredients listed in Table 8 of the regulation and no other active ingredient; or (2) pesticide products that are intended to disinfect or sanitize, reducing or mitigating growth or development of microbiological organisms including bacteria, fungi or viruses on surfaces or inanimate objects in the household and or institutional environment, as provided in the directions for use on the product label. The only institutional antimicrobial products which are included by this definition are those with formulations similar to the household sanitizer products.

For the purposes of identifying the PAIs which EPA is considering exempting from the scope of this rule and in order to estimate compliance costs to the industry for this notice, EPA was able to use the 1988-1991 FATES (FIFRA and TSCA Enforcement System) database which was previously used in developing costs for the proposal. In addition to the database, EPA used the definition shown above to construct the expanded list of sanitizer active ingredients that would receive an exemption from the final regulation. The expanded list of exempted sanitizer active ingredients used to develop revised compliance costs is contained in Appendix A, Table 1 of this notice. The discussion of estimating the revised compliance costs is contained in Section IV of this notice. EPA solicits comment on both the definition and its use, and whether to use the definition in conjunction with a list or to use a list only.

B. Pool Chemicals

In the proposed regulation EPA exempted sodium hypochlorite (bleach) from the pretreatment standards. EPA solicited comment on additional chemicals that should also be excluded along with sodium hypochlorite. Commenters suggested that several other chemicals, that are mainly used in the swimming pool industry, including calcium hypochlorite, potassium hypochlorite, lithium hypochlorite, chlorinated isocyanurate compounds and several halogenated hydantoin should be included in this exemption.

EPA did not include these "pool chemicals" in the exemption, at the time of proposal, because EPA believed that the formulating, packaging and repackaging of these chemicals did not involve the use of water (e.g., dry

production). After review of the comments and a site visit to a "pool chemicals" facility, EPA understands that although the products are dry, the addition of water is necessary in certain instances.

Throughout the course of normal dry operations, small amounts of product fall on the floor or accumulate on equipment surfaces and become contaminated with ordinary dust and dirt. These chemicals act as strong oxidizing agents and left untreated, the sweepings pose a serious fire and safety hazard. Facilities treat (de-activate) these chemicals with the addition of water and neutralizing chemicals such as sodium hydroxide or sodium carbonate. With this treatment, the available chlorine in the water is converted to a pH neutral salt which can be discharged to the POTW.

Commenters also provided additional reasons for the sodium hypochlorite exemption, stating that the chemical does not survive in the sanitary waste stream and would be converted to sodium chloride long before it reaches the POTW. Commenters supplied data on the degradation of sodium hypochlorite in water. This data is available for review in the public record for this notice. In addition, EPA notes that calcium hypochlorite, potassium hypochlorite and lithium hypochlorite exhibit similar chemistry and half-lives as sodium hypochlorite. EPA also received comment requesting the extension of the exemption to sodium carbonate, phosphoric acid and hydrochloric acid. Phosphoric acid and hydrochloric acid fall under the original sanitizer exemption and sodium carbonate is considered an inert ingredient when used in formulations with other sanitizer chemicals; therefore, EPA does not believe it is necessary to list these chemicals under the pool chemicals exemption. EPA is considering whether to exempt the chemicals on Table 2 in Appendix A from these categorical pretreatment standards (PSES and PSNS) in the final regulation. In addition, EPA is considering using a definition for pool chemicals in conjunction with the list in Appendix A. This would provide more flexibility to newly registered chemicals that are deserving of the pool chemicals exemption to receive it in the future. EPA solicits comment on a definition for this group of chemicals.

C. Other PAIs

Based on comments received, EPA performed a more extensive investigation to develop options for appropriate treatment technologies for certain PAIs. Upon completing this

more recent evaluation, EPA was left with two groups of PAIs for which insufficient information was available to identify best available control technologies. The two groups are identified as microorganisms and mixtures and are discussed below. In addition, comments were received requesting the exemption of specific low risk pesticides that fall into the "mixtures" grouping.

1. Microorganisms

EPA is considering whether to exclude microorganisms that are registered for pesticidal use, such as *Bacillus thuringiensis*, from these regulations. Although, EPA has little information on the formulation, packaging and repackaging of such pesticides or the generation and characteristics of wastewaters from such operations, EPA believes these "pesticides" are not formulated in a similar fashion as other PAIs covered by the proposed rule. Microorganisms which have registered pesticidal uses are generally created through a fermentation process, similar to those found in some food processing plants. Fermentation is a biological process, where as other pesticides are manufactured and formulated through chemical and physical processes.

In addition, almost all the microorganisms registered as pesticide products are exempt from the requirement of obtaining a (residue) tolerance for pesticide chemicals in or on raw agricultural commodities (40 CFR 180.1001). Under Part 180 Subpart D - Exemptions From Tolerance- it states that "an exemption from a tolerance shall be granted when it appears that the total quantity of the pesticide chemical in or on all raw agricultural commodities for which it is useful under conditions of use currently prevailing or proposed will involve no hazard to the public health." Also, some of these microorganisms will not survive in aquatic environments, and therefore, pose no harm to aquatic life. These microorganisms are listed in Appendix A of this notice. EPA solicits comment on the exemption of these pesticides from the PFPR regulation.

2. Mixtures

EPA had difficulty in finding information on appropriate treatment technology options for a second group of PAIs, which will be referred to as "mixtures." This group of mixtures represents those PAIs that are made up of a number of substances. The molecular weights, solubilities and aromaticity of these pesticides are not easily defined because they are

comprised of a variety of compounds. For example, oil of eucalyptus contains cineole, alpha-pinene, phellandrene, terpineol, citronellal, geranyl acetate, eudesmol, eudesmil acetate, piperitone and volatile aldehydes.

This group of mixtures can be separated into two subgroups. The first subgroup of mixtures was the subject of several comments requesting exemption for these PAIs from the proposed rule. This first subgroup contains active ingredients that are plants, extracts from plants, non-toxic household items, foods or constituents of foods. In addition, many of these pesticides have been determined to be Generally Regarded As Safe (GRAS) under Food and Drug Administration (FDA) regulation (20 CFR 170.1). Examples of these pesticides include: oil of anise, rosemary herbs, thyme herbs, cloves, oil of citronella, lanolin, cottonseed oil, soybean oil, oil of lemongrass, cedarwood oil, soap and sawdust. EPA is considering whether to exclude this subgroup of mixtures from the PFPR effluent guidelines regulation. The list of these mixtures can be found in Appendix A of this notice. EPA solicits comment on the exclusion of these pesticides and requests information on additional pesticides which should be included in this group of mixtures.

The other subgroup of mixtures is not as easily defined. This subgroup also contains mixtures of a number of substances of varying nature whose identifying characteristics are not easily identified. EPA has not been able to identify treatability data for these pesticides in the available literature. Many of these mixtures, such as kerosene, petroleum distillate oils, xylene range aromatic solvent and heavy aromatic naphtha, are typically found in the organic chemicals industry or are used as inert ingredients in the PFPR industry; however, in some instances they have been registered for pesticidal uses. EPA does not believe there is sufficient data to exclude these PAIs from this regulation; therefore, EPA is considering whether to reserve regulation of these types of pesticides and evaluate them at a later time. Specific identification of this subgroup of mixtures is contained in Appendix A of this notice.

3. PAIs That Have Been Determined Not to Pass Through

As discussed in the preamble to the proposed regulation, under the pesticide manufacturing effluent limitations guidelines and pretreatment standards, EPA found that four organic chemicals considered to be priority pollutants did not pass through POTWs (59 FR 17872).

The four chemicals are phenol, 2-chlorophenol, 2,4-dichlorophenol and 2,4-dimethylphenol (58 FR 50649; September 28, 1993). In addition to being a priority pollutant, phenol is considered a PAI under the proposed PFPR effluent guidelines.

EPA did not propose to exempt these four chemicals from the PFPR effluent limitations and categorical pretreatment standards. EPA proposed to establish a categorical pretreatment standard of zero discharge. EPA based this zero discharge standard upon the technology of recycling, reuse, treatment, and/or off-site disposal, which would be most likely shown by "no flow" of a PFPR facility's entire process wastewater stream. EPA found that PFPR facilities do not typically isolate their process wastewater streams; therefore the four "no pass through" pollutants would not be discharged in a separate wastewater stream. The zero discharge standard (premised upon a no flow technology) applied equally to all PAIs and priority pollutants, resulting in the removal of pass through pollutants and the incidental removal of those four pollutants that do not pass through. Thus, the Agency determined that it was unnecessary to exempt any PAI or priority pollutant from the pretreatment standards on the basis that it does not pass through a POTW. (59 FR 17872).

However, EPA is considering whether to add a pollution prevention alternative (see Section III) to the regulation which would provide for an allowable level of discharge where facilities are performing specified pollution prevention practices. With this proposed alternative, EPA believes it would be appropriate to exclude phenol, 2-chlorophenol, 2,4-dichlorophenol and 2,4-dimethylphenol from regulation in these categorical pretreatment standards (PSES and PSNS) for this alternative because they have been found not to pass through and facilities would no longer have to achieve no flow of process wastewater. EPA solicits comments on this determination.

D. Wastewater Sources

Commenters requested exemption of Department of Transportation (DOT) aerosol leak test water, safety equipment cleaning water, laboratory rinsates and storm water from the definition of process wastewater. After reviewing the information and data supplied by commenters and performing additional data gathering, EPA believes that, in certain situations, these wastewaters should be exempted from the rule.

DOT aerosol leak test baths are used by PFPR facilities that package their

products into aerosol cans. The leak test is performed as a requirement prior to transporting the cans. Test baths must be kept at 130°F, cans must be fully submerged, and the baths must be visually monitored for leaking or bursting cans.

EPA believes that unless there are leaking or bursting cans, the water in the bath should not contain pollutants from the formulations. When facilities are not using continuous overflow baths, they will change the water periodically. This is usually due to the build up of small amounts of oil and grease from the exterior surface of the cans themselves (or the silk screened labels). EPA is considering whether to exclude discharges from DOT test bath water from the rule when a facility operates a batch bath where no leaks have been detected or where cans have not burst from the time of the last water change out. EPA solicits comment on this exclusion (See Section III for a discussion on non-excluded DOT test bath water and the pollution prevention alternative.)

EPA has also reexamined the inclusion of discharges from safety equipment cleaning water in the rule. Commenters requested the exemption of safety equipment cleaning water from the zero discharge requirement on the basis that it contains only small amounts of pollutants. Commenters also stated that a zero discharge limitation on discharges from safety equipment cleaning waters would create a disincentive for testing safety showers and eye washes and would create worker safety problems. Safety showers and eye washes are typically tested by running water through the equipment long enough to ensure that water is flowing freely to the unit and that associated alarms are functioning. EPA proposed exempting wastewater discharges from the operation of employee showers, laundry facilities and the fire protection equipment test water for similar reasons, including worker safety issues. In addition, the water from testing this safety equipment should not contain any pesticide active ingredients or other pollutants of concern. Therefore, EPA is considering whether to exclude discharges from the testing of safety showers and eye washes from coverage under the final rule. However, other wastewater associated with cleaning safety equipment, such as rinsing respirators or boots, would still be covered by the rule and the pollution prevention alternative (see Section III) as it would be expected to contain some level of pollutants. EPA solicits comment on this exclusion.

Laboratory equipment rinse water is another wastewater source which commenters considered to contain low levels of PAIs. Typically, a finished product is analyzed prior to packaging as part of the facility's quality control program. A small sample, referred to as the retain sample, is taken into the laboratory for testing.

EPA believes that the only measurable amounts of PAI would come from the retain sample itself and the container that is used to bring it into the laboratory. Facilities can usually reuse the retain sample back into a future formulation of the same product. Wastewaters originating from water that is used to rinse other laboratory glassware, such as graduated cylinders, beakers and pipets should contain non-detectable levels of pesticide active ingredients. In addition, while performing analytical testing other chemicals may be used to perform extractions and render the glassware rinsates non-reusable. Therefore, EPA is considering whether to exclude wastewater discharges from cleaning analytical equipment in on-site laboratories from these regulations. However, EPA would not be excluding wastewater from the retain sample itself or the water used to clean the container that is used to bring the sample into the laboratory. EPA solicits comment on this exclusion.

In the proposed regulation, EPA included contaminated precipitation runoff (storm water) that collects in tank farms, secondary containment structures or on loading pads. Commenters requested the exclusion of storm water from the zero discharge regulation because it was not reusable and because storm water is covered by the Storm Water Regulations (57 FR 41297; September 9, 1992).

In the proposed regulation, EPA suggested the use of the Universal Treatment System (UTS) for achieving zero discharge for wastewaters that could not be reused directly into product. EPA suggested that, for example, floor wash could be treated through the UTS and reused as floor wash. Commenters disagreed with this suggestion in terms of storm water, stating that storm water cannot be reused for its original purpose following treatment.

In addition, comments were received on the redundancy of the proposed effluent guidelines regulations with the storm water regulations (57 FR 41297). In response to comment, EPA has reviewed the recent storm water regulations and has made a determination that except for the repackaging establishments, storm water

at PFPR facilities is already covered by the individual or general NPDES permits issued to cover storm water from industrial activity. For general permits and most individual permits, the storm water regulations require a very detailed pollution prevention plan which must contain a list of site specific best management practices, plans for employee training, and schedules for inspections. EPA believes that the pollution prevention plan required by the storm water regulations mandates practices similar to those outlined in the pollution prevention alternative (see Section III.B.3.). To avoid duplicative regulatory coverage, EPA is considering whether to exempt storm water discharges from the PFPR rule for the Subcategory C facilities (which does not include repackaging establishments). (See Section II.E for a discussion on the change from "refilling establishments" to "repackaging establishments.")

The coverage of storm water at repackaging establishments is not as clearly defined. The primary SIC code describing repackaging establishments is SIC 5191 and is not specifically included as one of the SIC codes covered under the definition of industrial activity (55 FR 47990) in the storm water regulations (although storm water in storage areas including tank farms is included). EPA believes a gap may be created if storm water from repackaging establishments is not covered in the PFPR effluent guidelines or the storm water regulations. EPA also believes that storm water collected from secondary containment at repackaging establishments where refilling of agricultural pesticides into minibulk containers is conducted, is not different than the type of storm water collected from tank farms at PFPR facilities. EPA solicits comment on the inclusion of the requirements for general storm water permits (i.e., storm water pollution prevention plan) into the PFPR guidelines for Subcategory E facilities (repackaging establishments) or into the storm water regulations under a separate rulemaking.

In addition, EPA believes that the possible contamination of storm water at repackaging establishments can be reduced through use of good housekeeping practices, closed loop refilling systems and small enclosures or roofs around pumps and valves. EPA solicits comment on these or other best management practices associated with repackaging establishments that could be employed to reduce the level of wastewater pollutants found in storm water at these facilities. EPA also requests comment from repackaging establishments that are not able to reuse

storm water or rinsates as make up water for use in applications, if it is in accordance with the product label.

E. Clarification of Definitions

Commenters requested clarification on several issues and definitions in the proposed regulations. Commenters requested specific definitions for formulating, packaging and repackaging, as well as, clarification between pesticide formulating and pesticide manufacturing when they occur at the same facility. Clarification was also requested for the determination that on-site incineration meets the requirements of zero discharge for this regulation. The definition of repackaging establishments, particularly in reference to "retail sales," also prompted comment.

EPA considers the formulation of pesticide products to mean the process of mixing, blending or diluting one or more PAIs with one or more active or inert ingredients, without a chemical reaction that changes one active ingredient into another active ingredient, to obtain a manufacturing use product or an end use product. EPA considers the packaging of pesticide products to mean enclosing or placing a formulated pesticide product into a marketable container. EPA considers the repackaging of pesticide products to mean the direct transfer of a single PAI or single formulation from any marketable container to another marketable container, without intentionally mixing in any inerts, diluents, solvents, other ingredients or other materials of any sort.

Pesticide manufacturers may sometimes add a solvent to a manufactured PAI or intermediate for the purpose of stabilizing transport or at the request of the formulator who is receiving the PAI as a raw material. EPA would like to clarify that manufacturers can perform such operations without being subject to the PFPR effluent guidelines. Typically, such operations are performed without placing the pesticide in a marketable container (i.e., they are shipped in bulk via tank truck, rail car or tote tank). However, PFPR facilities should not conclude that they can receive PAIs (that they do not manufacture), even in bulk quantities, and dilute it with solvent or other carrier without being subject to the PFPR effluent guidelines, as this would be considered formulating.

Although EPA proposed zero discharge limitations with pollution prevention, recycle/reuse and treatment for reuse as the basis for the zero discharge limitation, facilities may meet the requirement of zero discharge to

water through a number of other options. Most of these options include hauling wastewater to off-site destinations. These destinations include incinerators, deep wells and commercial waste treaters and, in some cases, wastes are returned to the registrant or manufacturer. EPA received comment requesting clarification of on-site incineration as a means of achieving zero discharge. For purposes of this regulation only, EPA considers on-site incineration a valid option for achieving zero discharge of PFPR process wastewater. Wet scrubbing devices used for air pollution control on these on-site incinerators are not subject to the PFPR effluent guidelines. The only existing on-site incinerators at facilities covered by the PFPR regulation are at facilities which also manufacture pesticide active ingredients. Scrubber wastewater discharges from these incineration activities are currently regulated under the pesticide manufacturing effluent guidelines (58 FR 50638, September 28, 1993) for the PAIs manufactured at these facilities.

Based on comments received, EPA intends to clarify how the PFPR effluent guidelines would apply to refilling establishments. EPA proposed that the PFPR limitations and standards (proposed Section 455.60) would apply to refilling establishments that repack agricultural pesticides whose primary business is retail sales (59 FR 17904). This is the same scope used in the proposed Standards for Pesticide Containers and Containment regulations (59 FR 6712, February 11, 1994). EPA chose to specify a subset of the universe of refilling establishments within the proposed containment rule to require secondary containment only at agricultural pesticide refilling facilities where there was documented evidence of environmental contamination from leaks and spills. Specifically, EPA believed that it did not have sufficient information regarding the practices and environmental problems at formulators and manufacturers where pesticide refilling may occur to prescribe containment requirements (59 FR 6754).

EPA received comments from State of Minnesota officials on the proposed PFPR effluent guidelines stating that there are refilling establishments whose business is primarily wholesale sales located in their state that repack agricultural chemicals into refillable containers.

The EPA believes that in an attempt to be consistent with the language in the proposed containment regulations, it may have misstated the intended scope of the PFPR effluent guidelines. EPA believes that the types of refilling

establishments used as the basis for extrapolating data to all refilling establishments in the PFPR industry included facilities whose primary business is wholesale and/or retail sales and did not include pesticide formulators or manufacturers or repackagers of non-agricultural pesticides.

EPA intends to clarify the scope of Subpart E of the proposed PFPR effluent guidelines, § 455.60. However, this change in the definition, may cause the regulated community confusion, as there would be two definitions of the term "refilling establishment." Therefore, EPA is considering keeping the term refilling establishment for the Container regulations and using the term repackaging establishments for the final PFPR effluent guidelines. In this situation § 455.60 would read "a repackaging establishment is an establishment where the activity of repackaging agricultural pesticide product into refillable containers occurs, whose primary business is wholesale or retail sales, and where no pesticide manufacturing, formulating, or packaging occurs". EPA solicits comment on this clarification.

III. Pollution Prevention Alternative

This section discusses the background on the pollution prevention alternative incorporated in the Zero/P2 Option, including the comments received which led to today's supplemental notice and solicitation for comments. The structure of the alternative and the pollution prevention (P2) practices are described. The notice solicits comment on the degree to which these practices should be specified in the regulatory text (i.e., specified vs. guidance). The wastewater treatment cost savings and pollutant loading reductions that are associated with the P2 practices are briefly discussed. In addition, several options for implementation of the P2 alternative on which EPA seeks comment are described including self-certification, submittal of a plan to permitting authorities, and greater flexibility for the permitting authorities to use best professional judgement (BPJ).

In response to the zero discharge proposal, a variety of commenters stated that PFPR facilities should be given the opportunity to conduct various pollution prevention practices and thereby limit the level of PAIs which would be discharged into navigable waters. Commenters cited to a list of such practices that the Agency had already developed in its Development Document for the proposed rule. These same commenters argued that the zero discharge limitations and standards

were inappropriate given the non-water quality environmental impacts that would arguably result from the increased amount of incineration of process wastewater that would need to occur. Commenters also raised concerns about the costs of the proposed zero discharge standard.

Given these set of comments concerning costs and non-water quality impacts, EPA believes that it is appropriate to consider a pollution prevention (P2) alternative to the proposed zero discharge limitations and standards. As described in more detail below, PFPR facilities would generally have a choice of either meeting the relevant zero discharge standard or limitation or choosing to conduct the listed P2 practices as set forth in Tables B-1 and B-2 of this supplemental notice. Two variations in the structure of the P2 alternative are discussed below, they vary in the practices that would be specified in the regulatory text of the final regulation (see Section III.C.3).

For either variation of the pollution prevention alternative chosen for final promulgation, those PFPR facilities which choose to conduct the P2 practices would need to also agree to make the P2 alternative enforceable, *e.g.*, direct dischargers would need to agree to have the P2 practices included in their NPDES permits and indirect dischargers would need to file notices of intent to use the P2 practices with the POTW. (See Part III.C.4 for discussion and solicitation of comment on several approaches that EPA anticipates could be utilized to implement the P2 alternative.)

If a PFPR facility chooses to adopt the P2 alternative by conducting the P2 practices, agreeing to its enforceability, complying with specified record keeping requirements, and, in certain instances, treating the process wastewater, the facility would be permitted to discharge those levels of PAIs and priority pollutants which remain in the process wastewater stream. The Agency believes that the level of PAIs and priority pollutants remaining in the process wastewater should be considerably reduced and, in most cases, should pose no environmental harm.

Direct dischargers of the covered PAIs which choose to adopt the P2 alternative in lieu of meeting the zero discharge limitations may be subject to the establishment by the permitting authority of more stringent effluent limitations based on applicable water quality standards. See 40 CFR 122.44. In addition, those PFPR facilities that are indirect dischargers which adopt the P2

alternative would remain subject to the Pass Through and Interference prohibitions contained in the general pretreatment regulations. 40 CFR 403.5(a)(1). Indirect dischargers which choose to be subject to the P2 alternative could also be subject to local limits established by the pretreatment authority receiving the facility's wastewater. 40 CFR 403.5(d).

A. Authority

EPA believes that promulgation of this pollution prevention alternative is authorized under the Clean Water Act (CWA) for a number of reasons. In promulgating Best Available Technology Economically Achievable (BAT) effluent limitations, EPA is authorized to consider a number of factors, including, among other things, non-water quality environmental impacts (including energy requirements) (CWA section 303(b)(2)(B)). In addition, in establishing BAT limitations, EPA is to identify the degree of effluent reduction attainable, *e.g.*, the level of pollutant removal attained through implementation of the effluent limitation (CWA section 304(b)(2)(A)). While not required under the CWA, EPA also evaluates the cost-effectiveness of the BAT effluent limitations.

Pretreatment Standards for Existing Sources (PSES) under CWA section 307(b) are designed to prevent the discharge of pollutants that pass through, interfere with, or are otherwise incompatible with the operation of POTWs. The CWA authorizes EPA to establish pretreatment standards for pollutants that pass-through POTWs or interfere with treatment processes or sludge disposal methods at POTWs. The legislative history of the 1977 Act indicates that pretreatment standards are to be technology-based and analogous to the BAT effluent limitations for removal of toxic pollutants. Thus, in proposing the zero discharge PSES limitation, EPA analyzed the same factors which were assessed for the proposed BAT zero limitation standard.

For example, in proposing the original BAT and PSES effluent limitations and the standards for new sources for PFPR facilities, EPA determined that zero discharge represents the best available and that zero discharge was economically achievable for the PFPR industry (59 FR 17891 and 17898). EPA also estimated the pounds of pollutants removed under a zero discharge limitation and determined that such a limitation option was cost-effective by estimating the cost per toxic pound equivalent removed from PFPR process

wastewaters (59 FR 17894-99). EPA also evaluated the non-water quality environmental impacts by assessing the effects a zero discharge limitation and standard would have on air pollution, solid waste generation, and energy requirements (59 FR 17900). Based upon those evaluations and analyses of the other factors to be considered in promulgating the BAT and PSES effluent limitations, the Agency found zero discharge to be an appropriate limitation for pollutants in wastewater from PFPR facilities.

However, in response to the proposed rule, a number of commenters argued that EPA had underestimated the non-water quality environmental impacts of a zero discharge limitation. In particular, commenters stated that air pollution would increase because of the increased use of incineration as an option for disposal of process wastewater. In addition, commenters argued that energy requirements resulting from BAT and PSES zero discharge limitations would be greater than those estimated by EPA because of the increased consumption of fuel for use in transporting wastewater to incineration facilities or deep well injection sites and the increased fuel needed for burning these dilute wastewaters in an incinerator.

