

BRIEFING PACKAGE

FOR

**BEST AVAILABLE TECHNOLOGY
PRETREATMENT STANDARDS
NEW SOURCE PERFORMANCE STANDARDS
BEST CONVENTIONAL POLLUTANT CONTROL TECHNOLOGY**

IN THE

PESTICIDES INDUSTRY

OCTOBER 20, 1980

9:00am, Room 3906 WSM

George M. Jett

AGENDA

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I. Introduction and Purpose

The Agency will shortly propose regulations establishing pollutant discharge levels with which the Pesticide Industry must comply by July 1, 1984. These regulations include Best Available Technology Economically Achievable (BAT), Best Conventional Pollutant Control Technology (BCT), New Source Performance Standards (NSPS), and Pretreatment Standards for new and existing sources. These regulations will be proposed under the authority of the Clean Water Act as amended.

The promulgated limitations will ultimately be used in writing NPDES (National Pollutant Discharge Elimination System) permits for this industry. Three categories of pollutants are anticipated under these regulations: priority pollutants, conventional pollutants (BOD, TSS) and nonconventional pollutants (COD and nonpriority pollutant pesticides). The Agency contracted with Environmental Science and Engineering (ESE) to study the industry; this package presents a summary of the contractor study.

ESE has submitted for evaluation by the Agency a confidential technical support document on the Pesticide Industry. This document contains the technical data base being considered as the basis for the proposed effluent limitations guidelines. This briefing package provides excerpts from the contractor's study without disclosing confidential information and summarizes the technical contractor's recommendations for the proposed regulations. We believe that the information presented here forms a reasonable base for the proposed regulations.

The purpose of this briefing is to provide the Pesticide Industry with a preview of the potential regulations as part of an informal rulemaking process. It is being circulated for comments on its technical merit only.

Please send comments within thirty (30) days to:

Mr. George M. Jett
U.S. Environmental Protection Agency
Effluent Guidelines Division (WH-552)
401 M. Street, S.W.
Washington D.C. 20460
(202) 426-2497

II. Project Status

A. Scope of Coverage

The study covers 117 manufacturers and 267 pesticide active ingredients. The Agency is currently considering regulations for 26 priority pollutants, 2 conventional pollutants (BOD, TSS) and 149 nonconventional (nonpriority) pollutant pesticides and COD. The conventional pollutants and COD are recommended for pesticides previously excluded from the BPT regulations. The formulators/-packagers who discharge to Publicly Owned Treatment Works (POTW's) are also under evaluation.

The scope of coverage does not include pesticide intermediates, certain zero discharge metallo-organic products regulated under BPT, inorganic pesticides, plant growth regulators, sex attractants, quaternary ammonium salts, disinfectants, and other products of minor commercial value. Rotenone, PCP, maleic hydrazide and pyrethrins are, however, covered.

B. Schedule:

The regulations are currently scheduled for proposal in late February 1981 followed by a public comment period and a target promulgation date of October 1981. A nonconfidential technical support document will be available when the proposal is published in the Federal Register. An economics contractor report is being prepared and this document will be made available upon proposal.

III. Project Summary

A. Data Sources

Data sources used to derive the results presented include industry responses to "308" questionnaires, permits data, contractor verification sampling data, and additional data supplied by the industry. Some screening data also are included. All data presented are from full scale, pilot scale, or bench scale systems and industry supplied plant estimates.

B. Analytical Procedures

The 304(h) review committee, chaired by the Environmental Monitoring and Support Laboratory and other Agency experts, is reviewing the analytical procedures for the majority of the nonconventional (nonpriority) pollutant pesticides recommended for regulation. An additional six pesticides not under current review by the 304(h) review committee are recommended for regulation due to the significance of these compounds and the availability of tentative acceptable analytical procedures from the manufacturers. The significance is established by previous regulatory status, level of production, method of discharge and effluent levels discharged.

The majority of the pesticide analytical procedures for pollutants recommended for regulation are GC or LC (Gas or Liquid Chromatography). Analytical procedures for the priority pollutants were proposed in the Federal Register on December 3, 1979.

C. Industry Profile

It is important to understand the structure of the Pesticide Chemicals Industry before any conclusion can be drawn concerning the proper approach to the drafting of regulations, the effectiveness of alternative pollution control technologies, the feasibility of wastewater monitoring, or the financial ability of plants to install pollution control equipment. This section presents data taken from the sources listed in Section A above, highlighting several aspects of the industry.

1. Pesticide Utilization

The total 1977 production volume for reported pesticides active ingredients within the scope of this study was approximately 1.6 billion pounds according to the industry 308 Survey. It is estimated that this production volume accounts for more than 95 percent of the compounds of interest. A recent article (Chemical Week, May 7, 1980) estimates pesticide shipments of 1.7 billion pounds in 1978. The major classes of pesticides with corresponding 1977 production are presented in table 1.

2. Geographical Location of Plants

Figure 1 presents the geographical location of the 117 pesticide manufacturers under consideration in this study. Since a majority of pesticides active ingredients is produced at the same sites as organic chemicals, plant location is governed by considerations such as proximity to raw materials, ease and cost of shipping, local labor and tax conditions, and other similar factors. Less than half of the manufacturers formulate their products on site; instead they ship to formulators/-packagers located near the areas of farm consumption.

3. Market Value of Pesticides

The response to the industry 308 Survey revealed that the 1977 market value for pesticides produced in the scope of this study ranged from \$2.5 to \$3 billion. Pesticide sales in 1978 were estimated to range from \$2.2 to \$3.0 billion (Chemical Week, May 7, 1980).

4. Level of Pesticide Production

In 1977, 117 pesticide plants made 245 discrete pesticides at a total of 322 pesticide process sites. Of the 322 process sites more than 44 percent of the pesticides considered were produced at levels less than 10,000 pounds per day, indicating the specialized nature and resulting small market for certain products. Of the remaining 56 percent, there is a group of 14 to 18 products with high-volume (100,000 pounds per day or greater), heavy-usage patterns such as some cotton insecticides or selective post-emergency herbicides.

5. Number of Pesticides Produced Per Plant

Almost 50 percent of the plants surveyed produce only one pesticide, while approximately 95 percent produce from one to four pesticides. When plants are found to produce more than one pesticide, the products are usually derived from similar reaction chemistry, thereby allowing the same unit process configurations to be used with minor changes in raw materials. Although several plants produce more than four pesticides during any one year, it is uncommon for plants to run more than four process lines simultaneously.

6. Number of Plants Producing Pesticides

Approximately 84 percent of all pesticides are produced only by individual plants with patented processes, whereas, after patent expiration, each of the remaining 16 percent are produced at two to four different plants. These facts contribute to the difficulty in examining and comparing wastewater data among identical products. There are several cases where the same product is made by a different process by different plants, resulting in different pollutants, different wastewater treatment technology and economic impact.

7. Other Operations at Pesticide Plants

Very few sites produce only pesticide active ingredients. There are only seven pesticide plants producing neither intermediates nor other chemicals, representing less than 6 percent of the industry. Response to the industry 308 Survey presented in Table 2 shows that 57 percent of the plants produce pesticide intermediates while 74.4 percent of the plants produce other miscellaneous chemicals. More than 90 percent of all plants have at least one shared treatment system for pesticide intermediate and miscellaneous chemicals wastewaters.

8. Methods of Wastewater Disposal

Table 3 itemizes the methods of wastewater disposal used at pesticide plants. Many plants have more than one method of disposal, as there are a total of 142 discrete methods used at 117 plants. Forty-two plants are direct dischargers to navigable waters, thirty-nine are indirect dischargers, and eighteen achieve zero discharge. Zero discharge is achieved by no wastewater generated (11 plants), evaporation ponds (6 plants) and incineration without scrubber effluent (1 plant). Other methods of disposal include deep well injection (17 plants), contract hauling of all wastewater (9 plants), land disposal (4 plants), and ocean discharge (1 plant).

9. Frequency and Levels of Priority Pollutant Groups

The process chemistry and all available data for each of the 267 pesticide products in the scope of this study was evaluated to determine what combinations of priority pollutants its wastewaters were known or suspected to contain. Table 4 shows the known or suspected frequency of priority pollutant groups and levels observed based on the highest reported concentration. As shown, the predominant pollutants observed were phenols, volatiles (aromatics, halomethanes, and chlorinated ethanes and ethylenes), nitrosamines, dienes, cyanide, copper, zinc, and pesticides.

D. Treatment Technologies

The treatment technologies currently installed and operating include activated carbon or resin adsorption, hydrolysis, steam stripping, chemical oxidation, metals separation and biological oxidation. Table 5 shows the distribution of these and other treatment technologies and disposal methods in the industry. The EPA has reviewed all available treatability data (308 response data, literature, etc.) and recommended treatment technologies for the priority pollutant groups studied. Results are summarized in Table 6.

E. Subcategorization

The purpose of this section is to provide the rationale for subcategorizing individual pesticide products. The subcategorization scheme is based on the priority pollutant group associated with each pesticide product. This wastewater characteristic is most important because it determines the number and type of treatments required and the associated treatment costs.

The technical feasibility and performance of potential treatment units was evaluated to estimate treatment levels for all pollutant parameters; pesticides, priority pollutants, conventional and non-conventional pollutants. These effluent levels defined the combinations of treatment units needed for removing the combinations of pollutants in each individual pesticide wastewater.

Raw waste and treated effluent priority pollutant concentrations were examined and compared to the design effluent levels shown in Table 7. Design effluent levels are long-term average effluent levels demonstrated or judged achievable from maximum design raw waste load levels. If the pollutant was found at a concentration above the design effluent level, then it was concluded that the pesticide should be placed in a subcategory with the treatment recommended to remove the pollutant. This evaluation process, depicted in Figure 2, ultimately defines the treatment alternative best suited to remove pollutants found in the wastewater from pesticide manufacture.

Seven combinations of treatment technologies are suggested for removal of priority pollutants groups in the pesticide industry. The seven potential subcategories did not take into account the existing BPT regulation, as well as those pesticide process wastewaters which were not previously controlled. Subcategories 8 and 9 were established to add priority pollutant ~~limitations~~ limitations to those pesticide products previously regulated only for BOD, COD, TSS and pH. Subcategory 10 included products which are not currently regulated for any pollutant parameters. These 10 subcategories are listed in Table 8. Pesticide products included in each of the subcategories are listed in Table 9. *pesticides,*

An eleventh subcategory was created to include pesticide processes which achieve no discharge of wastewater through total reuse, recycle, evaporation, incineration without scrubber effluent, or because no wastewater is generated. Based on industry 308 Survey responses, 29 pesticide products fit this definition. These are listed in Table 10. Plant location, age, size and other factors were examined and found not to be factors in subcategorization.

F. Pollutants to be Regulated

From the data obtained as described earlier, priority pollutants of primary and secondary significance were selected using the following criteria. Priority pollutants were classified as of primary significance if:

1. They are known or suspected to exist independently of other priority pollutants in that group.
2. They are known or suspected to exist in combination with other priority pollutants in that group, but because they may be raw materials, solvents, or products, they are normally found in higher concentrations than priority pollutants of secondary significance.

Priority pollutants were classified as of secondary significance if:

1. They are known or suspected to exist predominantly in conjunction with pollutants of primary significance.
2. They may be impurities or reaction byproducts and are normally found in lower concentrations than priority pollutants of primary significance.

Using the definitions above, for example, benzene, toluene, and chlorobenzene were selected as priority pollutants of primary significance in the volatile aromatic pollutants group. Ethylbenzene was considered to be of secondary significance since it predominantly exists as an impurity in benzene or toluene. In addition, effective treatment of benzene or toluene indicates that ethylbenzene would be treated effectively.

The Agency intends to include under these regulations additional pesticide active ingredients as well as priority pollutants. The pesticides selected were those on which the Agency had sufficient data and process information to set proposed limitations. Criteria used included available analytical procedures for analysis in wastewaters, treatability of pesticides, production levels, significant discharge levels and prior regulatory status.

G. Effluent Limitations

This briefing will address effluent regulations for both direct and indirect (pretreatment) discharges. The logic employed is best demonstrated through selection of limitations for an example priority pollutant, such as 2,4-dichlorophenol. Initially it was necessary to calculate a long-term average treatment effluent level for each pollutant. 2,4-dichlorophenol is one of the five phenols recommended for regulation. Full-scale systems pretreating 2,4-dichlorophenol are demonstrated to achieve 0.388 and 0.82 mg/l from raw waste loads of 33.9 and 42,000 mg/l, respectively at two separate plants, using the recommended treatment of activated carbon. Considering these treatment systems performance, it is judged that 1.0 mg/l is a reasonable long-term average on which to base effluent limitations for the pesticide industry.

Full-scale biological treatment system data from two direct discharging plants showed that 2,4-dichlorophenol can be reduced by 93.8 and 97.6 percent. Assuming a conservative 90-percent removal of 2,4-dichlorophenol through biological oxidation, the effluent limitation achievable for direct dischargers following activated carbon or resin adsorption pretreatment and biological oxidation, therefore, is 0.1 mg/l.

The pesticide long-term values were established by evaluating the treatability of all pesticides selected for regulation within the subcategory based on raw waste concentration, level of production, and flow. The long-term average chosen for the subcategory was determined by examining the current effluent achieved and, if necessary, determining the effluent judged achievable if a well-operated BAT treatment system was installed. The highest level achievable, maximum amount of pesticide remaining, became the long-term average.

In the development of effluent limitations guidelines, the variability of daily and monthly average discharge levels must be considered. The derivation of variability factors is based on a statistical analysis of the effluent levels from plants with long-term data available. The purpose of deriving variability factors is to define daily and 30-day maximum levels for pollutant discharges which statistical evaluations predict will not be exceeded by well operated plants. The daily and 30-day maximum levels are determined by multiplying the daily and 30-day variability factors times the long-term average effluent discharge in pounds of pollutant per thousand pounds of product. Tables 11 through 21 contain the present recommended daily and 30-day maximum effluent limitations.

Attachment 1 is a brief discussion of the statistical method employed in deriving these variability factors. The method is essentially the same as that employed for the BPT final pesticide regulations. The results of the normality/log normality tests indicated that, with one possible exception, the data consistently failed at a 5 percent level of significance. Therefore, a nonparametric method was chosen to estimate the variability (Gibbons, 1971). The nonparametric method of analysis makes no restrictive assumptions regarding the distribution of the data and can be used to predict effluent loadings in a manner completely analogous to that which would be used if the data fit a particular distribution such as the normal or log normal.

Because of the way the subcategories have been chosen, not all pesticide products within the same subcategory are regulated for all the priority pollutants listed for the subcategory. For example, if a plant makes a pesticide which uses toluene as a solvent but does not use any other volatile priority pollutants in the process, it will only be regulated for toluene. Table 22 lists the priority pollutants by pesticide product for potential regulations.

H. Costs

The contractor was required to present three levels of treatment options. The limits shown in Tables 11 to 21 and the costs listed below correspond to the recommended indirect and direct level 1 requirements. A plant-by-plant evaluation was conducted to determine what treatment expenditure, if any, would be incurred if level 1 requirements were promulgated. The resulting treatment cost estimates were based on the following criteria:

1. For those plants with effluent data exceeding design levels for priority pollutants and BPT levels for pesticides, BOD, and COD, projected treatment was costed to bring the plant into compliance.
2. For those plants without effluent data, it was assumed that pollutants exist at levels in excess of the recommended limitations and treatment was costed accordingly.