In response to these comments, EPA re-evaluated its position on the degree to which the non-water quality environmental impacts effect this regulation and now recognizes that under a zero discharge BAT or PSES limitation for this industry, significantly increased amounts of process wastewater that cannot be recycled, reused, or treated may be transported to incinerators for disposal (resulting in an increase in air emissions) and that increased amounts of energy may have to be used for such transport and for incineration of these dilute wastewaters.

Neither this revised assessment of non-water environmental quality impacts or the revised economic assessment (see Section V) alter EPA's determination that a zero discharge limitation is an appropriate BAT and PSES limitation for pollutants in PFPR process wastewater. However, in response to concerns raised by commenters about the costs and non-water quality environmental impacts of the zero discharge option, EPA believes it is appropriate to consider the Pollution Prevention (P2) alternative presented by these commenters.

To evaluate economic impact and economic efficiency, EPA has grouped the zero discharge proposal and the P2 alternative as proffered by commenters into the Zero Discharge/P2 Option

(Zero/P2 Option). Under this Option, all PFPR facilities subject to the final rule would have a choice of either meeting the zero discharge limitation (or pretreatment standard) or employing the P2 practices and discharging the small amount of PAI pollutants that remain in the process wastewater.

EPA believes that this Zero/P2 Option addresses both the economic cost and non-water quality environmental impacts which commenters believed were not adequately considered by the Agency in its proposed zero discharge option. As discussed in more detail in Section V, under the Zero/P2 Option both the costs impacts and the cost effectiveness compare favorably to the proposed Zero Discharge Option alone. Moreover, the Zero/P2 Option will reduce the level of adverse non-water quality environmental impacts which may occur in comparison to those resulting from a Zero Discharge limitation and standard alone by using pollution prevention practices to decrease the use of cross-media transfers (off-site disposal to incineration, deep-well injection, central waste treaters, etc. * * *).

Under the Zero/P2 Option, PFPR facilities would need to agree to implement the listed P2 practices in lieu of complying with the zero discharge limitation or standard and also agree to make compliance with the P2 practices enforceable. For PFPR facilities that directly discharge (only PFPR/Manufacturers) the covered PAIs into navigable waters, EPA believes that the P2 alternative is authorized under the CWA as a system of best management practices ("BMPs") that may be incorporated into any NPDES permit. (CWA section 304(e)). BMPs are defined, in part, to mean "schedules of activities, prohibitions of practices, maintenance procedures, and other management practices to prevent or reduce the pollution of "waters of the United States * * *." 40 CFR 122.2 EPA believes that the list of pollution prevention practices contained in Tables B-1 and B-2 fit within that definition. The NPDES regulations authorize permitting authorities to include BMPs in NPDES permits under a number of conditions. 40 CFR 122.44(k). EPA believes that incorporation of these pollution prevention practices as BMPs into an NPDES permit is authorized because they carry out the purposes and intent of the CWA. 40 CFR 122.44(k)(3).

EPA recognizes that in the proposed rule, the Agency took the position that regulating PFPR facilities on a nationwide basis through the use of BMPs may not be appropriate because

they may not provide the needed flexibility for the many different facilities subject to any final rule (59 FR 17901, April 14, 1994). However, EPA has provided for the needed flexibility in the Zero/P2 Option by making only certain pollution prevention practices mandatory if a facility chooses the P2 alternative, i.e., those practices contained in Table B-1. The other pollution prevention practices (Table B-2) may be modified under a variety of circumstances. In addition, EPA is soliciting comment on a variation of the P2 alternative where only practices which directly reduce pollutant loadings to wastewater are specified in the regulatory text and where water conservation practices are only provided as guidance (see Section III.C for discussion on this variation).

For PFPR facilities that discharge covered PAIs into navigable waters indirectly through a POTW, EPA believes that the Zero/P2 Option is appropriate as an alternative pretreatment standard under CWA section 307(b) and does not conflict with the implementation of the general pretreatment regulations. 40 CFR Part 403. Pretreatment standards for existing and new sources are designed to prevent the discharges of pollutants that pass through, interfere with, or are otherwise incompatible with the operations of POTWs. (CWA 307(b)).

As stated above, in establishing pretreatment standards for existing and new facilities, EPA is authorized to evaluate the same factors that it assesses in establishing BAT limitations. In assessing the removal of pollutants from wastewater, the cost impact, cost effectiveness, and non-water quality impacts of the P2 alternative for both the Zero Discharge proposed PSES and PSNS standards and the P2 alternative, EPA has found that the P2 alternative (as part of the Zero/P2 Option) compares either favorably (cost impact, cost effectiveness, non-water quality impacts) or similarly (pollutant removal) with the Zero Discharge Option. Thus, EPA believes that it is appropriate to consider the P2 alternative as pretreatment standards for existing and new sources.

B. Background

As discussed in Section I, EPA proposed a zero discharge regulation for wastewaters generated by the formulating, packaging and repackaging of pesticide products, with the exception of exterior wastewaters from facilities formulating, packaging and repackaging certain sanitizer active ingredients. The basis for the proposed zero discharge regulation was pollution

prevention, recycle/reuse and treatment and reuse when necessary. EPA received comment on the technical feasibility and economic achievability of the proposed zero discharge regulation. Many comments focused on circumstances where wastewater was not completely reusable. Commenters requested that EPA reduce both the cross-media and economic impacts associated with the proposed regulation.

One situation where commenters believe complete reuse is not achievable concerns EPA's existing policy on cross-contamination. Currently, EPA sets a standard of zero for cross-contamination. This means that an active ingredient may not be present at any concentration in a FIFRA registered product where it is not listed on the confidential statement of formula (CSF) of that product. During the study phase for the development of the proposal, the industry practice was to triple rinse containers and equipment. Because of recent EPA enforcement actions, industry commented that additional rinsing is being used to comply with the cross-contamination policy. EPA is currently reviewing the pesticide cross-contamination policy.

Commenters believe that more aggressive enforcement of a zero-standard cross-contamination policy would create additional wastewaters that would not be reusable and that were not taken into account when the proposed zero discharge regulation was developed. According to commenters, a facility that performs a triple rinse of the equipment interiors when changing from formulating one product to another, may have to perform additional rinses (e.g. a five times rinse) to ensure a level of zero cross-contamination. Commenters stated that even in cases where the rinsate from the multiple rinse could be stored for use in a future formulation, the additional rinses create more rinsewater than could be reused and that these very dilute wastewaters would have to be contract hauled for off-site disposal to achieve zero discharge. Commenters believe this additional contract hauling of wastewater not only makes the proposed regulation economically unachievable, but increases the opportunity for cross-media impacts.

A second situation described by commenters focuses on the need for periodic blowdown of the treatment system. Commenters believe that even when using an appropriate treatment system, such as the Universal Treatment System (UTS), continuous reuse is not technically feasible (i.e., PFPR wastewater is not reusable indefinitely). Commenters state this is due to a

buildup of salts in the system that would require a periodic blowdown to maintain a well operated treatment system. To achieve zero discharge this blowdown wastewater would have to be contract hauled for off-site disposal, increasing the economic impact to the industry and increasing the opportunity for cross-media transfers.

The third situation described by commenters concerns the reuse of water following treatment. In the proposed regulation, EPA demonstrated, in the discussion on estimation of compliance costs, that it did not expect facilities to reuse wastewaters that had been treated directly into product or for cleaning equipment interiors (59 FR 17876). Although some facilities do reuse treated wastewaters in this way, only interior rinsates that could be reused without treatment and could, therefore, be directly reused into formulation or stored for reuse in a future formulation of the same or compatible product formed the basis for the proposed zero discharge. EPA recommended that wastewaters that needed treatment prior to reuse could be reused for their original purpose (i.e., treated floor wash can be used to wash floors). However, commenters felt that EPA did not account for wastewaters that could not be reused for their original purpose such as interior wastewaters that could not be stored due to concerns for microbial growth or interior wastewaters generated when changing a formulating or packaging line from a solvent-based product to a water-based product. EPA notes that cost estimates for the proposed regulation did include costs for contract hauling similar excess wastewaters for off-site incineration. However, EPA does recognize that, as stated previously, contract hauling these wastewaters for incineration may increase economic and cross-media impacts.

Due to the concerns described above, many commenters requested a discharge allowance for these excess or non-reusable wastewaters. Commenters suggested that they would be willing to agree to use specified pollution prevention or best management practices and pointed to the pollution prevention, recycle and reuse practices described in the preamble to the proposal (59 FR 17866) and the technical development document [EPA #821-R-94-002]. In some cases commenters provided examples of possible additional practices they would be willing to agree to use. EPA believes that a discharge allowance ("pollution prevention allowable discharge") may provide an added incentive to increase the use of pollution prevention and

recycle practices while ensuring that facilities are maximizing pollutant reductions in the wastewater without increasing cross-media impacts.

The following sections describe the possible variations in the structure of the pollution prevention alternative, the practices which may be included as part of final regulation for either variation, and the various approaches for implementing the final rule.

C. Structure of the Alternative

For purposes of soliciting comment on today's supplemental notice, two variations of the structure of the pollution prevention alternative, as they might appear in the final regulation are discussed below. EPA has also provided possible regulatory text in Appendix B of this notice to assist commenters in focusing their written comments. Appendix B to this notice focuses on a version of the P2 alternative which would list all the pollution prevention, recycle and reuse practices that would be specified in the final regulatory text. The other version of the P2 alternative would specify, in the final rule, only those pollution prevention, recycle and reuse practices that directly reduce pollutant loadings in the wastewater, while only recommending the use of the water conservation practices and equipment as guidance. For example, in this case the use of a floor scrubber would not be specified in the regulation; however, floor wash from cleaning liquid production area floors would still require treatment prior to being considered a P2 allowable discharge. Thus, floor scrubbers would be recommended because they can reduce the size and cost of the treatment system by reducing the volume of wastewater requiring treatment. (See Section III.C.4 for a discussion on an implementation approach which could increase the use of BPJ in reference to the specified practices).

EPA believes that although most facilities would choose to use both the specified and recommended practices, this approach may be more difficult to permit and enforce. Also, this approach does not ensure that the total pounds of pollutants in the discharged wastewaters are at desirable levels. Without the use of certain flow equipment devices, the maximum reusability of certain wastewater sources, particularly interior equipment rinsates, may not be possible (i.e., facilities may have too much rinsewater volume than is called for in the formulation). In addition, in the case where water conservation practices are not incorporated into the final regulatory text, the use of dilution to

achieve the P2 allowable concentrations may be encouraged.

In addition to soliciting comment on these variations, EPA is soliciting comment on the approach related to implementation of the pollution prevention alternative. (See Section III.C.4. for a discussion on implementation).

1. Alternative to Zero

The pollution prevention alternative has been designed to serve as an alternative to the proposed zero discharge regulation. This means that if a facility agrees to comply with the prescriptive practices (and any local limits which may be more stringent) and make them enforceable, the facility would be allowed a discharge allowance (P2 allowable discharge). However, if a facility does not agree to comply with the requirements of the alternative they would be subject to a zero discharge limitation or standard.

2. Definition of Pollution Prevention Allowable Discharge

EPA has extensively evaluated the definition of the P2 allowable discharge for use in the pollution prevention alternative. EPA is not planning to set a numerical definition of P2 allowable discharge for many of the same reasons that EPA did not set numerical limitations and standards in the proposed regulation (59 FR 17875). Briefly, the reasons included the lack of data, such as long term monitoring data necessary to set numerical limitations, lack of analytical methods for testing for many of the PAIs in wastewater, and the large annual cost that would be associated with compliance monitoring for all PAIs that a PFPR facility may use in production over a year's time.

In general, the definition as described would require that, in addition to performing the specified practices, certain waste streams be treated (or pretreated) prior to being eligible for consideration as an "allowable discharge." In order to allow additional flexibility, EPA is considering allowing permitting authorities (NPDES or pretreatment authority) to use BPJ to make a special modification to this definition in which treatment would not be necessary for a specific facility. EPA solicits comments on the use of a special modification to the definition. The remainder of this section focuses on the definition of pollution prevention allowable discharge.

Use of a definition for P2 allowable discharge should account for the difference between waste streams of high concentration and other waste streams (e.g., interior wastewaters, floor

wash and spill and leak cleanup water versus DOT test bath water or safety equipment cleaning water). Due to the additional pollutant removals afforded by treatment at the POTW, EPA has developed similar but separate definitions for indirect and direct dischargers. In brief, treatment would be required for any waste streams discharged to the nation's waters by direct dischargers. The definition of P2 allowable discharge for direct dischargers will be discussed later in this section. The definition of P2 allowable discharge for indirect dischargers that send wastewater to POTWs is constructed as a two-part definition, which would apply to waste streams of different raw concentrations.

For PFPR process wastewaters, excluding interior equipment cleaning, floor wash and spill and leak cleanup water, EPA believes that (1) many of these sources contain lower concentrations of pollutants prior to pretreatment and (2) the use of the specified pollution practices alone will sufficiently reduce the pollutant loadings in the wastewater when followed by treatment at a POTW. However, based on raw wastewater characterization data collected on sampling visits to PFPR facilities, pretreatment may be necessary for interior equipment cleaning, floor wash and spill and leak cleanup water to reduce the levels of pesticide active ingredients and other pollutants. Thus, EPA is requesting comment on the following two part definition of pollution prevention allowable discharge for indirect dischargers:

Pollution prevention allowable discharge (excluding interior wastewaters, leak/spill cleanup water and floor wash) means: the quantity of/concentrations in PFPR process wastewaters that remain after a facility has demonstrated that it is using the specified practices of the Pollution Prevention Alternative as listed.

Pollution prevention allowable discharge for interior wastewaters, leak/spill cleanup water, and floor wash means: the quantity of/concentrations in PFPR process wastewaters that remain after a facility has demonstrated that it is using the specified practices of the Pollution Prevention Alternative as listed AND that have been pretreated using appropriate pollution control technologies which can be used individually or in conjunction with one another as listed in Appendix C, or an equivalent system to achieve a sufficient level of pollutant reduction. Facilities must demonstrate that the appropriate pollution control technology is properly maintained and operated.

Appendix C contains those pollutant control technologies, such as hydrolysis, chemical oxidation, metals precipitation and activated carbon adsorption, which

have been used for estimating compliance costs on a PAI specific basis. In general, these treatment technologies have been determined to be effective in treating pesticide containing wastewaters in literature, in bench or pilot scale treatability studies or in the Pesticide Manufacturing effluent guidelines.² These are the same technologies that were presented as part of the Universal Treatment System at the time of proposal. However, these technologies are PAI specific and may need to be used in conjunction with one another to provide treatment for all PAIs used at a facility over a period of time. In addition, facilities may experience difficulties treating wastewaters that contain emulsions, therefore, "appropriate" treatment for emulsified wastewaters must include an emulsion breaking step.

Note: EPA has costed facilities for these types of dynamic treatment needs.

In the proposed regulation, EPA recognized that although the 1978 regulation for the pesticides industry set a zero direct discharge limitation (BPT) on wastewaters generated from the formulating, packaging and repacking of pesticide products, some facilities were directly discharging PFPR wastewaters. These facilities manufacture pesticide active ingredients, as well as, perform PFPR activities (referred to as PFPR/Manufacturers in the proposed regulation) and were able to comply with zero discharge (BPT) by treating these wastewaters through the same treatment system used for treating their pesticide manufacturing wastewaters without an additional allowance for PFPR wastewater pollutants in the facility's pesticide manufacturing discharge limits. These facilities should be the only PFPR facilities currently discharging directly to the nation's waters.

These direct discharging pesticide manufacturing facilities have treatment systems that are required to meet the BAT pesticide manufacturing limitations (57 FR 50368). However, because these facilities discharge directly into the nation's waters without the removals afforded by secondary treatment at POTWs, EPA believes that, unlike indirect dischargers, these facilities may have to treat all PFPR wastewaters. Therefore, the following definition of pollution prevention allowable discharge would apply to

direct dischargers who formulate, package or repackage pesticides and manufacture pesticides.

Pollution prevention allowable discharge (for PFPR/Manufacturers) means: the quantity of/concentrations in all PFPR process wastewaters that remain after a facility has demonstrated that it is using the specified practices of the Pollution Prevention Alternative as listed AND that have been treated using appropriate pollution control technologies which can be used individually or in conjunction with Manufacturer's treatment systems or one another as listed in Appendix C, or an equivalent system to achieve a sufficient level of pollutant reduction. Facilities must demonstrate that the appropriate pollution control technology is properly maintained and operated.

By using the above definition, EPA would be including wastewaters into the pollution prevention alternative generated at these facilities by the PFPR of pesticides that are manufactured and formulated, packaged and/or repackaged as well as the wastewaters from the PFPR of those pesticides that are not also manufactured. In the case of these PFPR/Manufacturers, the term "appropriate" pollution control technology takes on additional meaning than the one discussed above for indirect dischargers. It also implies that when the pollution control technology in place for treating their manufacturing wastewater is not identified in Appendix C, in literature, or in treatability studies as an effective treatment technology for a PAI that they only use in formulating and packaging operations, they must add to their existing treatment system. EPA is soliciting comment on the above definition.

In the above definitions, for both indirect and direct discharges, EPA makes reference to allowable amounts of pollutants in terms of concentration and quantity.

Note: EPA is considering a variation of the P2 alternative which would specify certain P2 practices while providing water conservation practices solely as guidance.

The main purpose for including volume in the definition of P2 allowable discharge is that in lieu of setting a mass-based definition, the incorporation of volume or flow reduction is meant to discourage the use of dilution of wastewaters to create concentrations that appear to be at an allowable level. In addition, EPA notes that when facilities use water conservation technologies to control the volume of wastewater they generate, they can more easily store and reuse interior rinsates, which may result in additional pollutant removals. Also, the use of flow

²EPA is still determining the appropriate treatment technologies for a number of inorganic pesticide chemicals. Activated carbon (AC) adsorption was only used to provide a conservative cost estimate. Therefore, listed technologies for such PAIs are subject to change for final regulation.

reduction practices or equipment reduces the volume of water that must be treated before it can be considered a P2 allowable discharge. Reduced volumes require smaller treatment systems that, therefore, cost less to install and operate and run more efficiently, and in using certain technologies, such as precipitation/clarification, will result in reduced effluent pollutant loadings. Some facilities may adopt flow reduction strategies to save money and incidentally save loadings.

EPA believes that the definition of P2 allowable discharge can be implemented for this industry without the use of numerical limitations. In the pollution prevention alternative, EPA has included the requirement for paperwork that would include a discussion describing how a facility would demonstrate to their permitting authority (NPDES or pretreatment authority) that they are operating a well maintained treatment system (UTS or equivalent) that includes pollution control technologies that are appropriate for the PAIs handled at their facility. In addition, the paperwork would have to include the rationale for choosing the method of demonstration. For example, a facility may determine a surrogate method for determining breakthrough of their carbon adsorption unit. This method could be used instead of performing analytical testing for all or any of the PAIs that may have been in production at the facility over a specific period of time.

Note: EPA will submit an ICR to the Office of Management and Budget concerning this paperwork prior to final promulgation.

In addition, some indirect discharge facilities may be able to achieve complete pollution prevention, recycle and reuse of some wastewater sources, such as interior equipment cleaning rinsates, that would otherwise require treatment prior to being considered allowable discharges under the pollution prevention alternative. Such facilities would not have to incur the cost of treatment to discharge their remaining streams to the POTW (assuming no local limits requiring treatment). These facilities would not be operating treatment systems to comply with this regulation and; therefore, would not need to include a discussion in the necessary paperwork that demonstrates they are operating a well maintained treatment system. However, these facilities should indicate in the necessary paperwork that the wastewater sources which remain and which they are discharging are not the wastewater sources that require

treatment under the pollution prevention alternative. In addition, there may also be facilities that choose to comply with the zero discharge track of the Zero/P2 Option. For example, these facilities may choose to recycle and reuse wastewaters to the best of their ability and contract haul remaining wastewaters to avoid incurring the costs associated with installing and operating a treatment system.

3. Description of Pollution Prevention Practices

EPA has developed a list of pollution prevention, recycle and reuse practices for the pollution prevention alternative. The list is derived from the pollution prevention, recycle and reuse practices that have been demonstrated in the PFPR industry and are documented in the public record to the proposed rule. (See Section 7 of the Technical Development Document for the proposed rule [EPA 821-R-94-002].) If performed, these practices will reduce the pollutant loading of the wastewater and reduce the volume of wastewater by creating opportunities for reuse. In some instances the water conservation aspect of the practices will discourage the practice of dilution of the wastewater to create concentrations that appear to be at an allowable level.

For use as part of the pollution prevention alternative, the list has been separated into two tiers: (1) Practices that discharger must agree to comply with without any modification; and (2) other practices that discharger must agree to with acceptable justification. The second list has been set up to include possible modification based on comments received on the proposed rule or during meetings with industry. These modifications are discussed below. Both sets of pollution prevention, recycle, and reuse practices are included in Appendix B of this supplemental notice.

The list of pollution prevention practices for which no modification is provided includes: the use of flow reduction on hoses; the use of good housekeeping practices such as using drip pans and performing preventive maintenance; specific practices concerning the reuse of rinsate from rinsing drums that contain liquid PAI (or inerts) for formulation of water-based products; the sweeping of dry production areas prior to rinsing; and the use of recirculation (with periodic blowdown) when operating air pollution control wet scrubbers and continuous overflow DOT aerosol leak test baths. In addition, this list of pollution prevention practices includes a provision for some equipment

dedication that is contingent on the ability to reuse interior rinsates as discussed on the second list (See discussion below). In the version of the P2 alternative, where water conservation practices and equipment would only be included as guidance and not specified in the regulatory text, the list above would be modified. The use of flow reduction devices on hoses and the use of recirculating air pollution control scrubbers and DOT test baths would not be included in the regulatory text of the final regulation and would only be recommended. EPA solicits comment on the practices contained in Table B-1 of Appendix B and whether the water conservation practices and equipment discussed above should be used only in guidance.

The second list sets forth other pollution prevention, recycle and reuse practices that may be modified with acceptable justification. In Appendix B, acceptable justification for modifying an individual practice is described following the description of the practice itself. A modification, for purposes of the pollution prevention alternative, means that a facility would no longer have to perform a listed practice or that it would need to comply with the described alternative practice. However, the modification only applies to the specific practice from the second list for which the modification has been justified and to no other listed practices. Facilities would be required to discuss all modifications in the paperwork necessary for the pollution prevention alternative.

The pollution prevention, recycle and reuse practices on the second list include: practices concerning the reuse of rinsates from rinsing drums that contain liquid PAI (or inert) for formulation of solvent-based products; the use of low volume/high pressure rinsing equipment for rinsing PFPR equipment interiors when rinsing with water; the use of floor scrubbing machines or mops for cleaning floors in liquid production areas; the segregation of production equipment for water and solvent based production; and the storage of interior equipment rinsates for use in future formulation of the same or compatible product. Water conservation equipment such as low volume/high pressure rinsing equipment, floor scrubbing machines, and mops and buckets that do not directly reduce pollutant loadings to the wastewater and, therefore, may not be specified in the regulatory text of the final rule. Instead, they may be discussed as guidance.

Upon reviewing the comments to the proposed regulation and discussions

with facilities on post-proposal site visits, EPA has determined situations where it may be justified not to conduct these practices. For example, facilities may not always be able to store interior equipment rinsates for use in future formulation of the same or compatible product for a variety of reasons. These reasons include: microbial growth in the stored product or other deterioration such as phase separation or formation of precipitate; space limitations; dropping of product registration or discontinuation of production for a specific product; customer specifications (e.g., manufacturer/formulator for which a toll formulating contract directs otherwise); and the facility only packages but does not formulate the product. EPA is soliciting comment on the above reasons for modification and whether the water conservation equipment discussed above should be used only in guidance.

Facilities who modify a practice must provide justification. For example, facilities who modify the practice of storing rinsate for future formulation for any of the reasons above must provide justification such as: evidence of microbial growth or deterioration or written statement from the customer for which they are contract toll formulating directing otherwise (e.g., the contract specifies that the rinsate be sent back to customer or sent for off-site disposal). In some instances in which modifications are allowed, specific alternative practices must be agreed to and conducted in addition to those in the list of specified practices (Table B-1, Appendix B). These specific alternative requirements are listed with the second list of pollution prevention, recycle and reuse practices in Table B-2, Appendix B and would be incorporated into the regulatory text at the time of promulgation. For example, where a facility cannot store interior rinsates for use in future formulation due to space limitations, the facility would have to store rinsates for use in future formulation of the same or compatible product only for their most frequently produced products.