Treatment costs were estimated only for those pesticide active ingredients to be regulated.

Of the 117 plants and 322 pesticide wastewater streams considered, it is anticipated that 17 POTW dischargers and 14 direct dischargers will require additional pollutant removal as a result of implementing the recommended limitations. This could affect 40 pesticide wastewater streams from POTW dischargers and 31 pesticide wastewater streams from direct dischargers.

It should be noted that treatment cost estimates may in some cases be overestimated due to such factors as:

1. Treatment costs for activated carbon were based on the purchase of the activated carbon system and regeneration facilities. This is more expensive than the leasing of activated carbon systems which is prevalent in the industry.
2. Contract hauling has been costed to handle hazardous waste at \$60/yd³. Disposal costs may be cheaper if wastes are determined to be nonhazardous.

The treatment costs estimated for compliance with the recommended pesticide industry effluent limitations are as follow:

	<u>Level 1</u>	
	<u>Pesticide and Priority Pollutant Removal</u>	
	<u>Indirect</u>	<u>Direct</u>
No. of Plants Affected	17	14
No. of Pesticides Affected	40	31
Capital Cost (\$1000s)	12,700	28,200
Annual Cost (\$1000s)	8,000	22,500

In order to demonstrate the portion of the total treatment cost estimate devoted strictly to pesticide pollutant removal, the following table is presented.

	<u>Pesticide Pollutant Removal</u>	
	<u>Indirect</u>	<u>Direct</u>
No. of Plants Affected	9	8
No. of Pesticides Affected	17	15
Capital Cost (\$1000s)	7,479	23,400
Annual Cost (\$1000s)	5,126	18,200

The difference is for the cost to remove the priority pollutants. The costs are based on September 1979 dollars and an equivalent ENR index of 3116.

IV. Discussion

A period of time has been set aside to answer any questions you may have.

Table 1 Pesticide Production by Class

Class	Number of Products	Production Volume (1977)	
		Million lbs	Percent
Insecticide*	86	846	51.74
Herbicide	77	554	33.88
Fungicide†	69	229	14.01
Rodenticide	5	2	0.12
Plant Growth Regulator	1	4	0.25
TOTAL	238**	1,635††	100

* Includes miticides, nematocides, repellants, insect synergists, fumigants, insect growth regulators, insecticides.

† Includes algicides, bactericides, molluscicides.

** Seven additional pesticides currently manufactured, but their classification is unknown at this time.

†† Production not available from 30 (9.3 percent) of 322 process sites.

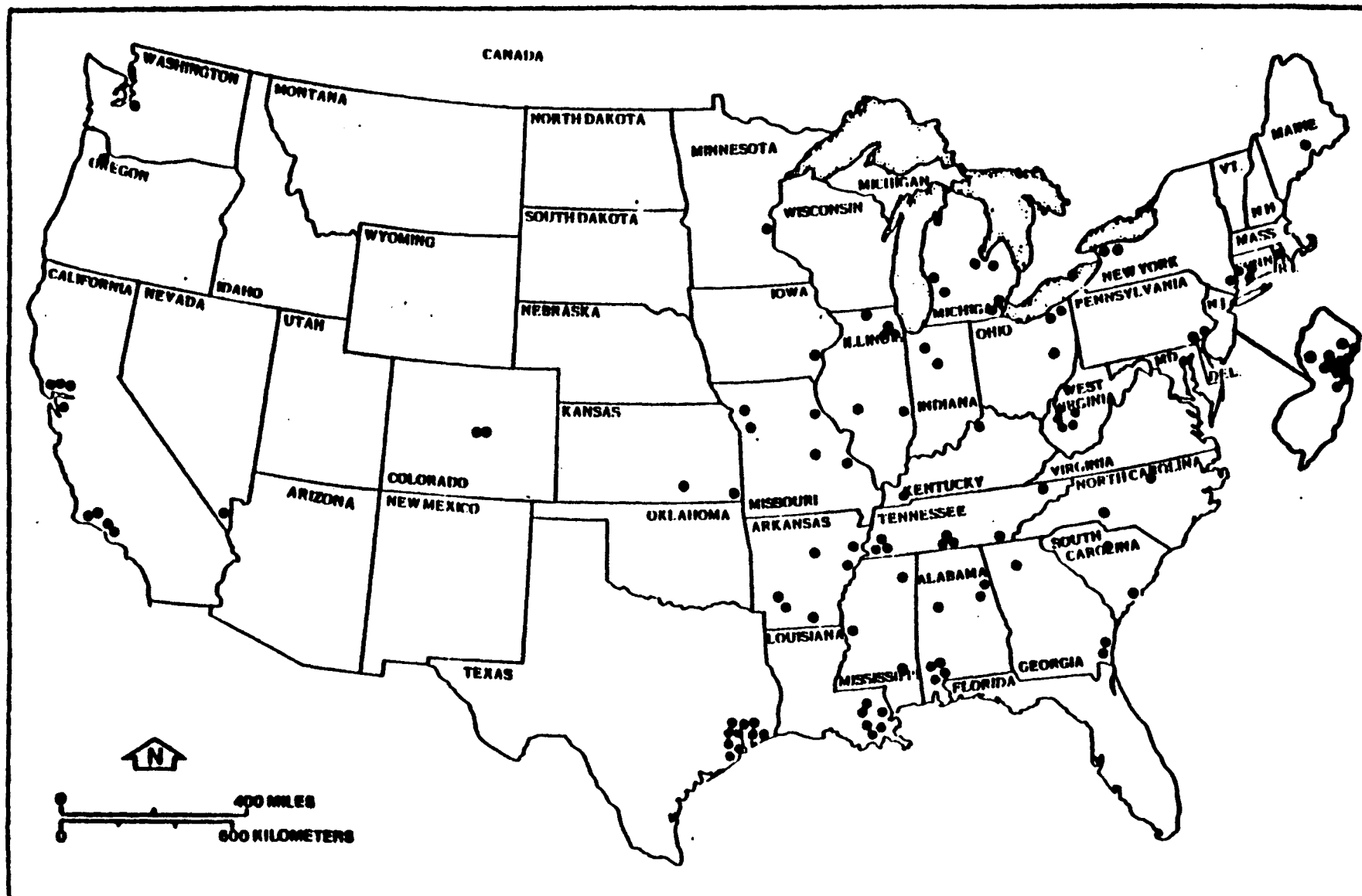


FIGURE 1 GEOGRAPHICAL LOCATION OF PESTICIDE MANUFACTURERS
(TOTAL OF 117 PLANTS)

Table 2 Types of Operations at Pesticide Plants (1977)

Type of Operation	Number of Plants	Percent of Total
Manufacturer of Pesticide Active Ingredients	117	100
Manufacturer of Other Miscellaneous Chemicals	87	74.4
Manufacturer of Pesticide Intermediates	67	57.3
Formulator/Packager of Pesticides	55	47.0

Table 3 Methods of Wastewater Disposal at Pesticide Plants (1977)

Type of Wastewater Disposal	Number of Plants*
Direct Discharge to Navigable Waters	42
Indirect Discharge (POTW, etc.)	39
Deep Well Injection	17
Incineration	13
No Wastewater Generated†	11
Contract Hauling of all Wastewater	9
Evaporation Ponds	6
Land Disposal	4
Ocean Discharge	1

* There are a total of 117 plants in the industry; however, many have more than one means of disposal.

† Includes wastewater which is recycled, reused, or because no wastewater is generated.