There is also a contingent practice in the first list of pollution prevention practices (Table B-1, Appendix B) which mandates some dedication of equipment that will reduce rinsates from changeover. Under this contingent practice, facilities would not have to dedicate all equipment, but instead would have to dedicate equipment in at least one of the following ways, by: frequently produced products (i.e., top production products); hard to clean products (e.g., viscous, sticky or colored products); product families; or a portion

of the formulating/packaging equipment (e.g., just the mix tank, just the agitator, just the transfer hoses). Facilities would not have to dedicate equipment for the same products where they cannot store the interior rinsates for future formulation. EPA believes such a contingent practice would be over prescriptive and would possibly be economically unachievable at some PFPR facilities. The purpose of this contingent practice for dedication is to avoid the generation of wastewater where plausible in order to off-set the wastewater generated when a facility has modified the specified practice. EPA solicits comment and data on the pollutant loadings in wastewater and the volume of wastewater saved by the use of dedicated equipment in any of the ways listed in the above discussion.

In general, EPA believes that the use of the practices specified by the pollution prevention alternative, including practices focusing on water conservation, create the opportunity for increased source reduction through reusability of wastewaters. This would lead to large pollutant reductions and, in the case of water conservation practices, smaller, less expensive treatment systems. Use of the practices as part of the pollution prevention alternative (with a P2 discharge allowance) should also limit cross-media impacts by reducing the amount of process wastewater that would otherwise be transported off-site and incinerated.

4. Implementation of the Pollution Prevention Alternative

This section describes several implementation options for this effluent guideline. EPA solicits comment from all interested parties. In addition, EPA hopes to provide guidance on the implementation of the final rulemaking through the use of a guidance manual and regional workshops. EPA is soliciting comment on additional forms of guidance that would be useful.

EPA believes that either variation of the pollution prevention alternative (all practices specified vs. some as guidance only) could be implemented in a variety of ways. Each PFPR facility subject to this regulation, if promulgated with the Zero/P2 Option, will need to make an initial choice: to either comply with the Zero Discharge effluent limitation or pretreatment standard or choose to agree to conduct the listed pollution prevention practices and also agree to make the practices and the pollution prevention discharge allowance enforceable. However, beyond this initial choice, the continued implementation of the Zero/P2 Option

will differ for direct and indirect dischargers.

For direct dischargers, the Zero/P2 Option will be implemented through the NPDES permitting process. For each direct discharging PFPR/Manufacturer or new facility, the facility would need to make the initial choice at the permitting or permit renewal stage. If the facility chooses the P2 alternative over the zero discharge limitation, the permitting authority would include all of the P2 practices and the specified treatment technologies in the facility's NPDES permit. The pollution prevention practices and treatment technologies included in such a NPDES permit would be enforceable under CWA sections 309 and 505.

PFPR facilities which are indirect dischargers would also need to make an initial choice of meeting the zero discharge pretreatment standard or adopting and implementing the P2 practices and the treatment technologies (if so specified). If the indirect discharging PFPR facility chooses the P2 alternative, EPA would propose that the facility file a Notice of Intent (NOI) with the pretreatment authority. In addition, indirect discharging PFPR facilities which choose the P2 alternative would need to self-certify in writing that they are performing the listed practices or provide the necessary justification for modifying certain of the pollution prevention practices as listed in Table B-2. This certification would require a signature by the appropriate manager in charge of overall operations of the facility to assure that information provided is true, accurate, and complete to the best of his or her knowledge. The pretreatment authority, as part of its approved pretreatment program, must have the authority to ensure compliance with a pretreatment standard (40 CFR 403.8(f)(1)(ii)) and to carry out inspections of the indirect dischargers' self-certifications and of the paperwork described below. 40 CFR 403.8(e)(1)(v).

Both direct and indirect discharging facilities would be required to keep certain paperwork on-site and available for permitting authorities and enforcement officials. For each facility, this necessary paperwork would include, at a minimum, descriptions of the practices that are being employed and how they are being implemented, discussions of any modifications that are made and the justification for each modification (including records that indicate, for example, microbial growth, space limitations, infrequent or intermittent production). The necessary paperwork must also include: (1) A discussion on demonstrating that the treatment system being used contains

the appropriate treatment technologies (i.e., listed by PAI in Appendix C or equivalent established in literature) for removing PAIs that are used in production at their facility and could be in their wastewater; (2) and establishes a method for demonstrating that the treatment system is well operated and maintained; and (3) the rationale for choosing the method of demonstration.

Permitting authorities could, after receipt of the NOI or at the time of issuing, reissuing, or modifying the NPDES permit, inspect the PFPR facility to see that the listed practices are being employed, that the treatment system is well operated and maintained and that the necessary paperwork provides sufficient justification for any modifications. EPA solicits comment on this approach to implementation of the pollution prevention alternative.

EPA also requests comment on a second implementation option. Instead of utilizing self-certification, this approach could require facilities to submit the necessary paperwork to the permit writer or pretreatment authority for approval. For this option, EPA is requesting comment on whether the submitted paperwork should support the practices as listed in Appendix B of this notice or be based on the practices listed in Appendix B, but allow flexibility to the permitting authority. More specifically, the permitting authority could add to or replace practices in Appendix B with new or innovative practices that are more effective at reducing the pollutant loading (directly or indirectly) from a specific facility to the environment, based on best professional judgement (BPJ). EPA realizes that requiring submittal of paperwork to and approval from the permitting authority would increase the burden and may cause untimely delays in implementing this option. In addition, EPA believes that it may be difficult for the permitting authority to review a facility specific plan that is not based wholly on the listed practices found in Appendix B of this notice. This approach may provide more flexibility for the industry and the permitting authority; however, it will substantially increase the burden on the permitting authorities.

As in other effluent guidelines and pretreatment standards, the compliance deadline for the PFPR pretreatment standards for existing sources would be three years following promulgation and the date of issue, reissue or modification of the NPDES permit for direct discharging PFPR/Manufacturing facilities. New source standards and limitations (PSNS and NSPS) must be complied with when a facility

commences the discharging of wastewater.

IV. Costing Methodology

This section will briefly describe the revisions that have been made to the costing methodology that was used to estimate compliance costs and the pollutant removals for the proposed rule. These revisions are discussed more thoroughly in the updated version of the Cost and Loadings Report and the Treatability Database Report which can be found in the public docket.

In addition to the changes that are made due to the revisions to the scope that are being considered (as discussed in Section II), there are three areas where changes have been made to the costing methodology. These include revisions to: (1) The treatability database to include activated carbon adsorption (AC) as the treatment technology for certain PAIs where additional treatability information has been identified; (2) the costs for the zero discharge alternative to include costs for off-site incineration of non-reusable wastewaters; and (3) the computer model used to develop costs and pollutant removals for the proposed rule to estimate compliance costs and pollutant removals for the pollution prevention alternative.

In order to adjust the estimated compliance costs and pollutant loadings to account for the exemption of specific PAIs and wastewater sources (see Section II for discussion of exemptions), EPA had to remove the PAIs from the influent database. In addition, EPA had to make adjustments to account for the volume of wastewater previously contributed by the PFPR of these PAIs. In the situation where exempted PAIs are the only PAIs used in a product or on a line, it is not difficult to zero out the associated pollutant removals, treatment cost estimates or the wastewater related to production of the exempted PAIs. However, when exempted PAIs are used in conjunction (in products or on shared lines) with PAIs that are covered by the rule, only the pollutant loading contributed by the exempted PAIs can be excluded; the total wastewater related to the production must still be costed. A more extensive description on the revisions to wastewater volumes due to the exemption of certain PAIs (including PAIs with non-surveyed production) can be found in the updated Cost & Loadings Report. These revisions tend to reduce an individual facility's annualized compliance cost estimates as compared to the proposed rule.

EPA revised the treatability database to assign activated carbon as the

treatment technology for certain PAIs where additional treatability information has been identified. In addition to deciding which treatment technologies were appropriate for these PAIs through literature searches and technology transfers, EPA used the same transfer basis as was used in the proposal to transfer achievable effluent concentrations (i.e., the 90th percentile highest achievable effluent concentration) for these PAIs. This information was added to the treatability database for the PFPR industry. This revision tends to increase annualized compliance cost estimates for some facilities as compared to costs estimated at proposal.

In addition to the overall revisions above, revisions were made specifically to the cost estimates for achieving zero discharge of wastewater for the proposed rule. In the proposed rule, EPA only included costs for contract hauling to off-site incineration of treatment system sludges. Based on comment, EPA has revised the costing methodology for the zero discharge option to reflect additional contract hauling of interior equipment rinsates to off-site incineration, and to account for possible water balance problems. Interior equipment cleaning rinsates from lines where detergents or solvents were used are now costed for contract hauling for off-site incineration rather than treatment and reuse. Based on comment, EPA also increased overall, the percentage of the blowdown (bleed off stream) from the UTS. This revision accounts for the volume of wastewater that cannot be reused due to either a salt buildup or a water balance problem at the facility. The percent for blowdown has been increased from 0.2% in the proposed rule to 5% in this notice.

Note: EPA continued to use a blowdown of 0.2% for estimations for the pollution prevention alternative, because under this alternative facilities can discharge these excess wastewater under the P2 discharge allowance.

A third revision was made which was applied to both the revised zero discharge cost estimates and those estimated for the pollution prevention alternative. For the proposal, EPA costed directly reusable rinsewaters that were stored for longer than 90 days to be treated prior to reuse. This conservative approach was used to address the Resource Conservation and Recovery Act (RCRA) limitation for accumulating hazardous wastes for more than 90 days without a permit or interim status (40 CFR 262.34). Instead, EPA is using a more realistic approach by assuming that since these rinsewaters

are directly reusable (i.e., do not require treatment prior to reuse, and due to stringent product specifications, do not contain constituents that are not used in the product) they would not be considered a waste, and therefore, would not trigger the 90 day RCRA accumulation limitation on listed or characteristic hazardous wastewaters. Therefore, EPA has revised the cost model so that it no longer costs stored interior equipment cleaning rinsates that have been stored for greater than 90 days for treatment through the UTS. Instead, these reusable rinsewaters are costed for storage only (not RCRA storage costs).

Note: To avoid speculative accumulation, 75% of these directly reusable rinsewaters must be reused within a calendar year.

Estimated annualized compliance costs to achieve zero discharge tend to decrease due to changes in scope, but increase in the aggregate due to the three revisions described in the above discussion as compared to the proposed rule.

Finally, EPA also developed estimated annualized compliance costs and pollutant removals for the pollution prevention alternative. This cost estimate is based on the version of the P2 alternative which would specify the pollution prevention, recycle and reuse practices in the regulatory text of the final rule (see Section III.C). However, it can also be viewed as a conservative estimate for the P2 alternative where water conservation practices are not specified in the regulatory text, but are instead provided as guidance.

The computer model used for estimating costs was altered slightly to estimate costs for the pollution prevention alternative. Capital costs were added to account for equipment (e.g., cost of floor scrubbing machine or other flow reduction devices) needed to perform the specific practices. In reference to this equipment, EPA applied an 80% reduction to floor wash and exterior equipment cleaning volumes. Also, revisions were made to include removing the cost of pretreatment for the wastewater sources that would not require treatment prior to discharge to a POTW (e.g., DOT aerosol test bath water or safety equipment cleaning). [Note: EPA has not estimated costs for direct discharging stand alone PFPR facilities because these facilities are currently considered to be at zero discharge]. Wastewaters that would require treatment prior to discharge under a pollution prevention discharge allowance were costed for treatment through the UTS (including a 0.2% blowdown costed for contract

hauling sludges for incineration). As mentioned above, EPA did not include costs for treating interior equipment cleaning rinsates that are stored for greater than 90 days. In addition, interior equipment cleaning rinsates from lines where detergents were used were costed for treatment and discharge under the P2 discharge allowance. In the cases of indirect dischargers, many facilities benefited from the decrease in the size of the UTS necessary to treat their wastewater remaining after utilizing the specified practices. For the purpose of conducting the economic analysis, including determining the incremental cost-effectiveness (see Section V), EPA revised the costs and loadings of Option 2 (from proposal) to reflect the costs and loadings associated with the pollution prevention alternative. Both the pollution prevention alternative and Option 2 from the proposal are based on pollution prevention with treat and discharge; however, the pollution prevention alternative would only allow reduced discharge and is designed so that it would not have to require numerical limitations for compliance, as did Option 2 in the proposal.

EPA requests comment on the revisions to the costing methodology.

V. Estimated Costs, Economic Impacts, and Cost-Effectiveness

A. Options at Proposal

EPA considered 5 PSES options at proposal. Options 1 and 2 were not zero discharge options but involved treatment of wastewater and discharge to POTWs. Options 3, 4, and 5 were zero discharge options but involved different compliance methods with differing costs and impacts.

Option 1 consisted of end-of-pipe treatment for all wastewaters through the Universal Treatment System (UTS) and discharge to POTWs. Option 1 was rejected because it did not include pollution prevention, did not incorporate the best available technology available and because the Agency would be unable to control the discharge of all pollutants due to a lack of analytical methods for some active ingredients. Option 1 would require significant additional data on a large number of pollutants for which the Agency would have to establish standards and for which facilities would need to monitor. See 59 FR 17875.

Option 2 added pollution prevention by recycling wastewaters from cleaning the interiors of formulating and packaging equipment, and raw material and shipping containers into the product to recover product value in the wastewaters. Other wastewaters were still expected to be treated through the UTS and discharged to POTWs. Option 2 contained pollution prevention

provisions but was rejected for the analytical and monitoring reasons stated above, as it still required numerical limitations.

Option 3 employed the same technology and pollution prevention practices as Option 2 but achieved zero discharge of all process wastewater by recycling the wastewater back to the facility after treatment through the UTS. Option 3/S', the proposed option, is a variant on Option 3 which expanded the coverage of the regulation to PAIs not covered by the Section 308 survey and exempted certain waste streams associated with specific sanitizer PAIs from the zero discharge requirement.

Option 4 incorporated the pollution prevention aspects of Options 2 and 3, but instead of treatment, added off-site disposal to an incinerator for the rest of the wastewater. Option 4 was rejected because it relied on transferring wastewater pollutants to another media and resulted in higher costs with no increased benefits.

Option 5 assumed that all wastewater would be disposed of through off-site incineration. Option 5 was rejected because it did not contain any pollution prevention provisions and for the same reasons as Option 4.

A complete discussion of the estimated compliance costs, impacts, and cost-effectiveness at proposal can be found in the *Economic Impact Analysis of Proposed Effluent Limitations Guidelines and Standards for the Pesticide Formulation, Packaging, and Repackaging Industry (EIA) and the Cost-Effectiveness Analysis Of Proposed Effluent Limitations Guidelines And Standards For The Pesticide Formulating, Packaging, And Repackaging Industry*. Both of these documents are available for review in the public docket of this rulemaking.

B. Compliance Costs

For the purposes of economic analysis, EPA re-estimated the annualized compliance costs and economic impacts for two of the regulatory options presented at proposal (Options 1 and 4) to incorporate the changes in scope discussed in this notice. EPA also estimated compliance costs and economic impacts for a new regulatory option referred to as the Zero/P2 Option. The Zero/P2 Option consists of two alternatives. When implemented, facilities would either meet zero discharge limitations, as the proposed rule required, or would be allowed a reduced discharge (P2 allowable discharge) if they met certain pollution prevention and treatment practices. The Zero/P2 Option revises both Options 2 and 3/S' presented at proposal, and incorporates them into one option, allowing industry to choose between these alternatives. The new pollution prevention alternative is different from the old Option 2 in that

the pollution prevention practices are specified and must be used for compliance and does not require numerical limitations (which could not be developed due to insufficient data). As stated in III.A. of this notice, the Agency now believes that it may also be appropriate to establish an alternate BAT and PSES limitations that allow a discharge of pollutants as long as PFPR facilities comply with certain pollution prevention practices. It also differs from the old Option 2 in that as part of the Zero/P2 Option, the Agency believes that the pollution prevention alternative can be implemented without the use of numerical limitations (see Section III.C.2). EPA did not re-estimate costs for Option 5 because it is not a viable option given that it achieves the same results as the new regulatory option and Option 4 (i.e., zero discharge) at substantially higher costs.

EPA previously estimated the total annualized compliance cost of the proposed rule at \$56.1 million (1988) (which equals \$67.4 million in 1995). EPA is using 1988 dollars because it is the base year for the survey data that was collected and because costs were presented in 1988 dollars in the proposal. As shown in Table 1, total annualized compliance costs (including amortized capital costs and operating and maintenance costs) equal \$32.7 (1988) million (\$39.4 million in 1995) for the Zero/P2 Option. In choosing between the two components of the Zero/P2 Option, industry is expected to choose the lower cost compliance alternative for each facility. For some facilities, particularly those with low volumes of wastewater, achieving zero discharge will be the less expensive alternative (even when they comply by contract hauling wastewaters for off-site incineration); for most facilities, achieving the P2 allowable discharge by complying with pollution prevention practices and treatment of certain waste streams is less expensive. The cost estimate for the Zero/P2 Option selects the least costly alternative for each facility.

As discussed in the proposed rule (59 FR 17896), EPA expanded the scope of the rule to account for facilities that formulate PAIs other than those PAIs covered by the 1988 survey questionnaire. In the proposal, EPA

referred to these additional PAIs as the "non 272" PAIs. Several of the non-272 PAIs are being considered for exemption from the final rule (see Section II. A of this notice). Consistent with the methodology used at proposal, EPA assumed that facilities using only non-272 PAIs have the same average compliance costs, percent of impacted facilities, and average pollutant removals as facilities covered by the survey.

C. Economic Impacts

EPA re-estimated the economic impacts resulting from the compliance costs using the methodology presented in the EIA for the proposed rule. EPA projected two categories of economic impacts that may result from regulation: severe impacts measured as projected facility closures, and moderate impacts measured as conversion of PFPR product lines to non-pesticide formulating, packaging and repackaging operations, or compliance costs in excess of five percent of facility revenue. Under the proposed option, EPA projected facility closures at two facilities and moderate economic impacts at 250 facilities (see Table 1). Under the new combined Zero/P2 Option, EPA projects no severe impacts and moderate impacts at 162 facilities, a substantial decrease from the proposed rule.

TABLE 1.—NATIONAL ESTIMATES OF COSTS AND IMPACTS FOR SUB-CATEGORY C PSES OPTIONS IN 1988 DOLLARS (Assuming Zero Cost Pass-Through)

	Zero/P2 option	Proposed option 3/S ¹
All facilities:		
# of Facilities Projected to Incur Costs	651	869
Total Annualized Compliance Costs (million dollars) ¹	\$32.7	\$56.1
Facility Closures: (Severe Economic Impacts)	0	2

TABLE 1.—NATIONAL ESTIMATES OF COSTS AND IMPACTS FOR SUB-CATEGORY C PSES OPTIONS IN 1988 DOLLARS—Continued (Assuming Zero Cost Pass-Through)

	Zero/P2 option	Proposed option 3/S ¹
Moderate Economic Impacts	162	250

¹ Total annualized compliance costs are in \$1988 and therefore differ from the costs used in the cost-effectiveness section below.

D. Cost-Effectiveness

Cost-effectiveness analysis is used in the effluent guidelines process to compare the efficiency of one regulatory option in removing pollutants to another regulatory option, and to compare the regulation with other promulgated regulations. Cost-effectiveness is defined as the incremental annual cost of a pollution control option in an industry or industry subcategory per incremental pollutant removal. The increments considered are relative to another option or benchmark such as existing treatment. The cost-effectiveness value, therefore, represents the marginal cost of removing the next pound of pollutant.

For this cost-effective analysis, the costs were annualized using a social discount rate of seven percent. To facilitate comparison among rules promulgated in different years, cost-effectiveness values are always reported in 1981 dollars. Pollutant removals are measured in copper-based toxic "pounds-equivalent". This adjustment accounts for differences in toxicity among the regulated pollutants. (Note that the analysis presented here is not strictly comparable with that presented at proposal because the toxic weighting factor used for pyrethrin has decreased significantly since proposal as a result of a new calculation method.)

Table 2 presents the total annualized costs, total pounds, total pounds-equivalent of pollutants removed, and average cost per pound removed for the three options (Options 1, Zero/P2, and 4). Table 3 presents the incremental cost-effectiveness for the three options.

TABLE 2.—NATIONAL ESTIMATE OF ANNUALIZED COSTS AND REMOVALS UNDER PSES¹ SUBCATEGORY C FACILITIES

Options	Annualized cost, MM\$ (1981 dollars)	Pound removals ³	Pound equivalent removals ³	Average cost/pound removed
Zero/P2 ²	\$26.1	266,336	29,832,701	\$0.87
1 ⁴	44.9	269,181	29,943,443	1.50
4	383.3	269,738	29,973,224	12.79

¹ These removals are not strictly comparable with those presented in the cost-effectiveness at proposal as the toxic weighting factor used to calculate pound equivalent removals for Pyrethrin has decreased significantly since proposal.

² EPA is considering giving industry the choice of complying with zero discharge or the pollution prevention alternative which allows a reduced discharge. This choice was proposed by industry. Option Zero/P2 combines revised Options 2 and 3/S¹ into a single option of choice.

³ The removal numbers presented here are not precise. All options have virtually identical removals (2.7x10⁵ pounds and 3.0x10⁷ lb-eq). The precision with which we can estimate the removals is not precise enough to accurately differentiate such small differences. The Zero/P2 Option is the least costly alternative and removes approximately the same number of pounds as the other Options.

⁴ Option 1 requires numerical limitations. EPA did not set numerical limitations and standards in the proposed regulation (59 FR 17875) because of the lack of data such as the long term monitoring data necessary to set numerical limitations, lack of analytical methods for testing for many of the PAIs in wastewater, and the large annual cost that would be associated with compliance monitoring for all PAIs that a PFPR facility may use in production over a years time. The revised Option 1 costs presented here underestimate the true costs associated with Option 1 because they only include monitoring costs associated with the original 272 PAIs. They do not include monitoring costs associated with the Non-272 PAIs, because analytical methods have not currently been identified for all of them.

TABLE 3.—NATIONAL ESTIMATE OF INDUSTRY COST EFFECTIVENESS UNDER PSES¹ ALL SUBCATEGORY C FACILITIES

Option	Incremental costs	Incremental lb-eq removed ³	Cost-effectiveness in \$/lb-eq
Least cost alternative zero or P2 ²	26.1	29,832,701	\$0.87
1 ⁴	18.9	110,742	170.22
4	\$338.3	29,781	11,361

¹ Dollar values are in constant 1981 dollars. These removals are not strictly comparable with those presented in the cost-effectiveness at proposal as the toxic weighting factor used to calculate pound equivalent removals for Pyrethrin has decreased significantly since proposal.

² EPA is considering giving industry the choice of complying with zero discharge or the pollution prevention alternative which allows a reduced discharge. This choice was proposed by industry. Option Zero/P2 combines revised Options 2 and 3/S¹ into a single option of choice.

³ The cost effectiveness numbers presented here are for illustrative purposes only. All options have virtually identical removals (2.7x10⁵ lbs. and 3.0x10⁷ lb-eq). The precision with which we can estimate the removals is not precise enough to differentiate such small differences. EPA has determined that the Zero/P2 alternative is the least costly, and thus the most cost-effective.

⁴ Option 1 requires numerical limitations. EPA did not set numerical limitations and standards in the proposed regulation (59 FR 17875) because of the lack of data such as the long term monitoring data necessary to set numerical limitations, lack of analytical methods for testing for many of the PAIs in wastewater, and the large annual cost that would be associated with compliance monitoring for all PAIs that a PFPR facility may use in production over a years time. The revised Option 1 costs presented here underestimate the true costs associated with Option 1 because they only include monitoring costs associated with the original 272 PAIs. They do not include monitoring costs associated with the Non-272 PAIs, because analytical methods have not currently been identified for all of them.

VI. Unfunded Mandates Reform Act

Under section 202 of the Unfunded Mandates Reform Act of 1995 (the Act), P.L. 104-4, which was signed into law on March 22, 1995, EPA generally must prepare a written statement for rules with Federal mandates that may result in estimated costs to State, local, and tribal governments in the aggregate, or to the private sector, of \$100 million or more in any one year. When such a statement is required for EPA rules, under section 205 of the Act EPA must identify and consider alternatives, including the least costly, most cost-effective or least burdensome alternative that achieves the objectives of the rule. EPA must select that alternative, unless the Administrator explains in the final rule why it was not selected or it is inconsistent with law. Before EPA establishes regulatory requirements that may significantly or uniquely affect small governments, including tribal governments, it must develop under section 203 of the Act a small government agency plan. The plan must

provide for notifying potentially affected small governments, giving them meaningful and timely input in the development of EPA regulatory proposals with significant Federal intergovernmental mandates, and informing, educating, and advising them on compliance with the regulatory requirements.

EPA has determined that the alternative Zero/P2 Option discussed in this notice does not include a Federal mandate that may result in estimated costs of \$100 million or more to State, local, or tribal governments in the aggregate, or to the private sector, in any one year. EPA has estimated that the annual costs of the Zero/P2 Option to the private sector to be \$32.7 million in 1988 dollars or \$39.4 million in 1995). Although EPA has not empirically estimated the annual costs to States, local, or tribal governments resulting from implementation of the Zero/P2 Option, the Agency expects the annualized costs to be much less than those which the private sector, i.e., the

PFPR facilities will face. States, local, or tribal governments will face the costs of issuing NPDES permits or conducting inspections of facilities; however, EPA does not expect these costs to produce any significant increase to the costs that these entities incur by issuing an NPDES permit or discharge agreement prior to the promulgation of the effluent limitations or pretreatment standards. EPA solicits comment on this estimate.