Table 4 Known/Suspected Frequency and Level of Priority Pollutant Groups

Priority Pollutant Group	Suspected	Known	Number of Pesticides in Group (mg/l)*					
			TR-<.1	.1-<1	1-<10	10-<100	100-<1000	>1000
			Volatile Aromatics	108	46	6	7	12
Halomethanes	54	26	7	6	1	6	4	2
Cyanides	25	17	5	1	10	—	—	1
Haloethers	30	6	5	1	—	—	—	—
Phenols	32	22	4	2	2	4	5	5
Nitro-Substituted Aromatics	27	2	2	—	—	—	—	—
Polynuclear Aromatics	25	4	3	—	1	—	—	—
Metals	22	9	3	1	1	—	2	2
Chlorinated Ethanes (ylenes)	26	11	2	5	2	1	—	1
Nitrosamines	11	1	—	—	1	—	—	—
Phthalates	10	1	1	—	—	—	—	—
Dichloropropane(ene)	12	2	2	—	—	—	—	—
Pesticides	13	5	—	2	2	—	1	—
TCDD	11	3	3	—	—	—	—	—
Dienes	8	4	—	2	—	—	—	2
Miscellaneous	0	72†	63	9	—	—	—	—
PCB's	0	0	—	—	—	—	—	—
Benzidines	0	0	—	—	—	—	—	—

* = Based on highest concentrations reported.

† = Refers to the priority pollutant asbestos only.

TR = Trace.

**Table 5 Principal Types of Wastewater Treatment/Disposal in use
in the Pesticide Industry**

Type of Treatment/Disposal	Number of Plants*
Biological Oxidation	32
Activated Carbon	17
Deep Well Injection	17
Incineration	13
Chemical Oxidation	9
Contract Hauling of All Wastewater	9
Hydrolysis	8
Steam Stripping	8
Multi-Media Filtration	7
Evaporation	6
Resin Adsorption	4
Metals Separation	3

* There are a total of 117 plants in industry; however, many have more than one means of disposal.

Table 6 Recommended Treatment Technology for Priority Pollutant Groups

Pollutant Group	Treatment Technology											Powdered Activated Carbon	Tertiary Carbon
	Activated Carbon	Resin Adsorption	Steam Stripping	Hydrolysis	Biological Oxidation	Wet Air Oxidation	Membrane Processes	Metals Separation	Solvent Extraction	Chemical Oxidation	Filtration		
Volatile Aromatics	x	x	1	x	2	x	x	x	x	x	x	x	2
Haloothenes	x	x	1	x	2	x	x	x	x	x	x	x	2
Cyanides	x	x	x	x	2	x	x	x	x	1	x	x	2
Haloothers	x	x	1	x	2	x	x	x	x	x	x	x	2
Phenols	1	1	x	x	2	x	x	x	x	x	x	x	2
Nitro Substituted Aromatics	x	x	1	x	2	x	x	x	x	x	x	x	2
Polynuclear Aromatics	x	x	x	x	2	x	x	x	x	x	x	x	2
Metals	x	x	x	x	2	x	x	1	x	x	2	x	2
Chlorinated ethenes (ylenes)	x	x	1	x	2	x	x	x	x	x	x	x	2
Nitrosamines	1	x	x	x	2	x	x	x	x	x	x	x	2
Phthalates	x	x	x	x	2	x	x	x	x	x	x	x	2
Dichloropropene (ene)	x	x	1	x	2	x	x	x	x	x	x	x	2
Pesticides	1	1	x	1	2	x	x	x	x	1	x	x	2
Dienes	1	1	x	x	2	x	x	x	x	x	x	x	2
TCDD	1	x	x	x	x	x	x	x	x	x	x	x	2
Miscellaneous	--	--	--	--	--	--	--	--	--	--	--	--	--
PCB's	--	--	--	--	--	--	--	--	--	--	--	--	--
Benzidines	--	--	--	--	--	--	--	--	--	--	--	--	--

1 = Primary removal technology.

2 = Secondary removal technology.

-- = Pollutant group not suspected.

x = Indicates technology was considered but was not a primary or secondary recommendation.