As to section 203 of the Act, EPA has determined that the Zero/P2 Option discussed in this notice will not significantly or uniquely affect small governments, including tribal governments. EPA recognizes that small governments may own or operate POTWs that receive wastewater from PFPR facilities subject to the pretreatment standards contained in this notice, including the Zero/P2 Option. Thus, there may be certain small governments which receive notices of intent from PFPR facilities that choose to avail themselves of the P2 alternative. These same small governments will

need to enforce the pretreatment standards through compliance mechanisms, including inspections. However, these mandates are already contained in the existing general Pretreatment Standards, which include requirements for an approved POTW pretreatment program. 40 CFR 403.8. Thus, EPA believes that any mandates resulting from this notice are not significant or unique.

EPA has, however, sought meaningful and timely input from the private sector, states, and local governments on the development of this notice. After receiving comment on the pollution prevention alternative, EPA met with members of private sector who requested that such meetings be held to discuss this alternative. EPA shared a draft version of the pollution prevention alternative with the Effluent Guidelines Task Force, the members of which include industry, environmental groups, state governments, and owner/operators of POTWs. EPA officials also presented the pollution prevention alternative at a conference held by the Association of Metropolitan Sewerage Agencies, which includes representatives from, primarily, large and medium municipal sewer authorities (POTWs) from across the United States. EPA also plans to distribute this **Federal Register** notice to several smaller POTWs which service different small communities throughout the United States in an attempt to seek timely and meaningful input from small governments. Thus, EPA expects that any applicable requirements of section 203 of the Act will have been satisfied prior to promulgating a final rule.

VII. Solicitation of Comment

In addition to those areas where EPA specifically requested comment throughout this notice, EPA solicits comment in the following areas:

- Research and development (R&D) facilities—EPA has received comment from stand alone R&D facilities that develop new formulations and perform efficacy and field testing on these new formulations. These facilities requested exemption from the PFPR effluent guidelines for several reasons. First, the majority of wastewater that is generated at these facilities is due to operation of a greenhouse or residue laboratory. EPA notes that even if these facilities are

included in the final regulation, these wastewaters should not be considered process wastewater associated with pesticide formulating, packaging and repackaging operations.

Second, the remainder of wastewater is generated by the operation of a quality control (QC) laboratory or by cleaning the pilot scale formulating equipment. Both of these wastewater sources would have been considered PFPR process wastewaters under the proposed rule. However, as discussed in today's notice, EPA is considering whether to exempt laboratory equipment rinsates from cleaning analytical equipment from the definition of PFPR process wastewater. In the case of rinsate generated from cleaning the experimental formulation equipment, commenters stated that they could not meet the proposed regulation of zero discharge based on reuse. Since these facilities do not produce the same pesticides again once they have completed testing, they do not have the same ability to reuse water as a typical PFPR facility. EPA is soliciting comment and additional information on whether stand alone R&D facilities that perform PFPR operations should be exempted from the PFPR effluent guidelines rule. EPA is not considering exempting wastewaters generated by R&D activities at PFPR facilities.

- Stand alone direct discharging PFPR facilities—EPA requests comment on allowing stand alone direct discharging PFPR facilities (i.e., PFPR facilities that do not perform pesticide manufacturing operations) to have the option of complying with the pollution prevention alternative. [Note: During the development of the proposed regulation, EPA estimated that there were only two direct discharging PFPR stand alone facilities (one of which was both an indirect and a direct discharger).] Based on available data, EPA does not believe that stand alone PFPR facilities have the necessary treatment in place to discharge directly to the nation's waters; therefore, Appendix B does not include BAT and NSPS limitations for PFPR stand alone direct discharging facilities.

Triple rinse and the pollution prevention allowable discharge—EPA solicits comment and data on concentrations of pollutants (PAIs and other pollutants) found in the second

and third rinses of a triple rinse from cleaning equipment interiors or raw material drums. In discussions with industry, EPA was asked whether the second or third rinses of a triple rinse could be considered a P2 allowable discharge for the purposes of the pollution prevention alternative. Under the pollution prevention alternative, as it is presented today, these rinses would have to be reused because EPA believes that these subsequent rinses contain pollutant loadings which are at high enough levels to be reused. However, if sufficient data is available, EPA may reconsider specifying reuse of these rinses and allow discharge (possibly only after treatment) in the final regulation. [Note to commenters providing data: please indicate if data represents concentrations in second or third rinses and if from drum rinsing, interior equipment rinsing, minibulk or bulk tank rinsing.]

Burden to permitting authorities (NPDES and Pretreatment)—EPA solicits comment from POTWs and NPDES permit writers on the burden to them associated with both the variations of the pollution prevention alternative and on the different implementation approaches. EPA believes the burden for either of the variations of the P2 alternative and for implementation by self-certification is no larger than what is associated with the proposed zero discharge limitation as on-site inspections would still be the expected method of demonstrating compliance. EPA notes that implementation by self-certification of the pollution prevention alternative does not require analytical testing on the part of the permitting authority. However, EPA solicits comment, including estimates of burden, on whether there would be a substantial additional burden associated with increased use of guidance (versus the use of all practices being specified in the regulatory text). In addition, EPA solicits estimates of the burden associated with requiring submittal of paperwork for approval to the permitting authority (NPDES and/or pretreatment authority).

The following four appendices (A–D) are the appendices which are referred to in this Supplemental Notice.

Appendix A.—Pesticide Active Ingredients Considered for Exemption

TABLE 1.—PAIS THAT ARE SANITIZER CHEMICALS

Shaughnessey code	PAI code	Chemical name ¹	Previously proposed as sanitizer PAI ²
000101		Glycolic acid	
004206		Rosin amine D	
009601		Oxalic acid	
045901		Hydrogen chloride	
046607		Heptadecyl hydroxyethylimidazolium chloride	
046621		Alkyl*-1-benzyl-1-(2-hydroxyethyl)-2-imidazolium chloride	✓
046914		PVP iodine	
046915		Octylphenoxy polyethoxyethanol—iodine complex	
046923		Tetraglycine hydroperiodide	
046925		Alkyl*-omega-hydroxy-poly(oxyethylene)poly(oxypropylene)-iod.	
046926		Polyethylene glycol ether of linear secondary alcohol—iodi	
059804	051	Oxine-sulfate	✓
062201		o-Benzyl-p-chlorophenol	
062212		Chloro-2-biphenylol, sodium salt	
062215		Chloro-4-biphenylol, sodium salt	
063604		Potassium peroxymonosulfate	
064103	211	Phenylphenol	
064210		Trichlorophenol	
069104		Alkyl* dimethyl benzyl ammonium chloride *(60%C14, 30%C16, 5	✓
069105	056	Alkyl dimethyl benzyl ammonium chloride (Hyamine 3500)	✓
069106		Alkyl* dimethyl benzyl ammonium chloride *(50%C12, 30%C14, 1	✓
069107		Benzyl dimethyl tetradecyl ammonium chloride	
069108		Benzyl hexadecyl dimethyl ammonium chloride	
069110		Alkyl* dimethyl 3,4-dichlorobenzyl ammonium chloride *(50%C1	
069111		Alkyl* dimethyl ethylbenzyl ammonium chloride *(50%C12, 30%C	✓
069112		Alkyl* dimethyl 1-naphthylmethyl ammonium chloride *(98%C12,	✓
069119		Dialkyl* methyl benzyl ammonium chloride *(60% C14, 30% C16,	✓
069122	105	Benzethonium Chloride (Hyamine 1622)	✓
069125		Dodecylbenzyl trimethyl ammonium chloride	✓
069129	162	Hyamine 2389 (Methyl dodecylbenzyltrimethyl ammonium chlorid	✓
069134	159	Methylbenzethonium chloride	✓
069136		Dialkyl* dimethyl ammonium chloride *(47%C12, 18%C14, 10%C18	
069137		Alkyl* dimethyl benzyl ammonium chloride *(60%C14, 25%C12, 1	✓
069138		Dialkyl* dimethyl ammonium chloride *(as in fatty acids of c	
069140		Alkyl* dimethyl benzyl ammonium chloride *(61% C12, 23% C14,	✓
069141		Alkyl* dimethyl benzyl ammonium chloride *(58%C14, 28%C16, 1	✓
069143		Alkyl* dimethyl benzyl ammonium chloride *(67%C12, 24%C14, 9	
069144		Alkyl* dimethyl 3,4-dichlorobenzyl ammonium chloride *(61%C1	
069145		Alkyl* dimethyl 3,4-dichlorobenzyl ammonium chloride *(90%C1	✓
069149		Didecyl dimethyl ammonium chloride	✓
06951		Alkyl* trimethyl ammonium chloride *(90%C18, 10%C16)	✓
069154		Alkyl* dimethyl ethylbenzyl ammonium chloride *(68%C12, 32%C	✓
069156		Cetyl dimethyl ethyl ammonium bromide	
069157		Alkyl* dimethyl benzyl ammonium chloride *(65%C12, 25%C14, 1	
069158		Alkyl* dimethyl benzyl ammonium chloride *(93%C14, 3%C12, 3%	
069162		Dialkyl* dimethyl ammonium chloride *(85% C18, 15% C16)	
069165		Octyl decyl dimethyl ammonium chloride	✓
069166		Diocetyl dimethyl ammonium chloride	✓
069167		Alkyl* dimethyl ethylbenzyl ammonium chloride *(60%C14, 30%C	
069173		Oxydiethylenebis(alkyl* dimethyl ammonium chloride) *(as in	✓
069175		Alkyl* dimethyl benzyl ammonium chloride *(67%C12, 25%C14, 7	
069177		Dialkyl* dimethyl ammonium chloride *(50% C12, 30% C14, 20%	
069184		Alkyl* dimethyl benzyl ammonium chloride *(95%C14, 3%C12, 2%	
069189		Alkyl* dimethyl benzyl ammonium chloride *(61% C12, 23% C14,	
069192		Alkyl* dimethyl benzyl ammonium chloride *(70% C12, 30% C14)	
069194		Alkyl* dimethyl benzyl ammonium chloride *(90% C14, 5% C12,	✓
073201		Sodium bisulfate	
076001		Phosphoric acid	
078101		Sulfamic acid	
079005		Ethoxylated nonylphenol	
081406		Mono(trichloro)tetra(monopotassium dichloro))penta-s-triazin	
099001	036	2-(Hydroxymethyl) amino ethanol (HAE)	✓
104001		Hydroxymethyl)amino)-2-methyl-1-propanol	
107601		Alkoxy*-2-hydroxypropyl trimethyl ammonium chloride *(100% C	
124201		Chlorinated trisodium phosphate	
128875		Isobornyl acetate	
128919		Octanoic acid	

TABLE 1.—PAIS THAT ARE SANITIZER CHEMICALS—Continued

Shaughnessey code	PAI code	Chemical name ¹	Previously proposed as sanitizer PAI ²
128928	Alkyl* dimethyl benzyl ammonium chloride *(67%C12, 25%C14, 7 .....	.....
128955	Capric acid .....	.....
169101	Alkyl* dimethyl 3,4-dichlorobenzyl ammonium chloride *(50%C1 .....	.....
169105	Alkyl* dodecylbenzyl dimethyl ammonium chloride *(70% C12, 3 .....	.....
169108	Alkyl* dimethyl benzyl ammonium chloride *(as in fatty acids .....	.....
169124	Alkyl* trimethyl ammonium chloride *(70% C12, 30% C14) .....	.....
169128	Alkyl* bis(2-hydroxyethyl)benzyl ammonium chloride *(57%C10, .....	.....
169131	Alkyl* amino betaine *(46%C12, 24%C14, 10%C16, 8%C10, 7%C8, .....	.....

PAIs That Are Inert When Used With Sanitizer PAIs

001501 .....	.....	Ethyl alcohol .....	.....
004205 .....	.....	Ethylenediamine .....	.....
009603 .....	.....	Ammonium oxalate .....	.....
011102 .....	.....	Borax .....	.....
011601 .....	.....	Ethanolamine .....	.....
013905 .....	.....	Sodium chloride .....	.....
016001 .....	.....	Carbon .....	.....
028002 .....	.....	Dimethyl phthalate .....	.....
039101 .....	.....	Ethylenediaminetetraacetic acid .....	.....
039107 .....	.....	Tetrasodium ethylenediaminetetraacetate	✓
039110 .....	.....	Ethylenediaminetetraacetic acid, trisodium salt .....	.....
039113 .....	.....	Tripotassium ethylenediaminetetraacetate .....	.....
039115 .....	.....	Disodium ethylenediaminetetraacetate .....	.....
039122 .....	.....	Sodium dihydroxyethylglycine .....	.....
044008 .....	.....	Sodium diacetate .....	.....
044101 .....	.....	Acetone .....	.....
046903 .....	.....	Nonylphenoxy polyethoxyethanol—iodine complex .....	.....
047501 .....	.....	Isopropanol .....	.....
051601 .....	.....	Menthol .....	.....
068604 .....	.....	Dipropylene glycol .....	.....
072604 .....	.....	Sodium metasilicate .....	.....
073504 .....	.....	Potassium carbonate .....	.....
073506 .....	.....	Sodium carbonate	✓
073507 .....	.....	Sodium sesquicarbonate .....	.....
076403 .....	.....	Sodium phosphate (Na ₂ H(PO ₄)) .....	.....
076404 .....	.....	Sodium tripolyphosphate .....	.....
076406 .....	.....	Trisodium phosphate .....	.....
076409 .....	.....	Monosodium phosphate .....	.....
076601 .....	.....	Methyl salicylate .....	.....
079007 .....	.....	Polyoxyethylene sorbitol, mixed ether ester .....	.....
079011 .....	.....	Sodium lauryl sulfate .....	.....
079019 .....	.....	Sodium xylenesulfonate .....	.....
079020 .....	.....	Triethanolamine dodecylbenzenesulfonate .....	.....
079022 .....	.....	Potassium myristate .....	.....
079023 .....	.....	Potassium ricinoleate .....	.....
079046 .....	.....	Triethanolamine lauryl sulfate .....	.....
079058 .....	.....	Toluene sulfonic acid .....	.....
079701 .....	.....	Limonene .....	.....
081201 .....	.....	Trichloroethane .....	.....
085501 .....	.....	Undecylenic acid .....	.....
086802 .....	.....	Xylene .....	.....
098002 .....	.....	Dodecylbenzenesulfonic acid.	.....

¹ Shaughnessey codes and chemical names are taken directly from the FATES database. Several chemical names are truncated because the chemical names listed in the FATES database are limited to 60 characters.

² Two chemicals previously proposed as sanitizer PAIs, essential oils (Code 40501) and pine oil (Code 67002), are included on the PAI Mixtures table.

TABLE 2.— PAIS THAT ARE POOL CHEMICALS

Shaughnessey code	Chemical name
006315	1-Bromo-3-chloro-5,5-dimethylhydantoin.
014701	Calcium hypochlorite.
014702	Lithium hypochlorite.
014703	Bleach (or Sodium hypochlorite).
081401	Dichloro-s-triazinetrione.
081403	Potassium dichloro-s-triazinetrione.
081404	Sodium dichloro-s-triazinetrione.
081405	Trichloro-s-triazinetrione.
081407	Sodium dichloroisocyanurate dihydrate.

TABLE 3.—PAIS THAT ARE MICROORGANISMS

Shaughnessey code	Chemical name ¹
006401	Bacillus thuringiensis subsp. israelensis.
006402	Bacillus thuringiensis subsp. kurstaki.
006405	Bacillus thuringiensis subsp. tenebrionis.
006422	Bacillus thuringiensis subsp. kurstaki strain EG 2424.
006423	Bacillus thuringiensis subsp. kurstaki strain EG2371.
006424	Bacillus thuringiensis subsp. kurstaki strain EG2348.
006426	Bacillus thuringiensis subsp. aizawai strain GC-91.
006440	Pseudomonas fluorescens EG-1053 (previously coded 006418).
054501	Bacillus popilliae and B. lentimorbus.

TABLE 3.—PAIS THAT ARE MICROORGANISMS—Continued

Shaughnessey code	Chemical name ¹
111301	Phytophthora palmivora, chlamydospores of.
114201	Agrobacterium radiobacter.
128902	Trichoderma polysporum (ATCC 20475).
128903	Trichoderma harzianum (ATCC 20476).
128946	Bacillus thuringiensis subsp. San Diego.
129000	Gliocladium virens G-21.
129069	Streptomyces griseoviridis.
129084	Lagenidium giganteum, mycelium or oospores.
226300	Colletotrichum gloeosporioides spores.

¹ Shaughnessey codes and chemical names are taken directly from the FATES database. Several chemical names are truncated because the chemical names listed in the FATES database are limited to 60 characters.

TABLE 4.—PAIS THAT ARE MIXTURES

Shaughnessey code	Chemical name ^{1,2}	Mixtures That are reserved
000611	Dried blood	✓
002201	Sabadilla alkaloids	✓
004301	Oil of anise .....	.....
006501	Aromatic petroleum derivative solvent	✓
006602	Heavy aromatic naphtha	✓
010801	Bone oil .....	.....
021901	Oil of citronella .....	.....
022003	Coal tar	✓
025001	Coal tar neutral oils	✓
025003	Creosote oil (Note: Derived from any source)	✓
025004	Coal tar creosote	✓
031601	Lanolin .....	.....
031602	Cottonseed oil .....	.....
031605	Soybean oil .....	.....
031607	Ethoxylated lanolin .....	.....
031801	Ammonium salts of C8-18 and C18' fatty acids	✓
040501	Essential oils .....	.....
040502	Oil of lemongrass .....	.....
040503	Oil of eucalyptus .....	.....
040505	Cedarwood oil .....	.....
040509	Oil of Pennyroyal .....	.....
040517	Oil of orange .....	.....
040519	Oils, rue .....	.....
055601	BNOA	✓
056704	Tobacco dust .....	.....
063501	Kerosene	✓
063502	Mineral oil—includes paraffin oil from 063503	✓
063503	Petroleum distillate, oils, solvent, or hydrocarbons; also p	✓
063506	Mineral spirits	✓
067002	Pine oil .....	.....
067003	Terpineols (unspec.)	✓
067205	Pine tar oil	✓
067207	Ester gum	✓
067209	Canadian balsam .....	.....
067302	Amines, N-coco alkyltrimethylenedi-, acetates	✓
069152	Amines, coco alkyl, hydrochlorides	✓
070801	Red Squill glycoside	✓
071004	Cube Resins other than rotenone	✓
071501	Ryania speciosa, powdered stems of	✓
079009	Soap .....	.....
079014	Turkey red oil	✓
079021	Potassium salts of fatty acids	✓
079029	Fatty alcohols (52-61% C10, 39-46% C8, 0-3% C6, 0-3% C12)	✓

TABLE 4.—PAIS THAT ARE MIXTURES—Continued

Shaughnessey code	Chemical name ^{1,2}	Mixtures That are re-served
079034	Methyl esters of fatty acids (100% C8–C12)	✓
079059	Fatty alcohols (54.5% C10, 45.1% C8, 0.4% C6)	✓
086803	Xylene range aromatic solvent	✓
105101	Putrescent whole egg solids	.....
107302	Polyhedral inclusion bodies of Douglas fir tussock moth nucl	✓
107303	Polyhedral inclusion bodies of gypsy moth nucleopolyhedrosis	✓
107304	Polyhedral inclusion bodies of n. sertifer	✓
116902	Gibberellin A4 mixt. with Gibberellin A7	✓
117001	Nosema locustae	✓
128827	Garlic oil	.....
128888	Lactofen (ANSI)	✓
128892	Mint Herbs	.....
128893	Rosemary Herbs	.....
128894	Thyme Herbs	.....
128895	Clove, Crushed	.....
129029	Bergamot Oil	✓
129083	Sawdust	.....
224600	Diethanolamides of the fatty acids of coconut oil (coded 079)	✓
505200	Isoparaffinic hydrocarbons	✓

¹ Shaughnessey codes and chemical names are taken directly from the FATES database. Several chemical names are truncated because the chemical names listed in the FATES database are limited to 60 characters.

² Two chemicals previously proposed as sanitizer PAIs, essential oils (Code 40501) and pine oil (Code 67002), are included on this table.

Appendix B.—Sample Regulatory Text Considered for the Final Rule

General Definitions

(g) Sanitizer Products means pesticide products that (1) contain the sanitizer active ingredients listed in Table 8 of the proposed regulation and no other active ingredient; or (2) pesticide products that are intended to disinfect or sanitize, reducing or mitigating growth or development of microbiological organisms including bacteria, fungi or viruses on surfaces on surfaces or inanimate objects in the household and or institutional environment, as provided in the directions for use on the product label. The only institutional antimicrobial products which are included by this definition are those with formulations similar to the household sanitizer products in their active ingredients and relative concentrations.

(h) Repackaging Establishment means an establishment where the activity of repackaging agricultural pesticide product into refillable containers occurs, whose primary business is wholesale or retail sales and where no pesticide manufacturing, formulating, or packaging occurs.

(i) Interior Cleaning Wastewater Sources means wastewater that is generated from cleaning or rinsing the interior of pesticide formulating, packaging or repackaging equipment, or from cleaning or rinsing the interior of raw materials containers, shipping containers or bulk storage tanks.

(j) Pool Chemicals means the pesticide active ingredients that are listed in Table 2, Appendix A of this notice as pool chemicals.

(k) Microorganisms means registered pesticide active ingredients that are biological agents listed in 40 CFR 150.20 (a)(3) including Eucaryotes (protozoa, algae and fungi), Procaryotes (bacteria) and Viruses and/or are listed in Table 3, Appendix A of this notice.

(l) Mixtures means the pesticide active ingredients listed in Table 4, Appendix A of this notice.

Subcategory C—PFPR and PFPR/Manufacturers

Applicability; Description of the Pesticide Chemicals Formulating, Packaging and Repackaging Subcategory

(a) The provisions of this subpart are applicable to discharges resulting from all pesticide formulating, packaging and repackaging operations except as provided in paragraphs (b), (c) and (d) of this section.

(b) The provisions of this subpart do not apply to repackaging of agricultural pesticides performed at repackaging establishments, as defined in the General Definitions Section. (See Subpart E for provisions that apply to repackaging establishments.)

(c) The provisions of this subpart do not apply to wastewater discharges from the operation of employee showers and laundry facilities; testing fire protection equipment, safety shower and eye washes; storm water; DOT aerosol leak test bath water from a non-continuous overflow bath (batch bath) where from

the time of the last water change-out no leaks have been detected or where cans have not burst; and on-site laboratory wastewaters from cleaning analytical equipment. [This does not exclude the retain batch sample being tested or the water used to clean the container used to bring this sample into the laboratory.]

(d) The provisions of this subpart do not apply to wastewater discharges from the formulation, packaging and or repackaging of sanitizer products, pool chemicals, microorganisms and mixtures, as defined under General Definitions.

Specialized Definitions for Subcategory C

For Indirect Dischargers

Pollution prevention allowable discharge (excluding interior wastewaters, leak/spill cleanup water and floor wash) means: the quantity of concentrations in PFPR process wastewaters that remain after a facility has demonstrated that it is using the specified practices of the Pollution Prevention Alternative as listed.

Pollution prevention allowable discharge for interior wastewaters, leak/spill cleanup water, and floor wash means: the quantity of concentrations in PFPR process wastewaters that remain after a facility has demonstrated that it is using the specified practices of the Pollution Prevention Alternative as listed and that have been pretreated using appropriate pollution control technologies which can be used individually or in conjunction with one another as listed in Appendix C, or an

equivalent system to achieve a sufficient level of pollutant reduction. Facilities must demonstrate that the appropriate pollution control technology is properly maintained and operated.

For Direct Dischargers

Pollution prevention allowable discharge (for PFPR/Manufacturers) means: the quantity of/concentrations in all PFPR process wastewaters that remain after a facility has demonstrated that it is using the specified practices of the Pollution Prevention Alternative as listed and that have been treated using appropriate pollution control technologies which can be used individually or in conjunction with Manufacturer's treatment systems or one another as listed in Appendix C, or an equivalent system to achieve a sufficient level of pollutant reduction. Facilities must demonstrate that the appropriate pollution control technology is properly maintained and operated.

The following provisions apply to existing and new indirect discharge PFPR and PFPR/Manufacturers:

Pretreatment Standards for Existing Sources (PSES) for Subcategory C

(a) Except as provided in paragraph (b) of this section, any existing source subject to this subpart which introduces pollutants into a publicly owned treatment works must comply with 40 CFR part 403 and achieve the pretreatment standards for existing sources as follows: There shall be no discharge of process wastewater pollutants.

(b) Any pesticides formulating, packaging and repackaging facility may use the Pollution Prevention Alternative when it demonstrates that it has met the requirements of the Pollution Prevention Alternative listed on Table

B-1 and Table B-2 (or received a modification for requirements on Table B-2) and has notified the pretreatment authority of their intent and has made a written statement of certification to be kept on-site concerning these practices and has kept any necessary paperwork on-site and readily available for pretreatment authorities. This paperwork shall: (1) Describe the facility specific practices which are to be practiced as part of the Pollution Prevention Alternative; (2) describe any justification allowing modification to practices listed on Table B-2; (3) include a written discussion demonstrating that the treatment system being used contains the appropriate treatment technologies for removing PAIs; (4) establish a method for demonstrating to the pretreatment authority that the treatment system is well operated and maintained; and (5) include a discussion of the rationale for choosing the method of demonstration. Any wastewater from the formulating, packaging and repackaging of pesticides at any existing facility which has been described in this paragraph and which introduces pollutants into a publicly owned treatment works must comply with 40 CFR part 403 and achieve the pretreatment standards for existing sources as follows: There shall be allowed a pollution prevention allowable discharge of wastewater pollutants, as defined in the Specialized Definition Section.

Pretreatment Standards for New Sources (PSNS) for Subcategory C

(a) Except as provided in paragraph (b) of this section, any new source subject to this subpart which introduces pollutants into a publicly owned treatment works must comply with 40 CFR part 403 and achieve the

pretreatment standards for new sources as follows: There shall be no discharge of process wastewater pollutants.

(b) Any new pesticides formulating, packaging and repackaging facility may use the Pollution Prevention Alternative when it demonstrates that it has met the requirements of the Pollution Prevention Alternative listed on Table B-1 and Table B-2 (or received a modification for requirements on Table B-2) and has notified the pretreatment authority of their intent and has made a written statement of certification to be kept on-site concerning these practices and has kept any necessary paperwork on-site and readily available for pretreatment authorities. This paperwork shall: (1) describe the facility specific practices which are to be practiced as part of the Pollution Prevention Alternative; (2) describe any justification allowing modification to practices listed on Table B-2; (3) include a written discussion demonstrating that the treatment system being used contains the appropriate treatment technologies for removing PAIs; (4) establish a method for demonstrating to the pretreatment authority that the treatment system is well operated and maintained; and (5) include a discussion of the rationale for choosing the method of demonstration. Any wastewater from the formulating, packaging and repackaging of pesticides at any new facility which has been described in this paragraph and which introduces pollutants into a publicly owned treatment works must comply with 40 CFR part 403 and achieve the pretreatment standards for new sources as follows: There shall be allowed a pollution prevention allowable discharge of wastewater pollutants, as defined in the Specialized Definitions Section.

The following provisions apply to existing and new direct discharge PFPR/Manufacturers only:

Effluent Limitations Guidelines Representing the Degree of Effluent Reduction Attainable by the Application of the Best Available Technology Economically Achievable (BAT) for Subcategory C

(a) Except as provided in 40 CFR 125.30 through 125.32, and as provided in paragraph (b) of this section, any existing point source subject to this subpart which must achieve effluent limitations representing the degree of effluent reduction attainable by the application of the best available technology economically achievable: There shall be no discharge of process wastewater pollutants.

(b) Any existing pesticides formulating, packaging and repackaging facility may use the Pollution Prevention Alternative when it demonstrates that it has met the requirements of the Pollution Prevention Alternative listed on Table B-1 and Table B-2 (or received a modification for requirements on Table B-2) and has notified their NPDES permit writer at renewal or modification of their permit and has kept any necessary paperwork on-site and readily available for the permitting authority. This paperwork shall: (1) Describe the facility specific practices which are to be practiced as part of the Pollution Prevention Alternative; (2) describe any justification allowing modification to practices listed on Table B-2; (3) include a written discussion demonstrating that the treatment system being used contains the appropriate treatment technologies for removing

PAIs; (4) establish a method for demonstrating to the pretreatment authority that the treatment system is well operated and maintained; and (5) include a discussion of the rationale for choosing the method of demonstration. Any existing source must achieve effluent limitations representing the degree of effluent reduction attainable by the application of the best available technology economically achievable: There shall be allowed a pollution prevention allowable discharge of wastewater pollutants, as defined in the Specialized Definition Section.

New Source Performance Standards (NSPS) for Subcategory C

(a) Any new source, except as provided in paragraph (b) of this section, subject to this subpart which discharges process wastewater must meet the following standards: There shall be no discharge of process wastewater.

(b) Any new pesticides formulating, packaging and repackaging facility may use the Pollution Prevention Alternative when it demonstrates that it has met the requirements of the Pollution Prevention Alternative listed on Table B-1 and Table B-2 (or received a modification for requirements on Table B-2) and has notified the NPDES permit writer through the application process and has kept any necessary paperwork on-site and readily available for permitting authorities. This paperwork shall: (1) Describe the facility specific practices which are to be practiced as part of the Pollution Prevention Alternative; (2) describe any justification allowing modification to practices listed on Table B-2; (3) include a written discussion

demonstrating that the treatment system being used contains the appropriate treatment technologies for removing PAIs; (4) establish a method for demonstrating to the pretreatment authority that the treatment system is well operated and maintained; and (5) include a discussion of the rationale for choosing the method of demonstration. Any wastewater from the formulating, packaging and repackaging of pesticides at any new facility which has been described in this paragraph which discharges process wastewater must meet the following standards: There shall be allowed a pollution prevention allowable discharge of wastewater pollutants, as defined in the Specialized Definition Section.

Subcategory E—Repackaging of Agricultural Pesticides Performed by Repackaging Establishments

Applicability; Description of the Repackaging Establishment Subcategory

(a) The provisions of this subpart are applicable to discharges resulting from all repackaging of agricultural pesticide products into refillable containers that occurs at repackaging establishments, as defined in the General Definitions Section except as provided in paragraphs (b), and (c) of this section.

(b) The provisions of this subpart do not apply to wastewater discharges from the operation of employee showers and laundry facilities; and testing of fire protection equipment, safety showers and eye washes.

(c) The provisions of this subpart do not apply to wastewater discharges from the repackaging of microorganisms, as defined under General Definitions.

TABLE B-1.—LIST OF POLLUTION PREVENTION ALTERNATIVE PRACTICES

1. Must use spray nozzles on hoses used for rinsing (or other flow reduction devices).
2. Must practice good housekeeping:
 - (1) perform preventative maintenance on all valves and fittings and repair leaky valves and fittings in a timely manner;
 - (2) use drip pans under leaky valves/fittings, collect for reuse when possible; and
 - (3) perform quick cleanup of leaks and spills in outdoor bulk storage or process areas.
3. When performing drum rinsing (of liquid PAI or inert) for formulation of water-based products ♦

Must reuse the drum/shipping container rinsate DIRECTLY into the formulation at the time of formulation, store for use in next formulation or use staged drum rinsing station (counter current rinsing).
4. If all interior rinsate cannot be reused for a reason listed in Table B-2, # 5, ♦

Must dedicate some equipment in at least one of the ways listed below.

Dedicate to:

 - (a) frequently produced product (i.e., top production product);
 - (b) hard to clean products (i.e., viscous, sticky, colored products)
 - (c) product families
 - (d) a portion of the formulating/packaging equipment (i.e., just the mix tank or just the agitator)
5. Must sweep or vacuum dry production areas prior to rinsing with water.
6. If operating air pollution control wet scrubbers must operate as recirculating scrubbers (periodic blowdown is allowed as needed).
7. If operating continuous overflow Department of Transportation (DOT) aerosol leak test baths must operate with some recirculation.

Note:

- (1) After following the practices above, some wastewaters may require treatment prior to discharge to POTWs. See definition of pollution prevention allowable discharge.
- (2) After following the practices above, all wastewaters require treatment prior to discharge directly to the nation's waters. See definition of pollution prevention allowable discharge.

TABLE B-2.—LIST FOR POLLUTION PREVENTION ALTERNATIVE—OTHER PRACTICES

[May be modified with acceptable justification]

A modification to the list of practices on this table that an individual facility must comply with to be eligible for the pollution prevention alternative is allowed with acceptable justification. A modification, for purposes of this table, means that a facility would no longer have to perform a listed practice or would need to comply with a modified practice. However, the modification only applies to the specific practice for which the modification has been justified and to no other listed practices. Facilities are required to thoroughly discuss all modifications in the "necessary" paperwork as described above in the limitations and standards.

1. When performing drum rinsing (of liquid PAI or inert) for formulation of solvent-based products →

Must reuse the drum/shipping container rinsate (solvent) DIRECTLY into the formulation at the time of formulation or store for use in next formulation.

[Modification allowed when: drums are going to a drum refurbisher/recycler and they will only accept drums rinsed with water.]
2. Must use low volume/high pressure rinsing equipment for rinsing PFPR equipment interiors when rinsing with water.

[Modification allowed when: rinsing narrow transfer lines or piping where sufficient rinsing is better achieved by flushing with water.]
3. Must use a floor scrubbing machine to clean floors in liquid production areas.

[Modification allowed when: facility has uneven floor surfaces or crowded areas where floor scrubber cannot fit, BUT must then use a mop and bucket.]
4. Must dedicate PFPR production equipment by water-based versus solvent-based products.

[Modification allowed when: facility can provide evidence, such as production information, of infrequent/very intermittent formulation of one or the other or facility has installed and is using a solvent recovery system.]
5. Must store the rinsate from interior rinsing for future formulation of SAME or compatible product.

[Modification allowed when:

 - (a) evidence of biological growth or other product deterioration over typical storage period;
 - (b) space limitations, BUT must still store rinsates for most frequently produced products;
 - (c) manufacturer (or formulator contracting for toll formulating) has directed otherwise (i.e., send back to them or send for off-site disposal); or
 - (d) facility is dropping registration or production of formulation at the facility after present campaign;
 - (e) facility only performs packaging of the pesticide product from which interior rinsate is generated.]

Note:

- (1) After following the practices above, some wastewaters may require treatment prior to discharge to POTWs. See definition of pollution prevention allowable discharge.
- (2) After following the practices above, all wastewaters require treatment prior to discharge directly to the nation's waters. See definition of pollution prevention allowable discharge.

Appendix C—List of PAI Specific Treatment Technologies

This Appendix C contains those pollutant control technologies, such as hydrolysis, chemical oxidation, metals precipitation and activated carbon adsorption, which have been used for estimating compliance costs on a PAI specific basis. In general, these treatment technologies have been

determined to be effective in treating pesticide containing wastewaters in literature, in bench or pilot scale treatability studies or in the Pesticide Manufacturing effluent guidelines.¹ These are the same technologies that were presented as part of the Universal Treatment System at the time of proposal. However, these technologies are PAI specific and may need to be used in conjunction with one another to

provide treatment for all PAIs used at a facility over a period of time. In addition, facilities may experience difficulties treating wastewaters that contain emulsions, therefore, “appropriate” treatment for emulsified wastewaters must include an emulsion breaking step. [Note: EPA has costed facilities for these types of dynamic treatment needs.]

TABLE C-1.—TABLE OF TREATABILITY INFORMATION FOR THE 272 PAIS AND THE NON-272 PAIS LISTED IN THE 1988 FATES DATABASE ¹

PAI name ²	PAI code ³	Shaughnessy code ⁴	PAI classification ⁵	Structural group ⁵	Treatment technology bases for cost ⁶	Inert ⁷
Dicofol	001	10501	.....	DDT	Hydrolysis	
Maleic Hydrazide	002	51501	.....	Hydrazide	Activated Carbon	
EDB	003	42002	.....	EDB	Activated Carbon	
Vancide TH	004	82901	.....	s-Triazine	Activated Carbon	
1,3-Dichloropropene	005	29001	.....	EDB	Hydrolysis	
Thenarsazine Oxide	006	12601	.....	Organoarsenic	Precipitation	
Dowicil 75	007	17901	.....	NR4	Activated Carbon	
Triadimefon	008	109901	.....	s-Triazine	Activated Carbon	
Hexachlorophene	009	44901	.....	Chlorophene	Activated Carbon	
Tetrachlorophene	010	.....	.....	Chlorophene	Activated Carbon	
Dichlorophene	011	55001	.....	Chlorophene	Activated Carbon	
Dichlorvos	012	84001	.....	Phosphate	Hydrolysis	
Landrin-2	013	.....	.....	Carbamate	Activated Carbon	
2,3,6-T, S&E or Fenac	014	82605	.....	2,4-D	Activated Carbon	
2,4,5-T and 2,4,5-T, S&E	015	*	.....	2,4-D	Activated Carbon	
2,4-D (2,4-D, S&E)	016	*	.....	2,4-D	Chemical Oxidation	
2,4-DB, S&E	017	*	.....	2,4-D	Activated Carbon	
Dyrene or Anilazine	018	80811	.....	s-Triazine	Activated Carbon	
Dinocap	019	36001	.....	Phenylcrotonate	Activated Carbon	
Dichloran or DCNA	020	31301	.....	Aryl Halide	Activated Carbon	
Busan 90	021	8707	.....	Miscellaneous	Activated Carbon	
Mevinphos	022	15801	.....	Phosphate	Hydrolysis	
Sulfallate	023	.....	.....	Dithiocarbamate	Activated Carbon	
Chlorfenvinphos	024	84101	.....	Phosphate	Activated Carbon	
Cyanazine or Bladex	025	100101	.....	s-Triazine	Activated Carbon	
Propachlor	026	19101	.....	Acetanilide	Activated Carbon	
MCPA, S&E	027	*	.....	2,4-D	Activated Carbon	
Octhilinone	028	99901	.....	Heterocyclic	Activated Carbon	
Pindone	029	67703	.....	Miscellaneous	Activated Carbon	
Dichlorprop, S&E	030	*	.....	2,4-D	Activated Carbon	
MCPP, S&E or Mecoprop	031	*	.....	2,4-D	Activated Carbon	
Thiabendazole	032	60101	.....	Heterocyclic	Activated Carbon	
Belclene 310	033	80815	.....	s-Triazine	Activated Carbon	
Chlorprop, S&E	034	21202	.....	2,4-D	Activated Carbon	
Busan 72 or TCMTB	035	35603	.....	Heterocyclic	Hydrolysis	
Chlorophacinone	037	67707	.....	Miscellaneous	Activated Carbon	
Landrin-1	038	.....	.....	Carbamate	Activated Carbon	
Pronamide	039	101701	.....	Chlorobenzamide	Activated Carbon	
Methiocarb or Mesurol	040	100501	.....	Carbamate	Hydrolysis	
Propanil	041	28201	.....	Chloropropionanilide	Activated Carbon	
Polyphase	042	107801	.....	Carbamate	Activated Carbon	
Coumafuryl or Fumarin	043	86001	.....	Coumarin	Activated Carbon	
DNOC	044	.....	.....	Phenol	Activated Carbon	
Metribuzin	045	101101	.....	Triazathione	Activated Carbon	
CPA, S&E	046	*	.....	2,4-D	Activated Carbon	
MCPB, S&E	047	19202	.....	2,4-D	Activated Carbon	
Aminocarb	048	.....	.....	Carbamate	Hydrolysis	
Etridiazole	049	84701	.....	Heterocyclic	Activated Carbon	
Ethoxyquin	050	55501	.....	Quinolin	Activated Carbon	
Acephate or Orthene	052	103301	.....	Phosphoramidothioate	Activated Carbon	

¹ EPA is still determining the appropriate treatment technologies for a number of inorganic pesticide chemicals. Activated carbon (AC) adsorption was only used to provide a conservative

cost estimate. Therefore, listed technologies for such PAIs are subject to change for final promulgation.

TABLE C-1.—TABLE OF TREATABILITY INFORMATION FOR THE 272 PAIS AND THE NON-272 PAIS LISTED IN THE 1988 FATES DATABASE¹—Continued

PAI name ²	PAI code ³	Shaughnessy code ⁴	PAI classification ⁵	Structural group ⁵	Treatment technology bases for cost ⁶	Inert ⁷
Acifluorfen	053	114402		Benzoic Acid	Activated Carbon	
Alachlor	054	90501		Acetanilide	Activated Carbon	
Aldicarb	055	98301		Carbamate	Hydrolysis	
Allethrin	057	*		Pyrethrin	Activated Carbon	
Ametryn	058	80801		s-Triazine	Activated Carbon	
Amitraz	059	106201		Iminamide	Activated Carbon	
Atrazine	060	80803		s-Triazine	Hydrolysis	
Bendiocarb	061	105201		Carbamate	Hydrolysis	
Benomyl	062	99101		Carbamate	Hydrolysis	
BHC	063			Lindane	Hydrolysis	
Benzyl Benzoate	064	9501		Ester	Activated Carbon	
Lethane 60	065			Thiocyanate	Activated Carbon	
Bifenox	066	104301		Nitrobenzoate	Activated Carbon	
Biphenyl	067	17002		Aryl	Activated Carbon	
Bromacil (Lithium Salt)	068	*		Uracil	Activated Carbon	
Bromoxynil	069	*		Benzonitrile	Activated Carbon	
Butachlor	070			Acetanilide	Activated Carbon	
Giv-gard	071	101401		Miscellaneous	Activated Carbon	
Cacodylic Acid	072	*		Organoarsenic	Precipitation	
Captafol	073			Phthalimide	Hydrolysis	
Captan	074	81301		Phthalimide	Hydrolysis	
Carbaryl	075	56801		Carbamate	Hydrolysis	
Carbofuran	076	90601		Carbamate	Hydrolysis	
Carbosulfan	077			Carbamate	Activated Carbon	
Chloramben	078	*		Benzoic Acid	Activated Carbon	
Chlordane	079	58201		Tricyclic	Activated Carbon	
Chloroneb	080	27301		Aryl Halide	Chemical Oxidation	
Chloropicrin	081	81501		Alkyl Halide	Chemical Oxidation	
Chlorothalonil	082	81901		Chloropropionanilide	Activated Carbon	
Chloroxuron	083			Urea	Activated Carbon	
Stirofos	084	83701		Phosphate	Hydrolysis	
Chlorpyrifos Methyl	085	59102		Phosphorothioate	Hydrolysis	
Chlorpyrifos	086	59101		Phosphorothioate	Chemical Oxidation	
Mancozeb	087	14504		Dithiocarbamate	Activated Carbon	
Bioquin (Copper)	088	24002		Organocopper	Precipitation	
Copper EDTA	089	39105		Organocopper	Precipitation	
Pydrin or Fenvalerate	090	109301		Pyrethrin	Activated Carbon	
Cycloheximide	091			Cyclic Ketone	Activated Carbon	
Dalapon	092	*		Alkyl Halide	Activated Carbon	
Dienochlor	093	27501		HCP	Activated Carbon	
Demeton	094			Phosphorothioate	Hydrolysis	
Desmedipham	095	104801		Carbamate	Hydrolysis	
Amobam	096			Miscellaneous	Activated Carbon	
DBCP	097			EDB	Activated Carbon	
Dicamba	098	*		Aryl Halide	Activated Carbon	
Dichlone	099	29601		Quinone	Activated Carbon	
Thiophanate Ethyl	100	103401		Carbamate	Hydrolysis	
Perthane	101			DDT	Activated Carbon	
EXD	102			Dithiocarbamate	Activated Carbon	
Diazinon	103	57801		Phosphorothioate	Hydrolysis	
Diflubenzuron	104	108201		Urea	Activated Carbon	
Dimethoate	106	35001		Phosphorodithioate	Hydrolysis	
Parathion Methyl	107	53501		Phosphorothioate	Hydrolysis	
Dicrotophos	108	35201		Phosphate	Activated Carbon	
Crotoxyphos	109	58801		Phosphate	Activated Carbon	
DCPA	110	78701		Aryl Halide	Activated Carbon	
Trichlorofon	111	57901		Phosphonate	Activated Carbon	
Dinoseb	112	37505		Phenol	Activated Carbon	
Dioxathion	113	37801		Phosphorodithioate	Hydrolysis	
Diphacinone	114	67701		Indandione	Activated Carbon	
Diphenamide	115	36601		Acetamide	Activated Carbon	
Diphenylamine	116	38501		Aryl Amine	Activated Carbon	
MGK 326	117	47201		Ester	Activated Carbon	
Nabonate	118	63301		Isocyanate	Chemical Oxidation	
Diuron	119	35505		Urea	Activated Carbon	
Metasol DGH	120	44303		NR4	Activated Carbon	
Dodine	121	44301		NR4	Activated Carbon	
Endosulfan	122	79401		Tricyclic	Activated Carbon	
Endothall (Endothall S&E)	123	*		Bicyclic	Activated Carbon	

TABLE C-1.—TABLE OF TREATABILITY INFORMATION FOR THE 272 PAIS AND THE NON-272 PAIS LISTED IN THE 1988 FATES DATABASE¹—Continued

PAI name ²	PAI code ³	Shaughnessy code ⁴	PAI classification ⁵	Structural group ⁵	Treatment technology bases for cost ⁶	Inert ⁷
Endrin	124	41601	.....	Tricyclic	Activated Carbon	
Ethalfuralin	125	113101	.....	Toluidine	Activated Carbon	
Ethion	126	58401	.....	Phosphorodithioate	Hydrolysis	
Ethoprop	127	41101	.....	Phosphorodithioate	Activated Carbon	
Fenamiphos	128	100601	.....	Phosphoroamidate	Activated Carbon	
Chlorobenzilate	129	28801	.....	Aryl Halide	Activated Carbon	
Butylate	130	41405	.....	Thiocarbamate	Activated Carbon	
Famphur	131	.....	.....	Phosphorothioate	Hydrolysis	
Fenarimol	132	206600	.....	Pyrimidine	Activated Carbon	
Fenthion or Baytex	133	53301	.....	Phosphorothioate	Hydrolysis	
Ferbam	134	34801	.....	Dithiocarbamate	Activated Carbon	
Fluometuron	135	35503	.....	Urea	Activated Carbon	
Fluoroacetamide	136	.....	.....	Acetamide	Activated Carbon	
Folpet	137	81601	.....	Phthalimide	Hydrolysis	
Glyphosate (Glyphosate S&E).	138	*	.....	Phosphoroamidate	Chemical Oxidation	
Glyphosine	139	.....	.....	Phosphoroamidate	Activated Carbon	
Heptachlor	140	44801	.....	Tricyclic	Activated Carbon	
Cycloprate	141	.....	.....	Thiocarbamate	Activated Carbon	
Hexazinone	142	107201	.....	s-Triazine	Activated Carbon	
Isofenphos	143	109401	.....	Phosphoroamidithioate	Activated Carbon	
Isopropalin	144	100201	.....	Toluidine	Activated Carbon	
Propham	145	.....	.....	Carbamate	Hydrolysis	
Karabutilate	146	97401	.....	Carbamate	Hydrolysis	
Lindane	147	9001	.....	Lindane	Activated Carbon	
Linuron	148	35506	.....	Urea	Chemical Oxidation	
Malachite Green	149	39504	.....	NR4	Activated Carbon	
Malathion	150	57701	.....	Phosphorodithioate	Hydrolysis	
Maneb	151	14505	.....	Dithiocarbamate	Activated Carbon	
Manam	152	.....	.....	Dithiocarbamate	Activated Carbon	
Mefluidide	153	114002	.....	Carbamate	Activated Carbon	
Methamidophos	154	101201	.....	Phosphoroamidithioate	Activated Carbon	
Methidathion	155	100301	.....	Phosphorodithioate	Activated Carbon	
Methomyl	156	90301	.....	Carbamate	Hydrolysis	
Methoprene	157	*	.....	Ester	Activated Carbon	
Methoxychlor	158	34001	.....	DDT	Hydrolysis	
Methyl Bromide	160	53201	.....	Alkyl Halide	Activated Carbon	
Monosodium Methyl Arsenate.	161	*	.....	Organoarsenic	Precipitation	
Nalco D-2303	163	68102	.....	Thiocyanate	Activated Carbon	
Quinomethionate	164	54101	.....	Miscellaneous	Activated Carbon	
Metolachlor	165	108801	.....	Acetanilide	Activated Carbon	
Mexacarbate	166	.....	.....	Carbamate	Hydrolysis	
Metiram	167	14601	.....	Dithiocarbamate	Activated Carbon	
Monuron TCA	168	35502	.....	Urea	Activated Carbon	
Monuron	169	35501	.....	Urea	Activated Carbon	
Napropamide	170	103001	.....	Carbamate	Activated Carbon	
Deet	171	80301	.....	Toluamide	Activated Carbon	
Nabam	172	14503	.....	Dithiocarbamate	Chemical Oxidation	
Naled	173	34401	.....	Phosphate	Hydrolysis	
Norea	174	.....	.....	Urea	Activated Carbon	
Norflurazon	175	105801	.....	Heterocyclic	Activated Carbon	
Naptalam or Neptalam ..	176	30703	.....	Phthalimide	Activated Carbon	
MGK 264	177	57001	.....	Bicyclic	Activated Carbon	
Benfluralin	178	84301	.....	Toluidine	Activated Carbon	
Sulfotepp	179	79501	.....	Phosphorothioate	Activated Carbon	
Aspon	180	.....	.....	Phosphorothioate	Activated Carbon	
Coumaphos	181	36501	.....	Phosphorothioate	Hydrolysis	
Fensulfothion	182	32701	.....	Phosphorothioate	Hydrolysis	
Disulfoton	183	32501	.....	Phosphorodithioate	Hydrolysis	
Fenitrothion	184	105901	.....	Phosphorothioate	Hydrolysis	
Phosmet	185	59201	.....	Phosphorodithioate	Hydrolysis	
Azinphos Methyl (Guthion).	186	58001	.....	Phosphorodithioate	Hydrolysis	
Oxydemeton Methyl	187	58702	.....	Phosphorothioate	Activated Carbon	
Organo-Arsenic Pesticides.	188	.....	.....	Organoarsenic	Precipitation	
Organo-Cadmium Pesticides.	189	.....	.....	Organocadmium	Precipitation	