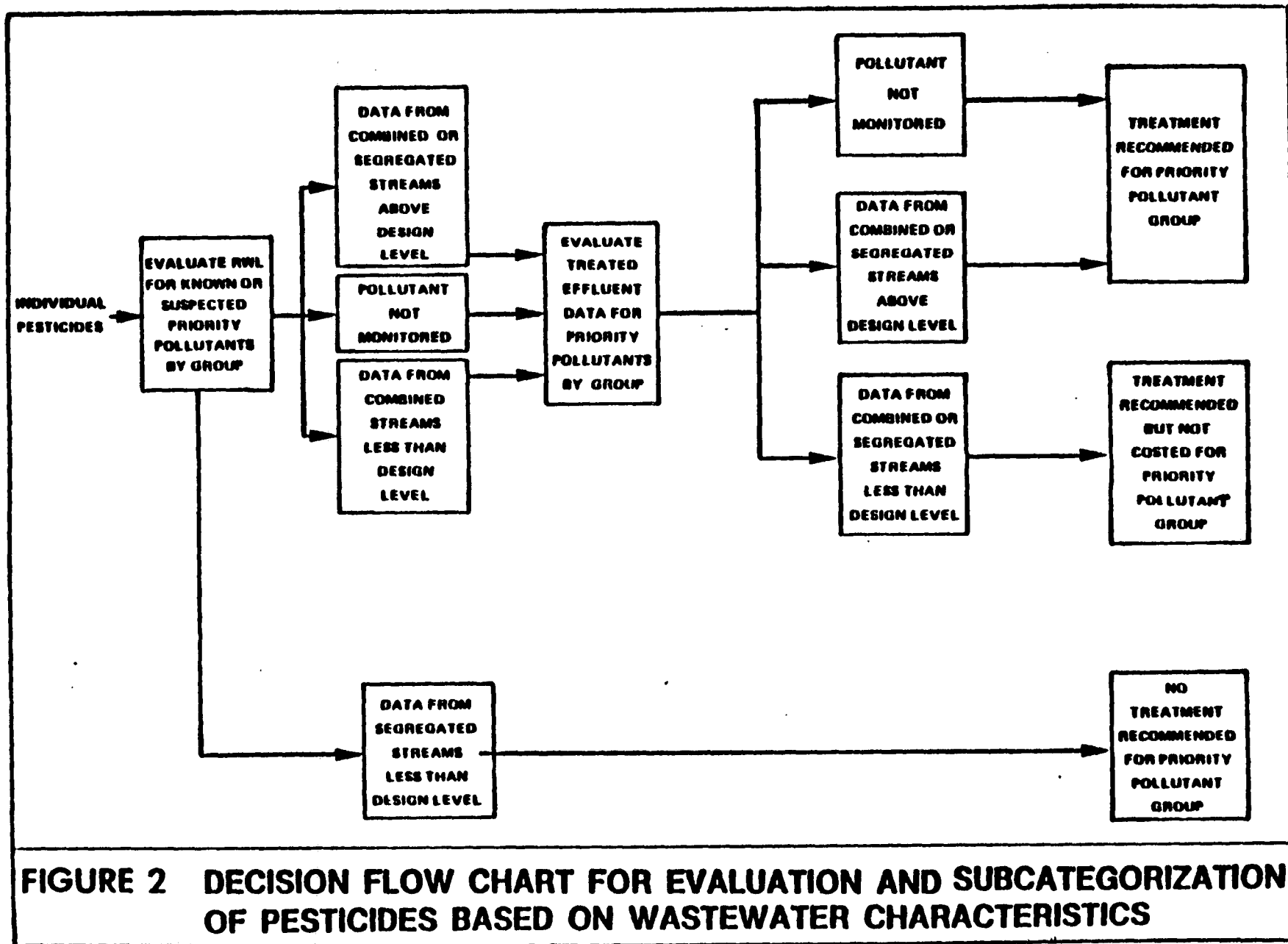


Table 7 Design Effluent Levels*

Pollutant Group†	LEVEL 1**				LEVEL 2††		LEVEL 3°	
	Indirect Discharger		Direct Discharger		Direct Discharger		Direct Discharger	
	(mg/l)	(lbs/1,000 lbs)	(mg/l)	(lbs/1,000 lbs)	(mg/l)	(lbs/1,000 lbs)	(mg/l)	(lbs/1,000 lbs)
Volatile Aromatics	1.0	0.037	<0.01	<0.00037	<0.01	<0.00037	<0.01	<0.00037
Halomethanes	1.0	0.037	<0.01	<0.00037	<0.01	<0.00037	<0.01	<0.00037
Cyanides	0.04	0.0015	0.02	0.00075	0.02	0.00075	<0.01	<0.00037
Haloethers	1.0	0.037	0.05	0.0019	0.05	0.0019	<0.01	<0.00037
Phenols	1.0	0.037	0.1	0.0037	0.1	0.0037	<0.01	<0.00037
Polynuclear Aromatics	1.0	0.037	0.1	0.0037	0.1	0.0037	<0.01	<0.00037
Metals	0.5	0.019	0.25	0.0094	0.15	0.0056	<0.1	<0.0037
Chlorinated Ethanes (ylenes)	1.0	0.037	0.1	0.0037	0.1	0.0037	<0.01	<0.00037
Nitrosamines	0.001	0.000037	0.001	0.000037	0.001	0.000037	<0.001	<0.000037
Dienes	0.045	0.0017	0.023	0.00086	0.023	0.00086	<0.01	<0.00037
Pesticides	1.0	0.037	0.5	0.019	0.5	0.019	<0.01	<0.00037
BOD	1470	55.2	30	1.13	20	0.75	10	0.37
COD	3890	146	586	22.0	470	17.6	235	8.82
TSS	N/A	—	35	1.31	10	0.37	5	0.19

* Long-term average effluents demonstrated or judged achievable from maximum design raw waste load levels.

† Pollutant groups not specified are not known to be present above the level of interest.

** Level 1 for indirect dischargers (POTW, etc.) includes pretreatment by steam stripping, chemical oxidation, metals separation, adsorption by resin or carbon, or hydrolysis as appropriate. Level 1 for direct dischargers includes pretreatment plus biological oxidation.

†† Level 2 includes Level 1 plus dual media filtration.

° Level 3 includes Level 2 plus granular activated carbon.

N/A = Not applicable.

Table 8 Subcategory Numbering System

Treatment Units Recommended	Subcategory Numbering According to Parameters Previously Regulated/ Wastewater Characteristics		
	BOD, COD TSS, pH	BOD, COD, TSS pH, Pesticides	None
Pesticide Removal Biological Oxidation	1	8	--
Steam Stripping Pesticide Removal Biological Oxidation	2	9	--
Metals Separation Pesticide Removal Biological Oxidation	3	--	--
Steam Stripping Chemical Oxidation Pesticide Removal Biological Oxidation	4	--	10
Steam Stripping Metals Separation Pesticide Removal Biological Oxidation	5	--	--
Chemical Oxidation Pesticide Removal Biological Oxidation	6	--	--
Steam Stripping Chemical Oxidation Metals Separation Pesticide Removal Biological Oxidation	7	--	--

-- = Combination is not required based on the observed data.

Table 9 Products Included in Each Subcategory

Subcategory 1
Pesticides Included: 57

Aldicarb	KN methyl
Atrazine (Plant 1)	Maleic hydrazide
Bendiocarb	Metham
Benomyl	Methoprene*
Biphenyl (Plant 1)	Mevinphos
Busan 40	Niacide
Busan 85	Norflurazon
Captafol	Octhilinone
Carbofuran	Oryzalin
Chlorpicrin (Plant 1)	Oxamyl
Coumaphos	PCP salt
Dalapon	Permethrin
Dazomet	Phorate
DBCP	Piperonyl butoxide*
Dichlorvos	Polyphase antimildew
Dimethoxane	Propargite*
Dinocap	Propionic acid
Dinoseb	8 Quinolinol citrate
Dioxathion	8 Quinolinol sulfate
Diphacinone*	Sodium monofluoroacetate (Plant 1)
Endothall*	Sulfallate
Ethylene dibromide	Tebuthiuron
EXD*	Terbacil
Fenarimol	Terbufos
Ferbam	Thionazin
Folpet	Tributyltin fluoride
HAE	Tricyclazole
HAMP	Vancide PA
Isopropalin	

* Previously excluded from BPT regulation.

Table 9 Products Included in Each Subcategory
(Continued, page 2 of 6)

Subcategory 2
Pesticides Included: 105

Alachlor	Dichlorophen
Aspon	Dichlorprop
Benfluralin	Diphenamid
Bensulide	Diphenylamine
Bentazon	EPN
Benzethonium chloride	EPTC
Benzylbromoacetate	Ethalfuralin
Bifenox	Ethion
Bolstar	Ethoxyquin, 66%
Bromacil	Ethoxyquin, 86%
Bromoxynil	Etridiazole
Bromoxynil octanoate	Famphur
Busan 90	Fenthion
Butachlor	Fentin hydroxide
Butylate	Fluchloralin
Carbendazim†	Fluoridone
Carbophenothion	Fonofos
CDN	Giv-gard
Chlorambent†	Glyphosate*
Chlorobenzene	Hexachlorophene
Chlorobenzilate	Hexazinone
Chlorpyrifos	Hyamine 2389
Chlorpyrifos methyl	Hyamine 3500
Cycloate	Kathon 886
Cycloheximide	Kinoprenet
Cycloprate	MCPA
Cyhexatin	MCPA isooctyl ester†
Cythioate	MCPP
2,4-DB	Mephosfolan
2,4-DB isobutyl ester†	Methamidophos
2,4-DB isooctyl ester†	Methomyl
DCPA	Methylbenzethonium chloride
Deet	Methyl bromide
Demeton	MGK 264
Dichlofenthion	MGK 326
Dichlorobenzene, ortho	Molinate
Dichlorobenzene, para	Nabam†

* Previously excluded from BPT regulation.

† Presence of non-priority pollutant ammonia determined that this pesticide be placed in a subcategory which included stripping.

Table 9 Products Included in Each Subcategory
(Continued, page 3 of 6)

Subcategory 2 (Continued)

Naled	Piperalin
Napropamide	Profluralin
Naptalam	Pronamide
Nitrofen	Propachlor
NMI	Propanil
Oxydemeton	RH-787
Oxyfluorofen	Ronnel
Paraquat	Rotenone*
PBED	Stirofos
PCP	Temephos
Phenylphenol*	Thiofanox†
Phenylphenol sodium salt*	Tokuthion
Phosfolan	Triadimefon
Phosmet	Tributyltin oxide (Plant 1)
Pindone	Trichlorobenzene
	Vernolate

* Previously excluded from BPT regulation.

† Presence of non-priority pollutant ammonia determined that this pesticide be placed in a subcategory which included stripping.

Subcategory 3

Pesticides Included: 5

Aquatreat DNM 30
 Mancozeb
 Maneb
 Zineb (Plant 1)
 Ziram (Plants 1, 2)

Subcategory 4

Pesticides Included: 6

Chlorothalonil
 Fluometuron
 Lethane 384
 Methylene bithiocyanate
 Picloram
 Thiabendazole

Table 9 Products Included in Each Subcategory
(Continued, page 4 of 6)

Subcategory 5
Pesticides Included: 7

Acephate
Dienochlor
Fensulfothion
Monocrotophos
Pebulate
Polyram*
Zineb* (Plant 2)

* Presence of non-priority pollutant ammonia determined that this pesticide be placed in a subcategory which included stripping.

Subcategory 6
Pesticides Included: 3

Dodine
Metasol DGH
Nabonate

Subcategory 7
Pesticides Included: 2

Fenitrothion
TCMTB

Subcategory 8
Pesticides Included: 14

Aminocarb
Chlordane
Endosulfan
Fenuron
Malathion
Methiocarb
Mexacarbate
Mirex
Monuron
Parathion ethyl
Parathion methyl
Propham
Propoxur
Trifluralin

Table 9

Products Included in Each Subcategory
(Continued, page 5 of 6)

Subcategory 9
Pesticides Included: 34

Azinphos methyl
BHC (Alpha, Beta, and Delta isomers)
Captan*
Carbaryl
Chlorpropham
2,4-D
2,4-D isobutyl ester*
2,4-D isooctyl ester* (Plant 1)
DCNA
DDD
DDE
DDT
Demeton-o
Demeton-s
Diazinon
Dicamba
Dicofol
Disulfoton
Diuron
Endrin
Fenuron-TCA
Heptachlor
Lindane
Linuron
Methoxychlor
Monuron-TCA
Neburon
PCNB
Perthane
Siduron
Silvex
SWEP
2,4,5-T
Toxaphene

* Presence of non-priority pollutant ammonia determined that this pesticide be placed in a subcategory which included stripping.

Table 9 Products Included in Each Subcategory
(Continued, page 6 of 6)

Subcategory 10
Pesticides Included: 13

Ametryne*
Anilazine*
Atrazine (Plants 2, 3)*
Cyanazine*†
Metribuzin*
Prometon*
Prometryn*
Propazine*
Resmethrin*
Simazine*
Simetryne*
Terbuthylazine*
Terbutryn*

* Previously excluded from BPT regulation.

† Presence of non-priority pollutant ammonia determined that this pesticide be placed in a subcategory which included stripping.

Table 10 Zero-Discharge Pesticides

Subcategory 11
Pesticides Included: 29

The following pesticides are assigned a zero-discharge status because wastewater is totally recycled, reused, evaporated, incinerated, or because there is no wastewater generated:

Alkylamine hydrochloride
Amobam
Barban
BBTAC
Biphenyl* (Plant 2)
Chlorpicrin (Plants 2, 3, 4)
2,4-D isooctyl ester (Plant 2)
2,4-D salt
Dichloroethyl ether
Dichlorophen salt
Dichloropropane-dichloropropene
Dichloropropene
Dowicide Q
Ethoprop
Fluoroacetamide
Glyodin
HPTMS
Merphos
Metasol J-26
Pyrethrin
Silvex isooctyl ester
Silvex salt
Sodium monofluoroacetate (Plant 2)
Tributyltin benzoate
Tributyltin oxide (Plant 2)
Vancide 51Z
Vancide 51Z dispersion
Vancide TH
Ziram (Plant 3)

* Previously excluded from BPT regulation.

Table 11 Recommended Standards and Limitations for Subcategory 1

Parameter	Pretreatment Standards*			BAT Effluent Limitations*		
	Long-Term Average	30-Day Maximum	Daily Maximum	Long-Term Average	30-Day Maximum	Daily Maximum
NON-PRIORITY POLLUTANT PESTICIDES†	0.0302	0.0701	0.308	0.0261	0.0606	0.266
PRIORITY POLLUTANTS**						
2,4-Dinitrophenol	0.037	0.0725	0.290	0.0037	0.00725	0.0290
Phenol	0.037	0.0714	0.290	0.0037	0.00714	0.0290
Naphthalene	0.037	0.111	0.659	0.0037	0.0111	0.0659
N-nitrosodi-n-propylamine	0.000037	0.000074	0.000170	0.000037	0.000074	0.000170
CONVENTIONAL POLLUTANTS ††						
BOD	N/A	N/A	N/A	1.12	1.6	7.4
COD	N/A	N/A	N/A	8.01	9.	13.
TSS	N/A	N/A	N/A	1.31	1.8	6.1

* All units are lbs/1,000 lbs (kg/tdkg).

† Applies only to atrazine (Plant 1), benomyl, busan 40, busan 85, carbofuran, coumaphos, DBCP, dichlorvos, dinoseb, dioxathion, ferbam, isopropalin, KN methyl, metham, mevinphos, niacide, oxamyl, PCP salt, phorate, terbacil, terbufos, tricyclazole.

** Applies to all pesticides in this subcategory, as necessary.

†† Applies only to biphenyl (Plant 1), diphacinone, endothall, EOD, methoprene, piperonyl butoxide, as all other pesticides in this subcategory were regulated for conventional pollutants during EPT.

N/A Not applicable since municipal treatment systems are designed to remove conventional pollutants.

Table 12 Recommended Standards and Limitations for S category 2

Parameter	Pretreatment Standards*			BAT Effluent Limitations*		
	Long-Term Average	30-Day Maximum	Daily Maximum	Long-Term Average	30-Day Maximum	Daily Maximum
NON-PRIORITY POLLUTANT						
PESTICIDES†	0.0938	0.172	0.614	0.0525	0.0961	0.344
PRIORITY POLLUTANTS **						
Benzene	0.037	0.108	0.659	<0.00037	<0.00108	<0.00659
Chlorobenzene	0.037	0.108	0.659	<0.00037	<0.00108	<0.00659
Toluene	0.037	0.106	0.659	<0.00037	<0.00106	<0.00659
Bromoform	0.037	0.165	0.659	<0.00037	<0.00165	<0.00659
Carbon tetrachloride	0.037	0.165	0.659	<0.00037	<0.00165	<0.00659
Chloroform	0.037	0.165	0.659	<0.00037	<0.00165	<0.00659
Methyl chloride	0.037	0.165	0.659	<0.00037	<0.00165	<0.00659
Methylene chloride	0.037	0.165	0.659	<0.00037	<0.00165	<0.00659
Bis(2-chloroethyl)ether	0.037	0.111	0.659	0.0019	0.00572	0.0338
2,4-Dichlorophenol	0.037	0.0725	0.290	0.0037	0.00725	0.0290
4-Nitrophenol	0.037	0.143	0.290	0.0037	0.0143	0.0290
Pentachlorophenol	0.037	0.0725	0.290	0.0037	0.00725	0.0290
Phenol	0.037	0.0705	0.290	0.0037	0.00714	0.0290
Naphthalene	0.037	0.111	0.659	0.0037	0.0111	0.0659
1,2-Dichloroethane	0.037	0.111	0.659	0.0037	0.0111	0.0659
Tetrachloroethylene	0.037	0.111	0.659	0.0037	0.0111	0.0659
N-nitrosodi-n-propylamine	0.000037	0.000074	0.000170	0.000037	0.000074	0.000170
1,2-Dichloropropane	0.037	0.111	0.659	0.0037	0.0111	0.0659
1,3-Dichloropropene	0.037	0.111	0.659	0.0037	0.0111	0.0659
CONVENTIONAL POLLUTANTS††						
BOD	N/A	N/A	N/A	1.12	1.6	7.4
COD	N/A	N/A	N/A	8.01	9.	13.
TSS	N/A	N/A	N/A	1.31	1.8	6.1

* All units are lbs/1,000 lbs (kg/tdkg).

† Applies only to alachlor, benfluralin, bentazon, bolstar, bromacil, butachlor, carbendazim, carbophenothion, chlorobenzene, chlorobenzilate, chlorpyrifos, chlorpyrifos methyl, 2,4-DB, 2,4-DB isobutyl ester, 2,4-DB isooctyl ester, deet, demeton, dichlofenthion, dichlorobenzene ortho, dichlorobenzene para, ethalfluralin, ethion, etridiazole, fenthion, glyphosate, hexazinone, mephosfolan, methomyl, methyl bromide, nabam, naled, PCP, profluralin, propachlor, ronnel, stirofos, triadimefon, trichlorobenzene.

†† Applies only to glyphosate, hexazinone, phenylphenol, phenylphenol sodium salt, rotenone, as all other pesticides in this subcategory were regulated for conventional pollutants during EPT.

** Applies to all pesticides in this subcategory, as necessary.

N/A = Not applicable since municipal treatment systems are designed to remove conventional pollutants.