TABLE C-1.—TABLE OF TREATABILITY INFORMATION FOR THE 272 PAIS AND THE NON-272 PAIS LISTED IN THE 1988 FATES DATABASE¹—Continued

PAI name ²	PAI code ³	Shaughnessy code ⁴	PAI classification ⁵	Structural group ⁵	Treatment technology bases for cost ⁶	Inert ⁷
Organo-Copper Pesticides.	190	*	.....	Organocopper	Precipitation	
Organo-Mercury Pesticides.	191	*	.....	Organomercury	Precipitation	
Organo-Tin Pesticides ...	192	*	.....	Organotin	Precipitation	
o-Dichlorobenzene	193	59401	.....	Aryl Halide	Activated Carbon	
Oryzalin	194	104201	.....	Sulfanilamide	Activated Carbon	
Oxamyl	195	103801	.....	Carbamate	Hydrolysis	
Oxyfluorfen	196	111601	.....	Miscellaneous	Activated Carbon	
Bolstar	197	111501	.....	Phosphorodithioate	Activated Carbon	
Sulprofos Oxon	198	.....	.....	Phosphorothioate	Hydrolysis	
Santox (EPN)	199	41801	.....	Phosphorodithioate	Hydrolysis	
Fonofos	200	41701	.....	Phosphorodithioate	Hydrolysis	
Propoxur	201	47802	.....	Carbamate	Hydrolysis	
p-Dichlorobenzene	202	61501	.....	Aryl Halide	Activated Carbon	
Parathion Ethyl	203	57501	.....	Phosphorothioate	Hydrolysis	
Pendimethalin	204	108501	.....	Benzeneamine	Activated Carbon	
PCNB	205	56502	.....	Aryl Halide	Activated Carbon	
PCP or Penta	206	*	.....	Phenol	Activated Carbon	
Perfludone	207	.....	.....	Sulfonamide	Activated Carbon	
Permethrin	208	109701	.....	Pyrethrin	Activated Carbon	
Phenmedipham	209	98701	.....	Carbamate	Hydrolysis	
Nemazine	210	64501	.....	Heterocyclic	Activated Carbon	
Phorate	212	57201	.....	Phosphorodithioate	Hydrolysis	
Phosalone	213	97701	.....	Phosphorodithioate	Hydrolysis	
Phosphamidon	214	18201	.....	Phosphate	Hydrolysis	
Picloram	215	*	.....	Pyridine	Activated Carbon	
Piperonyl Butoxide	216	67501	.....	Ester	Activated Carbon	
PBED or WSCP (Busan 77).	217	69183	.....	NR4	Activated Carbon	
Busan 85 or Arylane	218	34803	.....	Dithiocarbamate	Chemical Oxidation	
Busan 40	219	102901	.....	Dithiocarbamate	Chemical Oxidation	
KN Methyl	220	39002	.....	Dithiocarbamate	Chemical Oxidation	
Metasol J26	221	101301	.....	Miscellaneous	Activated Carbon	
Profenofos	222	111401	.....	Phosphorothioate	Activated Carbon	
Prometon or Caparol	223	80804	.....	s-Triazine	Chemical Oxidation	
Prometryn	224	80805	.....	s-Triazine	Activated Carbon	
Propargite	225	97601	.....	Miscellaneous	Activated Carbon	
Propazine	226	80808	.....	s-Triazine	Activated Carbon	
Propionic Acid	227	77702	.....	Alkyl Acid	Activated Carbon	
Previcur N	228	119301	.....	Carbamate	Hydrolysis	
Pyrethrin Coils	229	69004	.....	Pyrethrin	Activated Carbon	
Pyrethrum I	230	69001	.....	Pyrethrin	Hydrolysis	
Pyrethrum II	231	69002	.....	Pyrethrin	Hydrolysis	
Pyrethrins	232	*	.....	Pyrethrin	Hydrolysis	
Resmethrin	233	*	.....	Pyrethrin	Activated Carbon	
Fenchlorphos or Ronnel	234	58301	.....	Phosphorothioate	Hydrolysis	
Mexide or Rotenone	235	71003	.....	Miscellaneous	Activated Carbon	
DEF	236	74801	.....	Phosphorotrithioate	Activated Carbon	
Siduron or Tupersan	237	35509	.....	Urea	Activated Carbon	
Silvex	238	*	.....	2,4-D	Activated Carbon	
Simazine	239	80807	.....	s-Triazine	Activated Carbon	
Sodium Bentazon	240	103901	.....	Heterocyclic	Chemical Oxidation	
Carbam-S or Sodam	241	34804	.....	Dithiocarbamate	Chemical Oxidation	
Sodium Fluoroacetate ...	242	75003	.....	Acetamide	Activated Carbon	
Vapam or Metham Sodium.	243	39003	.....	Dithiocarbamate	Chemical Oxidation	
Sulfoxide	244	57101	.....	Miscellaneous	Activated Carbon	
Cycloate or Ro-Neet	245	41301	.....	Thiocarbamate	Activated Carbon	
EPrecipitationC or Eptam.	246	41401	.....	Thiocarbamate	Activated Carbon	
Molinate	247	41402	.....	Thiocarbamate	Activated Carbon	
Pebulate or Tillman	248	41403	.....	Thiocarbamate	Activated Carbon	
Vernolate or Vernam	249	41404	.....	Thiocarbamate	Activated Carbon	
HPrecipitationMS	250	35604	.....	Thiosulphonate	Activated Carbon	
Bensulide or Betesan	251	9801	.....	Phosphorodithioate	Activated Carbon	
Tebuthiuron	252	105501	.....	Urea	Activated Carbon	
Temephos	253	59001	.....	Phosphorothioate	Hydrolysis	
Terbacil	254	12701	.....	Uracil	Activated Carbon	
Terbufos or Counter	255	105001	.....	Phosphorodithioate	Activated Carbon	

TABLE C-1.—TABLE OF TREATABILITY INFORMATION FOR THE 272 PAIS AND THE NON-272 PAIS LISTED IN THE 1988 FATES DATABASE ¹—Continued

PAI name ²	PAI code ³	Shaughnessy code ⁴	PAI classification ⁵	Structural group ⁵	Treatment technology bases for cost ⁶	Inert ⁷
Terbutylazine	256	80814	.....	s-Triazine	Activated Carbon	
Terbutryn	257	80813	.....	s-Triazine	Activated Carbon	
Tetrachlorophenol	258	63004	.....	Phenol	Activated Carbon	
Dazomet	259	35602	.....	Heterocyclic	Chemical Oxidation	
Thiophanate Methyl	260	102001	.....	Carbamate	Hydrolysis	
Thiram	261	79801	.....	Dithiocarbamate	Activated Carbon	
Toxaphene	262	80501	.....	Bicyclic	Activated Carbon	
Merphos	263	74901	.....	Phosphorotrithioate	Hydrolysis	
Trifluralin or Treflan	264	36101	.....	Toluidine	Activated Carbon	
Warfarin	265	*	.....	Coumarin	Activated Carbon	
Zinc MBT	266	51705	.....	Organozinc	Precipitation	
Zineb	267	14506	.....	Dithiocarbamate	Activated Carbon	
Ziram	268	34805	.....	Dithiocarbamate	Activated Carbon	
Triallate	269	78802	.....	Thiocarbamate	Activated Carbon	
Phenothrin	270	69005	.....	Pyrethrin	Activated Carbon	
Tetramethrin	271	69003	.....	Pyrethrin	Activated Carbon	
Chloropropham	272	18301	.....	Carbamate	Hydrolysis	
Non-272 PAIs						
CFC 11		13	Non-Aromatic >100 .....	.....	Activated Carbon	
CFC 12		14	Non-Aromatic >100 .....	.....	Activated Carbon	
Gluconic acid		104	Non-Aromatic >100 .....	.....	Activated Carbon	
Polyethylene		152	Polymer .....	.....	Activated Carbon	
Hydrogen peroxide		595	Inorganic .....	.....	Activated Carbon	
Acrolein		701	Non-Aromatic <100 .....	.....	Activated Carbon	
Dimethyl-m-dioxan-4-ol acetate.		1001	Non-Aromatic >100 .....	.....	Activated Carbon	
Ethyl alcohol		1501	Non-Aromatic <100 .....	.....	Activated Carbon	I
Dodecyl alcohol		1509	Non-Aromatic >100 .....	.....	Activated Carbon	
Tetradecyl alcohol		1510	Non-Aromatic >100 .....	.....	Activated Carbon	
Rosin amine D acetate ..		4201	Non-Aromatic >100 .....	.....	Activated Carbon	
Ethylenediamine		4205	Non-Aromatic <100 .....	.....	Activated Carbon	I
Triethanolamine		4208	Non-Aromatic >100 .....	.....	Activated Carbon	
Dihydroabietylamine acetate.		4213	Non-Aromatic >100 .....	.....	Activated Carbon	
Amitrole		4401	Non-Aromatic <100 .....	.....	Activated Carbon	
Allyl isothiocyanate		4901	Non-Aromatic <100 .....	.....	Activated Carbon	
AMS		5501	Non-Aromatic >100 .....	.....	Activated Carbon	
Calcium sulfate		5602	Inorganic .....	.....	Activated Carbon	
Tartar emetic		6201	Non-Aromatic >100 .....	.....	Activated Carbon	
Diphenylstibene 2-ethylhexanoate.		6202	Aromatic .....	.....	Activated Carbon	
Streptomycin		6306	Non-Aromatic >100 .....	.....	Activated Carbon	
Oxytetracycline hydrochloride.		6308	Aromatic .....	.....	Activated Carbon	
Streptomycin sesquisulfate.		6310	Aromatic .....	.....	Activated Carbon	
Neomycin sulfate		6313	Aromatic .....	.....	Activated Carbon	
Antimycin A		6314	Aromatic .....	.....	Activated Carbon	
1,3-Dibromo-5,5-dimethylhydantoin.		6317	Non-Aromatic >100 .....	.....	Activated Carbon	
Calcium oxytetracycline .		6321	Aromatic .....	.....	Activated Carbon	
Espesol 3A		6601	Not Classified .....	.....	Activated Carbon	
Arsenic acid		6801	Metallic .....	.....	Precipitation	
Arsenic acid anhydride ..		6802	Metallic .....	.....	Precipitation	
Arsenous acid anhydride ..		7001	Metallic .....	.....	Precipitation	
Copper oxychloride		8001	Metallic .....	.....	Precipitation	
Basic cupric sulfate		8101	Metallic .....	.....	Precipitation	
Bromine		8701	Inorganic .....	.....	Activated Carbon	
Bromophos		8706	Aromatic .....	.....	Activated Carbon	
Benzyl bromoacetate		8710	Aromatic .....	.....	Activated Carbon	
Benzoic acid		9101	Aromatic .....	.....	Activated Carbon	
Benzyl diethyl ((2,6-xylylcarbamoyl)methyl) ammonium benzoat.		9106	Aromatic .....	.....	Activated Carbon	
Benzyl alcohol		9502	Aromatic .....	.....	Activated Carbon	
Ammonium oxalate		9603	Inorganic .....	.....	Activated Carbon	
Ammonium oxalate		9603	Non-Aromatic >100 .....	.....	Activated Carbon	
3-Chloro-p-toluidine hydrochloride.		9901	Aromatic .....	.....	Activated Carbon	I

TABLE C-1.—TABLE OF TREATABILITY INFORMATION FOR THE 272 PAIS AND THE NON-272 PAIS LISTED IN THE 1988 FATES DATABASE ¹—Continued

PAI name ²	PAI code ³	Shaughnessy code ⁴	PAI classification ⁵	Structural group ⁵	Treatment technology bases for cost ⁶	Inert ⁷
Butoxyethoxyethyl thiocyanate.	10002	Non-Aromatic >100 .....	.....	Activated Carbon	
2-Naphthol	10301	Aromatic .....	.....	Activated Carbon	
Boric acid	11001	Inorganic .....	.....	Activated Carbon	
Barium metaborate	11101	Inorganic .....	.....	Activated Carbon	
Borax	11102	Inorganic .....	.....	Activated Carbon	I
Boron sodium oxide (B8 Na ₂ O ₁₃), tetrahydrate (12280-03-4).	11103	Inorganic .....	.....	Activated Carbon	
Sodium metaborate (NaBO ₂).	11104	Inorganic .....	.....	Activated Carbon	
Boron sodium oxide (B8 Na ₂ O ₁₃) (12008-41-2).	11107	Inorganic .....	.....	Activated Carbon	
Boron sodium oxide (B ₄ Na ₂ O ₇), pentahydrate (12179-04-3).	11110	Inorganic .....	.....	Activated Carbon	
Boron sodium oxide (B ₄ Na ₂ O ₇) (1330-43-4).	11112	Inorganic .....	.....	Activated Carbon	
Polybutene	11402	Polymer .....	.....	Activated Carbon	
Polyisobutylene	11403	Polymer .....	.....	Activated Carbon	
Butyl cellosolve	11501	Non-Aromatic >100 .....	.....	Activated Carbon	
Ethanolamine	11601	Non-Aromatic <100 .....	.....	Activated Carbon	I
Butoxypolypropylene glycol.	11901	Polymer .....	.....	Activated Carbon	
Neburon (ANSI)	12001	Aromatic .....	.....	Activated Carbon	
Methyltrimethylenedioxybis(4-methyl-1,3,2-dioxaborinane).	12401	Non-Aromatic >100 .....	.....	Activated Carbon	
Oxybis(4,4,6-trimethyl-1,3,2-dioxaborinane).	12402	Non-Aromatic >100 .....	.....	Activated Carbon.	
Cadmium chloride	12902	Metallic .....	.....	Precipitation	
Lead arsenate, basic	13502	Metallic .....	.....	Precipitation	
Lead arsenate	13503	Metallic .....	.....	Precipitation	
Sodium arsenate	13505	Metallic .....	.....	Precipitation	
Sodium arsenite	13603	Metallic .....	.....	Precipitation	
Potassium bromide	13903	Inorganic .....	.....	Activated Carbon	
Sodium chloride	13905	Inorganic .....	.....	Activated Carbon	I
Aluminum sulfate	13906	Inorganic .....	.....	Activated Carbon	
Sodium bromide	13907	Inorganic .....	.....	Activated Carbon	
Camphor	15602	Non-Aromatic >100 .....	.....	Activated Carbon	
Carbon	16001	Inorganic .....	.....	Activated Carbon	I
Carbon disulfide	16401	Inorganic .....	.....	Activated Carbon	
Carbon tetrachloride	16501	Non-Aromatic >100 .....	.....	Activated Carbon	
Dry Ice	16601	Inorganic .....	.....	Activated Carbon	
Barban (ANSI)	17601	Aromatic .....	.....	Activated Carbon	
Chloro-2-propenyl)-3,5,7, triaza-1-azoniatricyclo (3.3.1.1(sup.	17902	Non-Aromatic >100 .....	.....	Activated Carbon	
Chlormequat chloride	18101	Non-Aromatic >100 .....	.....	Activated Carbon	
Chloromethoxypropylmercuric acetate.	18401	Metallic .....	.....	Precipitation	
Allidochlor	19301	Non-Aromatic >100 .....	.....	Activated Carbon	
Chlorine	20501	Inorganic .....	.....	Activated Carbon.	
Sodium chlorite	20502	Inorganic .....	.....	Activated Carbon	
Chlorine dioxide	20503	Inorganic .....	.....	Activated Carbon	
Bromine chloride	20504	Inorganic .....	.....	Activated Carbon	
Chromic acid	21101	Metallic .....	.....	Precipitation	
Chromic oxide	21103	Metallic .....	.....	Precipitation	
Citric acid	21801	Non-Aromatic >100 .....	.....	Activated Carbon	
Cresol (unspec) (Cresylic acid).	22101	Aromatic .....	.....	Activated Carbon	
Cresol	22102	Aromatic .....	.....	Activated Carbon	
Copper (metallic)	22501	Metallic .....	.....	Precipitation	
Copper ammonium carbonate.	22703	Metallic .....	.....	Precipitation	
Copper carbonate	22901	Metallic .....	.....	Precipitation	

TABLE C-1.—TABLE OF TREATABILITY INFORMATION FOR THE 272 PAIS AND THE NON-272 PAIS LISTED IN THE 1988 FATES DATABASE ¹—Continued

PAI name ²	PAI code ³	Shaughnessy code ⁴	PAI classification ⁵	Structural group ⁵	Treatment technology bases for cost ⁶	Inert ⁷
Copper hydroxide	23401	Metallic .....	.....	Precipitation	
Copper chloride hydroxide (Cu ₂ Cl(OH) ₃).	23501	Metallic .....	.....	Precipitation	
Copper oxychloride sulfate.	23503	Metallic .....	.....	Precipitation	
Copper sulfate	24401	Metallic .....	.....	Precipitation	
Copper (from triethanolamine complex).	24403	Metallic .....	.....	Precipitation	
Copper as metallic (in the form of chelates of copper citrat.	24405	Metallic .....	.....	Precipitation	
Copper as elemental from copper—ethylenediamine complex.	24407	Metallic .....	.....	Precipitation	
Copper sulfate (anhydrous).	24408	Metallic .....	.....	Precipitation	
Copper(I) oxide	25601	Metallic .....	.....	Precipitation	
Cuprous thiocyanate	25602	Metallic .....	.....	Precipitation	
Cyclohexane	25901	Non-Aromatic <100 .....	.....	Activated Carbon	
Cyclohexanone	25902	Non-Aromatic <100 .....	.....	Activated Carbon	
Dichlobenil	27401	Aromatic .....	.....	Activated Carbon	
Dimethyl phthalate	28002	Aromatic .....	.....	Activated Carbon	I
Dichloro-5,5-dimethylhydantoin.	28501	Non-Aromatic >100 .....	.....	Activated Carbon	
Diquat dibromide	32201	Aromatic .....	.....	Activated Carbon	
Dimethrin (ANSI)	34101	Non-Aromatic >100 .....	.....	Activated Carbon	
Dicapthon	34502	Aromatic .....	.....	Activated Carbon	
Ziram, cyclohexylamine complex.	34806	Non-Aromatic >100 .....	.....	Activated Carbon	
Butyl dimethyl trithioper oxycarbamate.	34807	Non-Aromatic >100 .....	.....	Activated Carbon	
Ferric sulfate	34902	Inorganic .....	.....	Activated Carbon	
Daminozide	35101	Non-Aromatic >100 .....	.....	Activated Carbon	
Bis(trichloro methyl) sulfone.	35601	Non-Aromatic >100 .....	.....	Activated Carbon	
Bis(bromoacet oxy)-2-butene.	35605	Non-Aromatic >100 .....	.....	Activated Carbon	
Dazomet, sodium salt	35607	Non-Aromatic >100 .....	.....	Activated Carbon	
Butonate	35701	Non-Aromatic >100 .....	.....	Activated Carbon	
Trifluoro-4-nitro-m-cresol (**)= alpha, alpha, alpha.	36201	Aromatic .....	.....	Activated Carbon	
Triethanolamine dinoseb (2-sec-Butyl-4,6-dinitrophenol).	37506	Aromatic .....	.....	Activated Carbon	
Sodium 4,6-dinitro-o-cresylate.	37508	Non-Aromatic >100 .....	.....	Activated Carbon	
Dinitrophenol	37509	Aromatic .....	.....	Activated Carbon	
Alkanol* amine dinoseb (2-sec-butyl-4,6-dinitrophenol) *(s).	37511	Aromatic .....	.....	Activated Carbon	
Sodium dinoseb (2-sec-Butyl-4,6-dinitrophenol).	37512	Aromatic .....	.....	Activated Carbon	
Ethylenediaminetetraacetic acid.	39101	Non-Aromatic >100 .....	.....	Activated Carbon	I
Ethylenediaminetetraacetic acid, sodium salt.	39103	Non-Aromatic >100 .....	.....	Activated Carbon	
Nitrilotriacetic acid, trisodium salt.	39106	Non-Aromatic >100 .....	.....	Activated Carbon	
Tetrasodium ethylenediaminetetraacetate.	39107	Non-Aromatic >100 .....	.....	Activated Carbon	I
Trisodium (2-hydroxyethyl) ethylenediaminetriacetate.	39109	Non-Aromatic >100 .....	.....	Activated Carbon	
Ethylenediaminetetraacetic acid, trisodium salt.	39110	Non-Aromatic >100 .....	.....	Activated Carbon	I

TABLE C-1.—TABLE OF TREATABILITY INFORMATION FOR THE 272 PAIS AND THE NON-272 PAIS LISTED IN THE 1988 FATES DATABASE ¹—Continued

PAI name ²	PAI code ³	Shaughnessy code ⁴	PAI classification ⁵	Structural group ⁵	Treatment technology bases for cost ⁶	Inert ⁷
Tripotassium ethylenediamine tetraacetate.	39113	Non-Aromatic >100 .....	.....	Activated Carbon	I
Disodium di(2-hydroxyethyl) ethylenediamine diacetate.	39114	Non-Aromatic >100 .....	.....	Activated Carbon	
Disodium ethylene diaminetetraacetate.	39115	Non-Aromatic >100 .....	.....	Activated Carbon	I
Ammonium ethylene diaminetetraacetate.	39117	Non-Aromatic >100 .....	.....	Activated Carbon	
Pentasodium diethylenetriaminepentaacetate.	39120	Non-Aromatic >100 .....	.....	Activated Carbon	
Sodium dihydroxyethylglycine.	39122	Non-Aromatic >100 .....	.....	Activated Carbon	I
Ethyl-1,3-hexanediol	41001	Non-Aromatic >100 .....	.....	Activated Carbon	
Ethylene	41901	Non-Aromatic <100 .....	.....	Activated Carbon	
EDC	42003	Non-Aromatic <100 .....	.....	Activated Carbon	
Methylene chloride	42004	Non-Aromatic <100 .....	.....	Activated Carbon	
Methoxyethanol	42202	Non-Aromatic <100 .....	.....	Activated Carbon	
Ethylene glycol	42203	Non-Aromatic <100 .....	.....	Activated Carbon	
Butylene glycol	42205	Non-Aromatic <100 .....	.....	Activated Carbon	
Ethylene oxide	42301	Non-Aromatic <100 .....	.....	Activated Carbon	
Copper(II) oxide	42401	Metallic .....	.....	Precipitation	
Cuprous and cupric oxide, mixed.	42403	Metallic .....	.....	Precipitation	
Propylene oxide	42501	Non-Aromatic <100 .....	.....	Activated Carbon	
Formaldehyde	43001	Non-Aromatic <100 .....	.....	Activated Carbon	
Paraformaldehyde	43002	Polymer .....	.....	Activated Carbon	
Bis (2-butylene) tetrahydro-2-furaldehyde.	43302	Aromatic .....	.....	Activated Carbon	
Gibberellic acid	43801	Aromatic .....	.....	Activated Carbon	
Potassium gibberellate	43802	Non-Aromatic >100 .....	.....	Activated Carbon	
Glutaral	43901	Non-Aromatic >100 .....	.....	Activated Carbon	
Copper citrate	44005	Metallic .....	.....	Precipitation	
Sodium diacetate	44008	Non-Aromatic >100 .....	.....	Activated Carbon	I
Acetone	44101	Non-Aromatic <100 .....	.....	Activated Carbon	I
Methyl nonyl ketone	44102	Non-Aromatic >100 .....	.....	Activated Carbon	
Methyl-2-pentanone	44105	Non-Aromatic >100 .....	.....	Activated Carbon	
Monosodium 2, 2'-methylenebis(3,4,6-trichlorophenolate).	44902	Aromatic .....	.....	Activated Carbon	
Potassium 2,2'-methylene bis(3,4,6-trichlorophenolate).	44904	Aromatic .....	.....	Activated Carbon	
Hexachloro epoxy octahydro-endo, exodimethanone phthalene 85%.	45001	Non-Aromatic >100 .....	.....	Activated Carbon	
Chlorhexidine diacetate	45502	Aromatic .....	.....	Activated Carbon	
Chlorhexidine digluconate.	45504	Aromatic .....	.....	Activated Carbon	
Hydrocyanic acid	45801	Inorganic .....	.....	Activated Carbon	
Hydroxyethyl octyl sulfide.	46301	Aromatic .....	.....	Activated Carbon	
Heptadecenyl-2-(2-hydroxyethyl)-2-imidazolium chloride.	46608	Aromatic .....	.....	Activated Carbon	
Hydroxyethyl)-2-alkyl-2-imidazoline (as in fatty acids of t.	46609	Aromatic .....	.....	Activated Carbon	
IBA	46701	Aromatic .....	.....	Activated Carbon	
Dihydropyrone	46801	Non-Aromatic >100 .....	.....	Activated Carbon	
Butoxy polypropoxy polyethoxy ethanol-iodine complex.	46901	Polymer .....	.....	Activated Carbon	
Nonyl hexoxypolyethoxyethanol-iodine complex.	46903	Polymer .....	.....	Activated Carbon	I