Table 13 Recommended Standards and Limitations for Subcategory 3

Parameter	Pretreatment Standards*			BAT Effluent Limitations*		
	Long-Term Average	30-Day Maximum	Daily Maximum	Long-Term Average	30-Day Maximum	Daily Maximum
NON-PRIORITY POLLUTANT PESTICIDES†	0.0145	0.0203	0.110	0.00473	0.00662	0.0359
PRIORITY POLLUTANTS**						
Zinc	0.019	0.0247	0.0570	0.0094	0.0122	0.0282

* All units are lbs/1,000 lbs (kg/tkg).

† Applies only to mancozeb, maneb, zineb (Plant 1), and ziram (Plants 1 and 2).

** Applies to all pesticides in this subcategory, as necessary.

Table 14 Recommended Standards and Limitations for Subcategory 4

Parameter	Pretreatment Standards*			BAT Effluent Limitations*		
	Long-Term Average	30-Day Maximum	Daily Maximum	Long-Term Average	30-Day Maximum	Daily Maximum
NON-PRIORITY POLLUTANT PESTICIDES†	0.00243	0.00396	0.0156	0.00129	0.00210	0.00829
PRIORITY POLLUTANTS**						
Benzene	0.037	0.108	0.659	<0.00037	<0.00108	<0.00659
Toluene	0.037	0.106	0.659	<0.00037	<0.00106	<0.00659
Carbon tetrachloride	0.037	0.165	0.659	<0.00037	<0.00165	<0.00659
Chloroform	0.037	0.165	0.659	<0.00037	<0.00165	<0.00659
Methyl chloride	0.037	0.165	0.659	<0.00037	<0.00165	<0.00659
Methylene chloride	0.037	0.165	0.659	<0.00037	<0.00165	<0.00659
Cyanide	0.0015	0.00240	0.00488	0.00075	0.00120	0.00244
Bis(2-chloroethyl)ether	0.037	0.111	0.659	0.0019	0.00572	0.0338
Naphthalene	0.037	0.111	0.659	0.0037	0.0111	0.0659
1,2-Dichloroethane	0.037	0.111	0.659	0.0037	0.0111	0.0659
Tetrachloroethylene	0.037	0.111	0.659	0.0037	0.0111	0.0659

* All units are lbs/1,000 lbs (kg/10kg).

† Applies only to fluometuron.

** Applies to all pesticides in this subcategory, as necessary.

Table 15 Recommended Standards and Limitations for Subcategory 5

Parameter	Pretreatment Standards*			BAT Effluent Limitations*		
	Long-Term Average	30-Day Maximum	Daily Maximum	Long-Term Average	30-Day Maximum	Daily Maximum
NON-PRIORITY POLLUTANT						
PESTICIDES†	0.0182	0.0255	0.138	0.00167	0.00234	0.0127
PRIORITY POLLUTANTS**						
Benzene	0.037	0.108	0.659	<0.00037	<0.00108	<0.00659
Toluene	0.037	0.106	0.659	<0.00037	<0.00106	<0.00659
Carbon tetrachloride	0.037	0.165	0.659	<0.00037	<0.00165	<0.00659
Chloroform	0.037	0.165	0.659	<0.00037	<0.00165	<0.00659
Methyl chloride	0.037	0.165	0.659	<0.00037	<0.00165	<0.00659
Methylene chloride	0.037	0.165	0.659	<0.00037	<0.00165	<0.00659
Copper	0.019	0.0274	0.0733	0.0094	0.0135	0.0363
Zinc	0.019	0.0247	0.0570	0.0094	0.0122	0.0282
Hexachlorocyclopentadiene	0.0017	0.00350	0.0127	0.00086	0.00177	0.00643

* All units are lbs/1,000 lbs (kg/tkg).

† Applies only to fensulfothion, polyram, and zineb (Plant 2).

** Applies to all pesticides in this subcategory, as necessary.

Table 16 Recommended Standards and Limitations for Subcategory 6

Parameter	Pretreatment Standards*			BAT Effluent Limitations*		
	Long-Term Average	30-Day Maximum	Daily Maximum	Long-Term Average	30-Day Maximum	Daily Maximum
PRIORITY POLLUTANTS†						
Cyanide	0.0015	0.00240	0.00488	0.00075	0.00120	0.00244

* All units are lbs/1,000 lbs (kg/kg).

† Applies to all pesticides in this subcategory, as necessary.

Table 17 Recommended Standards and Limitations for Subcategory 7

Parameter	Pretreatment Standards*			BAT Effluent Limitations*		
	Long-Term Average	30-Day Maximum	Daily Maximum	Long-Term Average	30-Day Maximum	Daily Maximum
PRIORITY POLLUTANTS†						
Benzene	0.037	0.108	0.659	<0.00037	<0.00108	<0.00659
Toluene	0.037	0.106	0.659	<0.00037	<0.00106	<0.00659
Carbon tetrachloride	0.037	0.165	0.659	<0.00037	<0.00165	<0.00659
Chloroform	0.037	0.165	0.659	<0.00037	<0.00165	<0.00659
Methyl chloride	0.037	0.165	0.659	<0.00037	<0.00165	<0.00659
Methylene chloride	0.037	0.165	0.659	<0.00037	<0.00165	<0.00659
Copper	0.019	0.0274	0.0733	0.0094	0.0135	0.0363
Cyanide	0.0015	0.00240	0.00488	0.00075	0.00120	0.00244

* All units are lbs/1,000 lbs (kg/kg).

† Applies to all pesticides in this subcategory, as necessary.

Table 18 Recommended Standards and Limitations for Subcategory 8

Parameter	Pretreatment Standards*			BAT Effluent Limitations*		
	Long-Term Average	30-Day Maximum	Daily Maximum	Long-Term Average	30-Day Maximum	Daily Maximum
NON-PRIORITY POLLUTANT						
PESTICIDES†	0.00129	0.00248	0.0117	N/A	N/A	N/A
PRIORITY POLLUTANTS**						
2,4-Dinitrophenol	0.037	0.0725	0.290	0.0037	0.00725	0.0290
4-Nitrophenol	0.037	0.143	0.290	0.0037	0.0143	0.0290
Phenol	0.037	0.0714	0.290	0.0037	0.00714	0.0290
Chlordane	0.00129	0.00248	0.0117	N/A	N/A	N/A
Heptachlor	0.00129	0.00248	0.0117	N/A	N/A	N/A
N-nitrosodi-n-propylamine	0.000037	0.000074	0.000170	0.000037	0.000074	0.000170
Hexachlorocyclopentadiene	0.0017	0.00350	0.0127	0.00086	0.00177	0.00643
Naphthalene	0.037	0.111	0.659	0.0037	0.0111	0.0659

* All units are lbs/1,000 lbs (kg/kg).

† Applies only to aminocarb, chlordane, endosulfan, fenuron, malathion, methiocarb, mexacarbate, mirex, monuron, parathion ethyl, parathion methyl, propan, propoxur, trifluralin.

** Applies to all pesticides in this subcategory, as necessary.

N/A = Not applicable—previously regulated for direct discharge in EPT.