TABLE C-1.—TABLE OF TREATABILITY INFORMATION FOR THE 272 PAIS AND THE NON-272 PAIS LISTED IN THE 1988 FATES DATABASE ¹—Continued

PAI name ²	PAI code ³	Shaughnessy code ⁴	PAI classification ⁵	Structural group ⁵	Treatment technology bases for cost ⁶	Inert ⁷
Polyethoxypolypropoxyetanol—iodine complex.	46904	Polymer .....	.....	Activated Carbon	
Iodine	46905	Inorganic .....	.....	Activated Carbon	
Use code no. 046904	46909	Polymer .....	.....	Activated Carbon	
Iodine—potassium iodide complex.	46917	Inorganic .....	.....	Activated Carbon	
Alkyl-omega-hydroxypoly (oxyethylene)—iodine complex *(100%.	46921	Polymer .....	.....	Activated Carbon	
Isopropanol	47501	Non-Aromatic <100 .....	.....	Activated Carbon	I
Lead acetate	48001	Metallic .....	.....	Precipitation	
Ferrous sulfate heptahydrate.	50502	Inorganic .....	.....	Activated Carbon	
Nickel sulfate hexahydrate.	50505	Metallic .....	.....	Precipitation	
Ferrous ammonium sulfate.	50506	Inorganic .....	.....	Activated Carbon	
Ferrous sulfate monohydrate.	50507	Inorganic .....	.....	Activated Carbon.	
Maleic hydrazide, diethanolamine salt.	51502	Non-Aromatic >100 .....	.....	Activated Carbon	
Maleic hydrazide, potassium salt.	51503	Non-Aromatic >100 .....	.....	Activated Carbon	
Menthol	51601	Non-Aromatic >100 .....	.....	Activated Carbon	
Sodium 2-mercapto benzothiolate.	51704	Aromatic .....	.....	Activated Carbon	
Mercuric chloride	52001	Metallic .....	.....	Precipitation	
Mercurous chloride	52201	Metallic .....	.....	Precipitation	
Met aldehyde	53001	Non-Aromatic >100 .....	.....	Activated Carbon	
Methyl alcohol	53801	Non-Aromatic <100 .....	.....	Activated Carbon	
Methylated naphthalenes.	54002	Aromatic .....	.....	Activated Carbon	
Chloro-2-(2,4-dichlorophenoxy) phenol.	54901	Aromatic .....	.....	Activated Carbon	
Sodium 2,2'-methylenebis (4-chlorophenate).	55005	Aromatic .....	.....	Activated Carbon	
Naphthalene	55801	Aromatic .....	.....	Activated Carbon	
NAD	56001	Aromatic .....	.....	Activated Carbon	
NAA (1-Naphthaleneacetic Acid).	56002	Aromatic .....	.....	Activated Carbon	
Potassium 1-naphthaleneacetate.	56003	Aromatic .....	.....	Activated Carbon	
Ammonium 1-naphthaleneacetate.	56004	Aromatic .....	.....	Activated Carbon	
Sodium 1-naphthaleneacetate.	56007	Aromatic .....	.....	Activated Carbon	
Ethyl 1-naphthaleneacetate.	56008	Aromatic .....	.....	Activated Carbon	
Nitrophenol	56301	Aromatic .....	.....	Activated Carbon	
Nicotine	56702	Aromatic .....	.....	Activated Carbon	
Carbopenthothion (ANSI).	58102	Aromatic .....	.....	Activated Carbon	
Sodium 5-chloro-2-(4-chloro-2-(3-(3,4-dichlorophenyl)ureido).	58802	Aromatic .....	.....	Activated Carbon	
Monocrotophos	58901	Non-Aromatic >100 .....	.....	Activated Carbon	
Chlordimeform	59701	Aromatic .....	.....	Activated Carbon	
Chlordimeform hydrochloride.	59702	Aromatic .....	.....	Activated Carbon	
Thiabendazole hypophosphite.	60102	Aromatic .....	.....	Activated Carbon	
Hexachlorobenzene	61001	Aromatic .....	.....	Activated Carbon	
Methyl 4-hydroxybenzoate.	61201	Aromatic .....	.....	Activated Carbon	
Butyl paraben	61205	Aromatic .....	.....	Activated Carbon	
Paraquat dichloride	61601	Aromatic .....	.....	Activated Carbon	

TABLE C-1.—TABLE OF TREATABILITY INFORMATION FOR THE 272 PAIS AND THE NON-272 PAIS LISTED IN THE 1988 FATES DATABASE ¹—Continued

PAI name ²	PAI code ³	Shaughnessy code ⁴	PAI classification ⁵	Structural group ⁵	Treatment technology bases for cost ⁶	Inert ⁷
Potassium 2-benzyl-4-chlorophenate.	62202	Aromatic .....	.....	Activated Carbon	
Sodium 2-benzyl-4-chlorophenate.	62203	Aromatic .....	.....	Activated Carbon	
Chloro-4-phenylphenol	62206	Aromatic .....	.....	Activated Carbon	
Chloro-2-phenylphenol	62208	Aromatic .....	.....	Activated Carbon	
Chloro-2-biphenylol, potassium salt.	62209	Aromatic .....	.....	Activated Carbon	
Chloro-2-phenylphenol	62210	Aromatic .....	.....	Activated Carbon	
Chloro-2-phenylphenol, potassium salt.	62211	Aromatic .....	.....	Activated Carbon	
Peroxyacetic acid	63201	Non-Aromatic <100 .....	.....	Activated Carbon	
Sodium phenate	64002	Aromatic .....	.....	Activated Carbon	
Amylphenol	64101	Aromatic .....	.....	Activated Carbon	
Sodium o-phenylphenate	64104	Aromatic .....	.....	Activated Carbon	
Phenylphenol, potassium salt.	64108	Aromatic .....	.....	Activated Carbon	
Amylphenol, potassium salt.	64111	Aromatic .....	.....	Activated Carbon	
Amylphenol, sodium salt	64112	Aromatic .....	.....	Activated Carbon	
Butylphenol, sodium salt	64115	Aromatic .....	.....	Activated Carbon	
Ammonium 2-phenylphenate.	64116	Aromatic .....	.....	Activated Carbon	
Chloro-2-cyclopentylphenol.	64202	Aromatic .....	.....	Activated Carbon	
Bithionolate sodium	64203	Aromatic .....	.....	Activated Carbon	
Chloro-3-cresol	64206	Aromatic .....	.....	Activated Carbon	
Sodium 2,4,5-trichlorophenate.	64217	Aromatic .....	.....	Activated Carbon	
Aluminum phosphide	66501	Inorganic .....	.....	Activated Carbon	
Phosphorus	66502	Inorganic .....	.....	Activated Carbon	
Magnesium phosphide	66504	Inorganic .....	.....	Activated Carbon	
1-(Alkyl* amino)-3-aminopropane *(Fatty acids of coconut oil).	67301	Non-Aromatic >100 .....	.....	Activated Carbon	
Alkyl* amino)-3- amino propane *(53% C12, 19% C14, 8.5% C16, 7% C8.	67305	Non-Aromatic >100 .....	.....	Activated Carbon	
Alkyl* amino)-3-aminopropane benzoate* (fatty acids of coconut.	67307	Aromatic .....	.....	Activated Carbon	
Alkyl* dipropoxyamine *(47% C12, 18% C14, 10% C18, 9% C10, 8.	67308	Non-Aromatic >100 .....	.....	Activated Carbon	
Alkyl* amino)-3-aminopropane hydroxy acetate* (acids of coconut.	67309	Non-Aromatic >100 .....	.....	Activated Carbon	
Alkyl* amino)-3-amino propane* (42% C12, 26% C18, 15% C14, 8% C16.	67310	Non-Aromatic >100 .....	.....	Activated Carbon	
Alkyl*amino) -3-aminopropane diacetate* (fatty acids of coconu.	67313	Non-Aromatic >100 .....	.....	Activated Carbon	
Octadecenyl -1,3-propanediamine monogluconate.	67316	Non-Aromatic >100 .....	.....	Activated Carbon	
Alkyl* amine acetate *(5% C8, 7% C10, 54% C12, 19% C14, 8% C16.	67329	Non-Aromatic >100 .....	.....	Activated Carbon	
Pindone sodium salt	67704	Aromatic .....	.....	Activated Carbon	
Diphacinone, sodium salt.	67705	Aromatic .....	.....	Activated Carbon	

TABLE C-1.—TABLE OF TREATABILITY INFORMATION FOR THE 272 PAIS AND THE NON-272 PAIS LISTED IN THE 1988 FATES DATABASE ¹—Continued

PAI name ²	PAI code ³	Shaughnessy code ⁴	PAI classification ⁵	Structural group ⁵	Treatment technology bases for cost ⁶	Inert ⁷
Isovaleryl-1,3-indandione, calcium salt.	67706	Aromatic .....	.....	Activated Carbon	
Methyl isothiocyanate	68103	Non-Aromatic <100 .....	.....	Activated Carbon	
Potassium dichromate	68302	Inorganic .....	.....	Activated Carbon	
Sodium chromate	68303	Inorganic .....	.....	Activated Carbon	
Sodium dichromate	68304	Metallic .....	.....	Precipitation	
Potassium permanganate.	68501	Inorganic .....	.....	Activated Carbon	
Propylene glycol	68603	Non-Aromatic <100 .....	.....	Activated Carbon	
Dipropylene glycol	68604	Non-Aromatic <100 .....	.....	Activated Carbon	
Alkenyl* dimethyl ethyl ammonium bromide* (90% C18', 10% C16').	69102	Non-Aromatic >100 .....	.....	Activated Carbon	
Alkyl*-N-ethyl morpholinium ethyl sulfate *(92% C18, 8% C16).	69113	Non-Aromatic >100 .....	.....	Activated Carbon	
Alkyl* isoquinolinium bromide *(50% C12, 30% C14, 17% C16, 3.	69115	Aromatic .....	.....	Activated Carbon	
Alkyl* methyl isoquinolinium chloride *(55% C14, 12% C12, 17% C.	69116	Aromatic .....	.....	Activated Carbon	
Cetyl trimethyl ammonium bromide.	69117	Non-Aromatic >100 .....	.....	Activated Carbon	
Cetyl pyridinium bromide	69118	Aromatic .....	.....	Activated Carbon	
Dodecyl dimethyl benzyl ammonium naphthenate.	69127	Aromatic .....	.....	Activated Carbon	
Alkyl* dimethyl ethylbenzyl ammonium cyclohexyl sulfamate *5.	69135	Aromatic .....	.....	Activated Carbon	
Alkyl* dimethyl ethyl ammonium bromide *(90% C14, 5% C16, 5%.	69146	Aromatic .....	.....	Activated Carbon	
Alkyl*-N-ethyl morpholinium ethyl sulfate *(66% C18, 25% C16,.	69147	Non-Aromatic >100 .....	.....	Activated Carbon	
Alkyl* trimethyl ammonium bromide *(95% C14, 5% C16).	69153	Non-Aromatic >100 .....	.....	Activated Carbon	
Benzyl ((dodecylcarbamoyl methyl) dimethyl ammonium chloride.	69159	Aromatic .....	.....	Activated Carbon	
Cetyl pyridinium chloride	69160	Aromatic .....	.....	Activated Carbon	
Alkyl* dimethyl ethyl ammonium bromide *(85% C16, 15% C18).	69186	Non-Aromatic >100 .....	.....	Activated Carbon	
Cetyl-N-ethylmorpholinium ethyl sulfate.	69187	Non-Aromatic >100 .....	.....	Activated Carbon	
Use code no. 069102 (Alkenyl* Dimethyl Ammonium bromide).	69198	Non-Aromatic >100 .....	.....	Activated Carbon	
p-Aminopyridine	69201	Aromatic .....	.....	Activated Carbon	
Nitrapyrin (ANSI)	69203	Aromatic .....	.....	Activated Carbon	
Alkyl pyridines	69205	Aromatic .....	.....	Activated Carbon	
Pyrazon (ANSI)	69601	Non-Aromatic >100 .....	.....	Activated Carbon	
Capsaicin (in oleoresin of capsicum).	70701	Aromatic .....	.....	Activated Carbon	
Ryanodine	71502	Aromatic .....	.....	Activated Carbon	
Silver	72501	Inorganic .....	.....	Activated Carbon	
Silver chloride	72506	Inorganic .....	.....	Activated Carbon	
Silica gel	72602	Inorganic .....	.....	Activated Carbon	
Sodium metasilicate	72604	Inorganic .....	.....	Activated Carbon	

TABLE C-1.—TABLE OF TREATABILITY INFORMATION FOR THE 272 PAIS AND THE NON-272 PAIS LISTED IN THE 1988 FATES DATABASE ¹—Continued

PAI name ²	PAI code ³	Shaughnessy code ⁴	PAI classification ⁵	Structural group ⁵	Treatment technology bases for cost ⁶	Inert ⁷
Silicon dioxide	72605	Inorganic .....	.....	Activated Carbon	
Silver thuronium acrylate co-polymer.	72701	Polymer .....	.....	Activated Carbon	
Sodium chlorate	73301	Inorganic .....	.....	Activated Carbon	
Potassium carbonate	73504	Inorganic .....	.....	Activated Carbon	
Sodium carbonate	73506	Inorganic .....	.....	Activated Carbon	
Sodium sesquicarbonate	73507	Non-Aromatic >100 .....	.....	Activated Carbon	
Calcium cyanide	74001	Inorganic .....	.....	Activated Carbon	
Sodium cyanide	74002	Inorganic .....	.....	Activated Carbon	
Cryolite	75101	Non-Aromatic >100 .....	.....	Activated Carbon	
Sodium fluoride	75202	Inorganic .....	.....	Activated Carbon	
Ammonium fluosilicate	75301	Inorganic .....	.....	Activated Carbon	
Sodium fluosilicate	75306	Inorganic .....	.....	Activated Carbon	
Potassium hydroxide (K(OH)).	75602	Inorganic .....	.....	Activated Carbon	
Sodium hydroxide	75603	Inorganic .....	.....	Activated Carbon	
Calcium oxide	75604	Inorganic .....	.....	Activated Carbon	
Potassium iodide	75701	Inorganic .....	.....	Activated Carbon	
Potassium tetrathionate	75903	Non-Aromatic >100 .....	.....	Activated Carbon	
Potassium nitrate	76103	Inorganic .....	.....	Activated Carbon	
Sodium nitrate	76104	Inorganic .....	.....	Activated Carbon	
Sodium nitrite	76204	Inorganic .....	.....	Activated Carbon	
Sodium phosphate (Na ₂ H (PO ₄)).	76403	Inorganic .....	.....	Activated Carbon	I
Sodium tripolyphosphate	76404	Polymer .....	.....	Activated Carbon	I
Trisodium phosphate	76406	Inorganic .....	.....	Activated Carbon	I
Monosodium phosphate	76409	Inorganic .....	.....	Activated Carbon	I
Benzenesulfonamide, N-chloro-, sodium salt.	76501	Aromatic .....	.....	Activated Carbon	
Methyl salicylate	76601	Aromatic .....	.....	Activated Carbon	I
Salicylic acid	76602	Aromatic .....	.....	Activated Carbon	
Ethoxyethyl p-methoxycinnamate.	76604	Aromatic .....	.....	Activated Carbon	
Calcium polysulfide	76702	Polymer .....	.....	Activated Carbon	
Strychnine	76901	Aromatic .....	.....	Activated Carbon	
Strychnine sulfate	76902	Aromatic .....	.....	Activated Carbon	
Trichloromelamine	77101	Aromatic .....	.....	Activated Carbon	
Niclosamide	77401	Aromatic .....	.....	Activated Carbon	
Dibromosalicylanilide	77402	Aromatic .....	.....	Activated Carbon	
Tribromsalan	77404	Aromatic .....	.....	Activated Carbon	
Dibromosalicylanilide	77405	Aromatic .....	.....	Activated Carbon	
Chlorosalicylanilide	77406	Aromatic .....	.....	Activated Carbon	
Sulfur	77501	Inorganic .....	.....	Activated Carbon	
Sulfur dioxide ⁷	7601	Inorganic .....	.....	Activated Carbon	
Sulfaquinoxaline	7901	Aromatic .....	.....	Activated Carbon	
Sulfacetamide	7904	Aromatic .....	.....	Activated Carbon	
Sulfuric acid	78001	Inorganic .....	.....	Activated Carbon	
Sulfuryl fluoride	78003	Non-Aromatic >100 .....	.....	Activated Carbon	
Sodium bisulfite	78201	Inorganic .....	.....	Activated Carbon	
Tetrachloroethylene	78501	Non-Aromatic >100 .....	.....	Activated Carbon	
Ethoxylated isooctylphenol.	79004	Aromatic .....	.....	Activated Carbon	
Polyoxyethylene sorbitol, mixed ether ester.	79007	Polymer .....	.....	Activated Carbon	I
Sodium dodecylbenzene sulfonate.	79010	Aromatic .....	.....	Activated Carbon	
Sodium lauryl sulfate	79011	Non-Aromatic >100 .....	.....	Activated Carbon	I
Lauric diethanolamide	79018	Non-Aromatic >100 .....	.....	Activated Carbon	
Sodium xylenesulfonate	79019	Aromatic .....	.....	Activated Carbon	I
Triethanolamine dodecylbenzene sulfonate.	79020	Aromatic .....	.....	Activated Carbon	I
Potassium myristate	79022	Non-Aromatic >100 .....	.....	Activated Carbon	I
Potassium ricinoleate	79023	Non-Aromatic >100 .....	.....	Activated Carbon	I
Triethanolamine oleate	79025	Non-Aromatic >100 .....	.....	Activated Carbon	
Diocetyl sodium sulfosuccinate.	79027	Non-Aromatic >100 .....	.....	Activated Carbon	
Use code no. 069179	79036	Not Classified .....	.....	Activated Carbon	
Decanol	79038	Non-Aromatic >100 .....	.....	Activated Carbon	

TABLE C-1.—TABLE OF TREATABILITY INFORMATION FOR THE 272 PAIS AND THE NON-272 PAIS LISTED IN THE 1988 FATES DATABASE ¹—Continued

PAI name ²	PAI code ³	Shaughnessy code ⁴	PAI classification ⁵	Structural group ⁵	Treatment technology bases for cost ⁶	Inert ⁷
Alkyl* diethanolamide *(70% C12, 30% C14).	79045	Non-Aromatic >100 .....	.....	Activated Carbon	
Triethanolamine lauryl sulfate.	79046	Non-Aromatic >100 .....	.....	Activated Carbon	I
Toluene sulfonic acid	79058	Aromatic .....	.....	Activated Carbon	I
Sulfonated oleic acid, sodium salt.	79064	Non-Aromatic >100 .....	.....	Activated Carbon	
Tetradecyl formate	79069	Non-Aromatic >100 .....	.....	Activated Carbon	
Polyoxyethylene sorbitol oleate-laurate.	79075	Polymer .....	.....	Activated Carbon	
Polyethoxylated stearylamine.	79094	Polymer .....	.....	Activated Carbon	
Capric diethanolamide	79099	Non-Aromatic >100 .....	.....	Activated Carbon	
Limonene	79701	Aromatic .....	.....	Activated Carbon	I
Calcium thiosulfate	80101	Inorganic .....	.....	Activated Carbon	
Ammonium thiosulfate	80103	Inorganic .....	.....	Activated Carbon	
Thymoxydi chloroacetic acid.	80401	Aromatic .....	.....	Activated Carbon	
Thymol	80402	Aromatic .....	.....	Activated Carbon	
Sodium trichloroacetate	81001	Non-Aromatic >100 .....	.....	Activated Carbon	
Trichloroacetic acid	81002	Non-Aromatic >100 .....	.....	Activated Carbon	
Trichloroethane	81201	Non-Aromatic >100 .....	.....	Activated Carbon	I
Use code no. 082053	82072	Not Classified .....	.....	Activated Carbon	
Use code no. 082555	82572	Not Classified .....	.....	Activated Carbon	
Hexahydro-1,3,5-tris(2- hydroxyethyl)-s-tri- azine.	83301	Aromatic .....	.....	Activated Carbon	
Triethylene glycol	83501	Non-Aromatic >100 .....	.....	Activated Carbon	
2-(Hydroxymethyl)-2- nitro-1,3-propanediol.	83902	Non-Aromatic >100 .....	.....	Activated Carbon	
Bomyl	84201	Non-Aromatic >100 .....	.....	Activated Carbon	
Turpentine	84501	Non-Aromatic >100 .....	.....	Activated Carbon	
Chloro-1- (2,5- dichlorophenyl) vinyl) O,O-diethyl phosphorothi.	84901	Aromatic .....	.....	Activated Carbon	
Undecylenic acid	85501	Non-Aromatic >100 .....	.....	Activated Carbon	I
Chloroxyleneol	86801	Aromatic .....	.....	Activated Carbon	
Xylene	86802	Aromatic .....	.....	Activated Carbon	I
Zinc chloride	87801	Metallic .....	.....	Precipitation	
Zinc 2-pyridinethiol-1- oxide.	88002	Metallic .....	.....	Precipitation	
Hydroxy-2-(1H)- pyridinethione, sodium salt.	88004	Aromatic .....	.....	Activated Carbon	
Omadine TBAO	88005	Aromatic .....	.....	Activated Carbon	
Zinc naphthenate	88301	Metallic .....	.....	Precipitation	
Zinc oxide	88502	Metallic .....	.....	Precipitation	
Zinc phosphide (Zn3P2)	88601	Metallic .....	.....	Precipitation	
Zinc phenol sulfonate	89002	Metallic .....	.....	Precipitation	
Zinc sulfate, basic	89101	Metallic .....	.....	Precipitation	
Dimetilan	90101	Non-Aromatic >100 .....	.....	Activated Carbon	
Carboxin	90201	Non-Aromatic >100 .....	.....	Activated Carbon	
Oxycarboxin	90202	Aromatic .....	.....	Activated Carbon	
Benzocaine	97001	Aromatic .....	.....	Activated Carbon	
Piperalin	97003	Aromatic .....	.....	Activated Carbon	
Tetracaine hydrochloride	97005	Aromatic .....	.....	Activated Carbon	
Formetanate hydro- chloride.	97301	Non-Aromatic >100 .....	.....	Activated Carbon	
Dodecyl benzene sul- fonic acid.	98002	Aromatic .....	.....	Activated Carbon	I
Azacosterol HCl	98101	Non-Aromatic >100 .....	.....	Activated Carbon	
Use code no. 039502	98401	Not Classified .....	.....	Activated Carbon	
Ammonium alum	98501	Inorganic .....	.....	Activated Carbon	
Bismuth subgallate	98601	Metallic .....	.....	Precipitation	
Chlorflurenol, methyl ester.	98801	Non-Aromatic >100 .....	.....	Activated Carbon	
Benzisothiazolin-3-one	98901	Aromatic .....	.....	Activated Carbon	

TABLE C-1.—TABLE OF TREATABILITY INFORMATION FOR THE 272 PAIS AND THE NON-272 PAIS LISTED IN THE 1988 FATES DATABASE ¹—Continued

PAI name ²	PAI code ³	Shaughnessy code ⁴	PAI classification ⁵	Structural group ⁵	Treatment technology bases for cost ⁶	Inert ⁷
Methyl 2-benzimidazolecarbamate phosphate.	99102	Aromatic .....	.....	Activated Carbon	
Ethephon	99801	Non-Aromatic >100 .....	.....	Activated Carbon	
Pentanethiol	100701	Non-Aromatic >100 .....	.....	Activated Carbon	
Nitrobutyl morpholine	100801	Aromatic .....	.....	Activated Carbon	
Ethyl-2-nitrotri(methyl-ene) dimorpholine.	100802	Aromatic .....	.....	Activated Carbon	
Tolyl diiodomethyl sulfone.	101002	Aromatic .....	.....	Activated Carbon	
Isobutyric acid	101502	Non-Aromatic <100 .....	.....	Activated Carbon	
Dibromo-3-nitrilopropionamide.	101801	Non-Aromatic >100 .....	.....	Activated Carbon	
Polyethoxylated oleylamine.	101901	Non-Aromatic >100 .....	.....	Activated Carbon	
Dinitramine (ANSI)	102301	Aromatic .....	.....	Activated Carbon	
Phenylethyl propionate	102601	Aromatic .....	.....	Activated Carbon	
Eugenol	102701	Aromatic .....	.....	Activated Carbon	
Tricosene	103201	Non-Aromatic >100 .....	.....	Activated Carbon	
Tricosene	103202	Non-Aromatic >100 .....	.....	Activated Carbon	
Sodium 1,4',5'-trichloro-2'-(2,4,5-trichlorophenoxy) methanes.	104101	Aromatic .....	.....	Activated Carbon	
Hexahydro-1,3,5-tris(2-hydroxypropyl)-s-triazine.	105601	Aromatic .....	.....	Activated Carbon	
Methazole	106001	Aromatic .....	.....	Activated Carbon	
Difenzoquat methyl sulfate.	106401	Non-Aromatic >100 .....	.....	Activated Carbon	
Butralin	106501	Aromatic .....	.....	Activated Carbon	
Fosamine ammonium	106701	Non-Aromatic >100 .....	.....	Activated Carbon	
Asulam	106901	Aromatic .....	.....	Activated Carbon	
Sodium asulam	106902	Aromatic .....	.....	Activated Carbon	
Hydroxy methoxy methyl-1-aza-3,7-dioxabicyclo (3.3.0) octane.	107001	Non-Aromatic >100 .....	.....	Activated Carbon	
Hydroxy methyl-1-aza-3,7-dioxabicyclo (3.3.0) octane.	107002	Non-Aromatic >100 .....	.....	Activated Carbon	
Hydroxypoly (methyleneoxy)* methyl-1-aza-3,7-dioxabicyclo (3.3.0) octane.	107003	Non-Aromatic >100 .....	.....	Activated Carbon	
Chloro-2-methyl-3(2H)-isothiazolone.	107103	Non-Aromatic >100 .....	.....	Activated Carbon	
Methyl-3(2H)-isothiazolone.	107104	Non-Aromatic >100 .....	.....	Activated Carbon	
Trimethoxysilyl propyl dimethyl octadecyl ammonium chloride.	107401	Non-Aromatic >100 .....	.....	Activated Carbon	
Kinoprene	107502	Non-Aromatic >100 .....	.....	Activated Carbon	
Triforine (ANSI)	107901	Non-Aromatic >100 .....	.....	Activated Carbon	
Pirimiphos-methyl (ANSI).	108102	Aromatic .....	.....	Activated Carbon	
Thiobencarb	108401	Aromatic .....	.....	Activated Carbon	
Ancymidol (ANSI)	108601	Aromatic .....	.....	Activated Carbon	
Oxadiazon (ANSI)	109001	Aromatic .....	.....	Activated Carbon	
Mepiquat chloride	109101	Non-Aromatic >100 .....	.....	Activated Carbon	
Fluvalinate	109302	Aromatic .....	.....	Activated Carbon	
Chloro-N-(hydroxymethyl) acetamide.	109501	Non-Aromatic >100 .....	.....	Activated Carbon	
Dikegulac sodium	109601	Non-Aromatic >100 .....	.....	Activated Carbon	
Iprodione (ANSI)	109801	Aromatic .....	.....	Activated Carbon	
Phenylmethyl-9-(tetrahydro-2H-pyran-2-yl)-9H-purin amine.	110001	Aromatic .....	.....	Activated Carbon	
Prodiamine	110201	Aromatic .....	.....	Activated Carbon	
Erioglaucine	110301	Aromatic .....	.....	Activated Carbon	

TABLE C-1.—TABLE OF TREATABILITY INFORMATION FOR THE 272 PAIS AND THE NON-272 PAIS LISTED IN THE 1988 FATES DATABASE ¹—Continued

PAI name ²	PAI code ³	Shaughnessy code ⁴	PAI classification ⁵	Structural group ⁵	Treatment technology bases for cost ⁶	Inert ⁷
Tartrazine	110302	Aromatic .....	.....	Activated Carbon	
Dodemorpha acetate	110401	Non-Aromatic >100 .....	.....	Activated Carbon	
Ethofumesate (ANSI)	110601	Aromatic .....	.....	Activated Carbon	
Aldoxycarb (ANSI)	110801	Non-Aromatic >100 .....	.....	Activated Carbon	
Diclofop-methyl	110902	Aromatic .....	.....	Activated Carbon	
Bromo-1-(bromomethyl)- 1,3- propanedicar bonitrile.	111001	Non-Aromatic >100 .....	.....	Activated Carbon	
Poly (iminoimidocar bonyliminoimi docar bonyliminohexa meth- ylene).	111801	Polymer .....	.....	Activated Carbon	
Imazalil	111901	Aromatic .....	.....	Activated Carbon	
Bromadiolone	112001	Aromatic .....	.....	Activated Carbon	
Brodifacoum	112701	Aromatic .....	.....	Activated Carbon	
Bromethalin (ANSI)	112802	Aromatic .....	.....	Activated Carbon	
Fluridone (ANSI)	112900	Not Classified .....	.....	Activated Carbon	
Vinclozolin	113201	Aromatic .....	.....	Activated Carbon	
Metalaxyl	113501	Aromatic .....	.....	Activated Carbon	
Propetamphos (ANSI)	113601	Non-Aromatic >100 .....	.....	Activated Carbon	
Methyl-1-naphthyl) malei mide.	113701	Aromatic .....	.....	Activated Carbon	
Hexadecadien-1-yl ace- tate.	114101	Non-Aromatic >100 .....	.....	Activated Carbon	
Hexadecadien-1-yl ace- tate.	114102	Non-Aromatic >100 .....	.....	Activated Carbon	
Epoxy-2- methyloctadecane.	114301	Non-Aromatic >100 .....	.....	Activated Carbon	
Thiodicarb (ANSI)	114501	Non-Aromatic >100 .....	.....	Activated Carbon	
Dimethyloxazolidine (8CA & 9CA).	114801	Non-Aromatic >100 .....	.....	Activated Carbon	
Trimethyloxazolidine	114802	Non-Aromatic >100 .....	.....	Activated Carbon	
Hydroxy phenyl) oxoacetoxy droximic chloride.	114901	Aromatic .....	.....	Activated Carbon	
EEEBC	115001	Not Classified .....	.....	Activated Carbon	
MDM Hydantoin	115501	Non-Aromatic >100 .....	.....	Activated Carbon	
DMDM Hydantoin	115502	Non-Aromatic >100 .....	.....	Activated Carbon	
Triclopyr (ANSI)	116001	Aromatic .....	.....	Activated Carbon	
Triethylamine triclopyr	116002	Aromatic .....	.....	Activated Carbon	
Butoxyethyl triclopyr	116004	Aromatic .....	.....	Activated Carbon	
Decenyl) dihydro-2(3H)- furanone.	116501	Non-Aromatic >100 .....	.....	Activated Carbon	
Cytokinins	116801	Not Classified .....	.....	Activated Carbon	
Benzyladenine	116901	Aromatic .....	.....	Activated Carbon	
Clopyralid, monoethanolamine salt.	117401	Aromatic .....	.....	Activated Carbon	
Clopyralid (ANSI)	117403	Aromatic .....	.....	Activated Carbon	
Flucythrinate (ANSI)	118301	Aromatic .....	.....	Activated Carbon	
Hydra methylnon (ANSI)	118401	Aromatic .....	.....	Activated Carbon	
Chlorsulfuron	118601	Aromatic .....	.....	Activated Carbon	
Dimethipin	118901	Non-Aromatic >100 .....	.....	Activated Carbon	
Hexadecenal	120001	Non-Aromatic >100 .....	.....	Activated Carbon	
Tetradecenal	120002	Non-Aromatic >100 .....	.....	Activated Carbon	
Thidiazuron	120301	Non-Aromatic >100 .....	.....	Activated Carbon	
Metronidazole	120401	Non-Aromatic >100 .....	.....	Activated Carbon	
Erythrosine B	120901	Aromatic .....	.....	Activated Carbon	
Sethoxydim	121001	Non-Aromatic >100 .....	.....	Activated Carbon	
Clethodim	121011	Not Classified .....	.....	Activated Carbon	
Cyromazine	121301	Aromatic .....	.....	Activated Carbon	
Tralomethrin	121501	Aromatic .....	.....	Activated Carbon	
Azadirachtin	121701	Non-Aromatic >100 .....	.....	Activated Carbon	
Tridecen-1-yl acetate	121901	Non-Aromatic >100 .....	.....	Activated Carbon	
Tridecen-1-yl acetate	121902	Non-Aromatic >100 .....	.....	Activated Carbon	
Sulfometuron methyl	122001	Aromatic .....	.....	Activated Carbon	
Metsulfuron-methyl	122010	Aromatic .....	.....	Activated Carbon	
Propiconazole	122101	Aromatic .....	.....	Activated Carbon	
Furanone, dihydro-5- pentyl-.	122301	Non-Aromatic >100 .....	.....	Activated Carbon	

TABLE C-1.—TABLE OF TREATABILITY INFORMATION FOR THE 272 PAIS AND THE NON-272 PAIS LISTED IN THE 1988 FATES DATABASE ¹—Continued

PAI name ²	PAI code ³	Shaughnessy code ⁴	PAI classification ⁵	Structural group ⁵	Treatment technology bases for cost ⁶	Inert ⁷
Furanone, 5- heptyldi hydro-	122302	Non-Aromatic >100 .....	.....	Activated Carbon	
Abamectin (ANSI)	122804	Non-Aromatic >100 .....	.....	Activated Carbon	
Fluazifop-butyl	122805	Aromatic .....	.....	Activated Carbon	
Fluazifop-R-butyl	122809	Aromatic .....	.....	Activated Carbon	
Flumetralin	123001	Not Classified .....	.....	Activated Carbon	
Fosetyl-Al	123301	Non-Aromatic >100 .....	.....	Activated Carbon	
Methanol, ((2-(dihydro-5-methyl-3(2H)-oxazolyl)-1-methyl)et.	123702	Non-Aromatic >100 .....	.....	Activated Carbon	
Fomesafen	123802	Not Classified .....	.....	Activated Carbon	
Tridiphane	123901	Aromatic .....	.....	Activated Carbon	
POE isooctadecanol	124601	Non-Aromatic >100 .....	.....	Activated Carbon	
Periplanone B	124801	Non-Aromatic >100 .....	.....	Activated Carbon	
Fenoxycarb	125301	Not Classified .....	.....	Activated Carbon	
Clomazone	125401	Aromatic .....	.....	Activated Carbon	
Clofentezine	125501	Aromatic .....	.....	Activated Carbon	
Paclobutrazol	125601	Aromatic .....	.....	Activated Carbon	
Flurprimidol	125701	Aromatic .....	.....	Activated Carbon	
Isoxaben	125851	Aromatic .....	.....	Activated Carbon	
Isazofos	126901	Non-Aromatic >100 .....	.....	Activated Carbon	
Triadimenol	127201	Aromatic .....	.....	Activated Carbon	
Fenpropathrin	127901	Non-Aromatic >100 .....	.....	Activated Carbon	
Sulfosate	128501	Not Classified .....	.....	Activated Carbon	
Fenoxaprop-ethyl	128701	Non-Aromatic >100 .....	.....	Activated Carbon	
Quizalofop-ethyl	128711	Aromatic .....	.....	Activated Carbon	
Bensulfuron-methyl	128820	Aromatic .....	.....	Activated Carbon	
Imazapyr	128821	Not Classified .....	.....	Activated Carbon	
Bifenthrin	128825	Aromatic .....	.....	Activated Carbon	
Dichloro-5-ethyl-5-methylhydantoin.	128826	Non-Aromatic >100 .....	.....	Activated Carbon	
Amazapyr, isopropylamine salt.	128829	Not Classified .....	.....	Activated Carbon	
Sodium salt of 1-carboxymethyl-3,5,7-triaza-1-azoniatricyclo.	128832	Non-Aromatic >100 .....	.....	Activated Carbon	
Linalool	128838	Non-Aromatic >100 .....	.....	Activated Carbon	
Imazaquin, monoammonium salt.	128840	Aromatic .....	.....	Activated Carbon	
Imazethabenz	128842	Aromatic .....	.....	Activated Carbon	
Thifensulfuron methyl	128845	Not Classified .....	.....	Activated Carbon	
Imazaquin	128848	Aromatic .....	.....	Activated Carbon	
Myclobutanil (ANSI)	128857	Aromatic .....	.....	Activated Carbon	
Zinc borate (3ZnO, 2B ₂ O ₃ , 3.5H ₂ O; mw 434.66).	128859	Metallic .....	.....	Precipitation	
Cyhalothrin	128867	Aromatic .....	.....	Activated Carbon	
Potassium cresylate	128870	Aromatic .....	.....	Activated Carbon	
Triflumizole	128879	Aromatic .....	.....	Activated Carbon	
Tribenuron methyl	128887	Not Classified .....	.....	Activated Carbon	
Cyhalothrin	128897	Aromatic .....	.....	Activated Carbon	
Chlorimuron-ethyl	128901	Aromatic .....	.....	Activated Carbon	
Dodecen-1-yl acetate	128906	Non-Aromatic >100 .....	.....	Activated Carbon	
Dodecen-1-yl acetate	128907	Non-Aromatic >100 .....	.....	Activated Carbon	
DDOL	128908	Non-Aromatic >100 .....	.....	Activated Carbon	
Farnesol	128910	Non-Aromatic >100 .....	.....	Activated Carbon	
Nerolidol	128911	Non-Aromatic >100 .....	.....	Activated Carbon	
Tefluthrin	128912	Not Classified .....	.....	Activated Carbon	
Bromoxynil heptanoate	128920	Aromatic .....	.....	Activated Carbon	
Imazethapyr	128922	Not Classified .....	.....	Activated Carbon	
Imazethapyr, ammonium salt.	128923	Not Classified .....	.....	Activated Carbon	
Chitosan	128930	Polymer .....	.....	Activated Carbon	
Nitrogen, Liquid	128934	Inorganic .....	.....	Activated Carbon	
Sulfuric acid, monourea adduct.	128961	Non-Aromatic <100 .....	.....	Activated Carbon	
Hydroprene	128966	Non-Aromatic >100 .....	.....	Activated Carbon	
Triasulfuron	128969	Aromatic .....	.....	Activated Carbon	
Primisulfuron-methyl	128973	Aromatic .....	.....	Activated Carbon	
Uniconazole (ANSI)	128976	Aromatic .....	.....	Activated Carbon	

TABLE C-1.—TABLE OF TREATABILITY INFORMATION FOR THE 272 PAIS AND THE NON-272 PAIS LISTED IN THE 1988 FATES DATABASE ¹—Continued

PAI name ²	PAI code ³	Shaughnessy code ⁴	PAI classification ⁵	Structural group ⁵	Treatment technology bases for cost ⁶	Inert ⁷
Tetradecenyl acetate	128980	Non-Aromatic >100 .....	.....	Activated Carbon	
Chitin	128991	Polymer .....	.....	Activated Carbon	
Sulfluramid	128992	Non-Aromatic >100 .....	.....	Activated Carbon	
Dithiopyr (ANSI)	128994	Not Classified .....	.....	Activated Carbon	
Nicosulfuron	129008	Not Classified .....	.....	Activated Carbon	
Zinc	129015	Metallic .....	.....	Precipitation	
Tetradecen-1-ol, acetate, (E)-	129019	Non-Aromatic >100 .....	.....	Activated Carbon	
Imazaquin, sodium salt	129023	Aromatic .....	.....	Activated Carbon	
Dodecadien-1-ol	129028	Non-Aromatic >100 .....	.....	Activated Carbon	
Ionone	129030	Non-Aromatic >100 .....	.....	Activated Carbon	
Ionone	129030	Non-Aromatic >100 .....	.....	Activated Carbon	
Dicamba, aluminum salt	129042	Aromatic .....	.....	Activated Carbon	
Benzene methanaminium, N-(2-((2,6-dimethylphenyl)amino)-2-oxo.	129045	Aromatic .....	.....	Activated Carbon	
Fenoxaprop-p-Ethyl	129092	Aromatic .....	.....	Activated Carbon	
Alkyl* bis(2-hydroxyethyl) ammonium acetate *(as in fatty ac.	169103	Non-Aromatic >100 .....	.....	Activated Carbon	
Alkenyl* dimethyl ammonium acetate *(75% C18, 25% C16).	169104	Non-Aromatic >100 .....	.....	Activated Carbon	
Amines, N-coco alkyltrimethylenedi-, adipates.	169109	Non-Aromatic >100 .....	.....	Activated Carbon	
Dialkyl* dimethyl ammonium bentonite *(as in fatty acids of.	169111	Non-Aromatic >100 .....	.....	Activated Carbon	
Alkyl* bis(2-hydroxyethyl) amine acetate *(65% C18, 30% C16,.	169125	Non-Aromatic >100 .....	.....	Activated Carbon	
Dodecyl bis(hydroxyethyl) dioctyl ammonium phosphate.	169154	Non-Aromatic >100 .....	.....	Activated Carbon	
Dodecyl bis(2-hydroxyethyl) octyl hydrogen ammonium phosphat.	169155	Non-Aromatic >100 .....	.....	Activated Carbon	
Didecyl-N-methyl-3-(trimethoxysilyl) propanaminium chloride.	169160	Non-Aromatic >100 .....	.....	Activated Carbon	
Cholecalciferol	202901	Non-Aromatic >100 .....	.....	Activated Carbon	
Use code no. 202901	208700	Non-Aromatic >100 .....	.....	Activated Carbon	
Alkyl* N,N-bis(2-hydroxyethyl)amine *(100% C8-C18).	210900	Non-Aromatic >100 .....	.....	Activated Carbon	
Bromo-2-nitropropane-1,3-diol.	216400	Non-Aromatic >100 .....	.....	Activated Carbon	
Use code no. 114601	229300	Not Classified .....	.....	Activated Carbon	
Diethyl ethyl	279500	Non-Aromatic >100 .....	.....	Activated Carbon	
Hydroprene (ANSI)	486300	Non-Aromatic >100 .....	.....	Activated Carbon	
Zinc sulfate monohydrate.	527200	Metallic .....	.....	Precipitation	
Geraniol	597501	Non-Aromatic >100 .....	.....	Activated Carbon	

¹ The 272 Pesticide Active Ingredients (PAIs) are listed first, by PAI code, followed by the non-272 PAIs from the 1988 FIFRA and TSCA Enforcement System (FATES) Database, which are listed in Shaughnessy code order. PAIs that were exempted or reserved from the supplemental PFPR effluent guidelines are not listed in the table.

² The non-272 PAI names are taken directly from the 1988 FATES database. Several of the PAI names are truncated because the PAI names listed in the FATES database are limited to 60 characters.

³ The non-272 PAIs do not have PAI codes.

⁴ All Shaughnessy codes are taken from the 1988 FATES database. Some of the 272 PAIs are not listed in the 1988 FATES database; therefore, no Shaughnessy codes are listed for these PAIs.

⁵ The PAI classification and structural group are not provided for every PAI. Structural groups are provided for the 272 PAIs, and classifications are provided for the non-272 PAIs.

⁶The listed treatment technology represents the technology used as the basis for developing treatment costs for wastewaters containing the PAI. The analysis of treatment technologies has not been completed for all PAIs, therefore some non-272 PAIs were costed for activated carbon as a temporary treatment technology to give a conservatively high cost estimate.

⁷PAIs with an "I" in this column are considered to be active ingredients only when used on combination with other active ingredients listed in this table.

*This PAI code represents a category or group of PAIs; therefore, it has multiple Shaughnessy codes.

Appendix D—List of Acronyms

AC	Activated Carbon.
BAT	Best Available Technology Economically Achievable.
BCT	TBest Conventional Pollutant Control Technology.
BPT	Best Practicable Control Technology Currently Available.
CSF	Confidential Statement of Formula.
DOT	Department of Transportation.
FATES ...	FIFRA and TSCA Enforcement System.
FDA	Food and Drug Administration.
FIFRA	Federal Insecticide, Fungicide, and Rodenticide Act.
GRAS	Generally Regarded as Safe.
NOI	Notice of Intent.
NPDES ..	National Pollutant Discharge Elimination System.
NSPS	New Source Performance Standards.
PAIs	Pesticide Active Ingredients.
PFPR	Pesticide Formulating, Packaging, and Repackaging.
POTWs ..	Publicly Owned Treatment Works.
PSES	Pretreatment Standards for Existing Sources.
PSNS	Pretreatment Standards for New Sources.
QC	Quality Control
R&D	Research and Development.
RCRA	Resource Conservation and Recovery Act.
SIC	Standard Industrial Classification.
TSCA	Toxic Substances Control Act.
UTS	Universal Treatment System.

Dated: May 24, 1995.

Robert Perciasepe,

Assistant Administrator for Water.

[FR Doc. 95-13541 Filed 6-7-95; 8:45 am]

BILLING CODE 6560-50-P

DEPARTMENT OF ENERGY

48 CFR Chapter 9

Acquisition Regulation; Regulatory Reduction

AGENCY: Department of Energy.

ACTION: Notice of proposed rulemaking.

SUMMARY: The Department of Energy (DOE) proposes to amend the Department of Energy Acquisition Regulation (DEAR) in its continuing effort to achieve the goals of several Executive Orders (EO), including: EO 12861, Elimination of One-Half of Executive Branch Internal Regulations; EO 12931, Federal Procurement Reform; and EO 12866, Regulatory Planning and

Review. This proposed rule would delete existing regulatory material that has been determined to be unnecessary. Specific material to be deleted from the DEAR is summarized in the "Section-by-Section Analysis" appearing later in this document.

DATES: Written comments should be forwarded no later than August 7, 1995.

ADDRESSES: Send written comments to Kevin M. Smith, Procurement Policy Division (HR-51), Department of Energy, 1000 Independence Avenue, SW., Washington, DC 20585.

FOR FURTHER INFORMATION CONTACT: Kevin M. Smith, (202) 586-8189.

SUPPLEMENTARY INFORMATION:

I. Background

II. Section-by-Section Analysis

III. Procedural Requirements

- A. Review Under Executive Order 12866
- B. Review Under Executive Order 12778
- C. Review Under the Regulatory Flexibility Act
- D. Review Under the Paperwork Reduction Act
- E. Review Under Executive Order 12612
- F. Review Under the National Environmental Policy Act
- G. Public Hearing Determination

I. Background

Executive Order (EO) 12861, dated September 11, 1993, Elimination of One-Half of Executive Branch Internal Regulations, was issued by the President to streamline Government operations, improve productivity, and improve customer service. EO 12931, dated October 13, 1994, Federal Procurement Reform, calls for significant changes to make the Government procurement process more effective and efficient. EO 12866, dated October 4, 1993, Regulatory Planning and Review, requires agencies to review regulations to improve effectiveness and to reduce regulatory burden. This proposed rule eliminates existing regulatory material that is unnecessary. In promulgating this rule, the Department will further the objectives of the EOs by reducing the volume of the DEAR; streamlining operations; reducing constraints, prescriptive requirements, and administrative processes; making requirements outcome oriented vs. process oriented; and, defining roles and responsibilities at the lowest appropriate level within the procurement organization by lowering certain responsibilities from the Head of

the Contracting Activity to the contracting officer. The DEAR coverage proposed for removal includes material that is for informational purposes only and nonregulatory in nature; internal guidance and procedures; regulations that constrain the Department's own procuring activities; coverage that is more restrictive than the Federal Acquisition Regulation (FAR); and coverage that is repetitive of the FAR or of other regulations.

II. Section-by-Section Analysis

The following sections of the DEAR are proposed to be eliminated:

1. Section 901.103, second sentence, addressing the applicability of the DEAR to procurements using nonappropriated funds; this is recommended guidance and is nonregulatory in nature.
2. Subsection 901.103-70, identifying those types of actions excluded from the scope of the DEAR; this is for informational purposes only and is nonregulatory in nature.
3. Subsection 901.104-3, third sentence of paragraph (a), and paragraph (b), identifying distribution procedures of the DEAR; this is for informational purposes only and is nonregulatory in nature.
4. Section 901.170, explaining references to organizations within DOE; this is for informational purposes only and is nonregulatory in nature.
5. Subsection 901.301-71, addressing the amendment procedure; this is internal procedural information and is nonregulatory in nature.
6. Subsection 901.301-72, paragraphs (a), (b), and (c), detailing other issuances related to acquisition; this is for informational purposes only and is nonregulatory in nature.
7. Subsection 901.601-70, prescribing the use of internal controls for DOE activities; this is internal oversight procedure and is nonregulatory in nature.
8. Subsection 901.603-70, addressing modification to existing contracting officer authority; this is internal oversight procedure and is nonregulatory in nature.
9. Subsection 901.603-71, addressing the responsibility of other Government personnel; this is internal oversight procedure and is nonregulatory in nature.