Table 19 Recommended Standards and Limitations for Subcategory 9

Parameter	Pretreatment Standards*			BAT Effluent Limitations*		
	Long-Term Average	30-Day Maximum	Daily Maximum	Long-Term Average	30-Day Maximum	Daily Maximum
NON-PRIORITY POLLUTANT						
PESTICIDES†	0.00129	0.00212	0.0105	N/A	N/A	N/A
PRIORITY POLLUTANTS**						
Benzene	0.037	0.108	0.659	<0.00037	<0.00108	<0.00659
Chlorobenzene	0.037	0.108	0.659	<0.00037	<0.00108	<0.00659
Toluene	0.037	0.106	0.659	<0.00037	<0.00106	<0.00659
Carbon tetrachloride	0.037	0.165	0.659	<0.00037	<0.00165	<0.00659
Chloroform	0.037	0.165	0.659	<0.00037	<0.00165	<0.00659
Methyl chloride	0.037	0.165	0.659	<0.00037	<0.00165	<0.00659
Methylene chloride	0.037	0.165	0.659	<0.00037	<0.00165	<0.00659
Chlordane	0.00129	0.00212	0.0105	N/A	N/A	N/A
Heptachlor	0.00129	0.00212	0.0105	N/A	N/A	N/A
Hexachlorocyclopentadiene	0.0017	0.00350	0.0127	0.00086	0.00177	0.00643
Naphthalene	0.037	0.111	0.659	0.0037	0.0111	0.0659
1,2-Dichloropropane	0.037	0.111	0.659	0.0037	0.0111	0.0659
1,3-Dichloropropene	0.037	0.111	0.659	0.0037	0.0111	0.0659
2,4-Dichlorophenol	0.037	0.0725	0.290	0.0037	0.00725	0.0290
2,4-Dinitrophenol	0.037	0.0725	0.290	0.0037	0.00725	0.0290
4-Nitrophenol	0.037	0.143	0.290	0.0037	0.0143	0.0290
Pentachlorophenol	0.037	0.0725	0.290	0.0037	0.00725	0.0290
Phenol	0.037	0.0714	0.290	0.0037	0.00714	0.0290
Bis(2-chloroethyl)ether	0.037	0.111	0.659	0.0019	0.00572	0.0338
1,2-Dichloroethane	0.037	0.111	0.659	0.0037	0.0111	0.0659
Tetrachloroethylene	0.037	0.111	0.659	0.0037	0.0111	0.0659

* All units are lbs/1,000 lbs (kg/kg).

† Applies only to azinphos methyl, BHC, captan, carbaryl, chlorpropham, 2,4-D isobutyl ester, 2,4-D, 2,4-D isooctyl ester (Plant 1), DCNA, DDD, DDE, demeton-o, demeton-s, diazinon, dicamba, dicofol, disulfoton, diuron, fenuron-TCA, heptachlor, lindane, linuron, methoxychlor, monuron-TCA, neburon, PCNB, perthane, siduron, silvex, S-EP, 2,4,5-T,.

** Applies to all pesticides in this subcategory, as necessary.

N/A = Not applicable - previously regulated for direct discharge in EPT.

Table 20 Recommended Standards and Limitations for Subcategory 10

Parameter	Pretreatment Standards*			BAT Effluent Limitations*		
	Long-Term Average	30-Day Maximum	Daily Maximum	Long-Term Average	30-Day Maximum	Daily Maximum
NON-PRIORITY POLLUTANT						
PESTICIDES†	0.0583	0.131	0.618	0.0493	0.111	0.522
PRIORITY POLLUTANTS**						
Benzene	0.037	0.108	0.659	<0.00037	<0.00108	<0.00659
Chlorobenzene	0.037	0.108	0.659	<0.00037	<0.00108	<0.00659
Toluene	0.037	0.106	0.659	<0.00037	<0.00106	<0.00659
Carbon tetrachloride	0.037	0.165	0.659	<0.00037	<0.00165	<0.00659
Chloroform	0.037	0.165	0.659	<0.00037	<0.00165	<0.00659
Methyl chloride	0.037	0.165	0.659	<0.00037	<0.00165	<0.00659
Methylene chloride	0.037	0.165	0.659	<0.00037	<0.00165	<0.00659
1,2-Dichloroethane	0.037	0.111	0.659	0.0037	0.0111	0.0659
Tetrachloroethylene	0.037	0.111	0.659	0.0037	0.0111	0.0659
Cyanide	0.0015	0.00240	0.00488	0.00075	0.00120	0.00244
CONVENTIONAL POLLUTANTS††						
BOD	N/A	N/A	N/A	1.12	1.6	7.4
COD	N/A	N/A	N/A	8.01	9.	13.
TSS	N/A	N/A	N/A	1.31	1.8	6.1

* All units are lbs/1,000 lbs (kg/tdkg).

† Applies only to ametryne, atrazine (Plants 2 and 3), cyanazine, metribuzin, prometon, prometryn, propazine, simazine, simetryne, terbuthylazine, terbutryn.

** Applies to all pesticides in this subcategory, as necessary.

†† Applies to all pesticides in this subcategory.

N/A Not applicable since municipal treatment systems are designed to remove conventional pollutants.

Table 21 Recommended Standards and Limitations for Subcategory 11

<u>Pretreatment Standards</u>		<u>BAT Effluent Limitations</u>				
<u>Parameter</u>	<u>Long-Term Average</u>	<u>30-Day Maximum</u>	<u>Daily Maximum</u>	<u>Long-Term Average</u>	<u>30-Day Maximum</u>	<u>Daily Maximum</u>
ALL PROCESS WASTEWATER POLLUTANTS*		ZERO DISCHARGE			ZERO DISCHARGE	

* Applies to all wastewaters from manufacture of alkylamine hydrochloride, amoban, barban, BETAC, biphenyl (Plant 2), chlorpicrin (Plants 2, 3, 4), 2,4-D isooctyl ester (Plant 2), 2,4-D salt, dichloroethyl ethyl, dichlorophen salt, dichloropropane-dichloropropene, dichloropropene, dowicide Q, ethoprop, fluoroacetamide, glyodin, HPTMS, merphos, metasol J-26 pyrethrin, silvex isooctyl ester, silvex salt, sodium monofluoroacetate (Plant 2), tributyltin benzoate, tributyltin oxide (Plant 2), vancide TH, vancide 51Z, vancide 51Z dispersion, ziram (Plant 3).

Daily Variability Factors

The daily maximum variability factor is defined as an estimate (U_k) of the 99th percentile of the daily pollutant discharge divided by the average daily pollutant discharge. This estimate is obtained by using the following binomial equation to establish the value of k such that U_k has a probability of at least 50 percent of exceeding the 99th percentile of the distribution of daily discharges.

$$\text{Confidence coefficient} = 1 - \sum_{j=0}^{k-1} \binom{N}{j} (0.01)^j (0.99)^{N-j}$$

where k = rank of each observation
 N = total number of values available

U_k therefore represents a value below which at least 99 percent of the values of future samples of size N will fall at least 50 percent of the time. The daily variability factor is then calculated by the equation

$$VF_d = \frac{U_k}{\bar{X}}$$

where U_k = the observation used to estimate the 99th percentile which has a confidence coefficient most closely approximating, but not less than, 50 percent.

\bar{X} = arithmetic average of the daily observations

The results of this analysis for each of the available plant/pollutant data sets are presented in the Contractor Technical Report.

30-Day Variability Factors

The monthly average variability factor is defined as the estimate of the 99th percentile of the average monthly pollutant discharge divided by the average monthly pollutant discharge. The estimated 99th percentile of the monthly averages, based on daily values, is derived from the equation

$$M_d = \bar{X} + 2.33s \sqrt{\frac{1}{m}}$$

where m = sample days/month to which the maximum is applied

s = standard deviation of the daily observations

\bar{X} = arithmetic average of the daily observations

This equation assumes the approximate normality of the monthly average. When the monthly averages consist of a sufficient number of daily observations, the central limit theorem assures their normality. What represents a sufficient number of observations varies according to the underlying distribution of the data.

ATTACHMENT 1
(Continued, page 2 of 2)

For data reported as monthly averages (where all monthly averages consist of 30 observations), the daily standard deviation may be approximated by $\sqrt{30} s_{\bar{x}}$ where $s_{\bar{x}}$ is the standard deviation of the monthly averages. Therefore the equation for the estimated 99th percentile of the monthly averages, based on monthly values, becomes

$$M_m = \bar{x} + 2.33\sqrt{30} s_{\bar{x}} \sqrt{1/m}$$

where $s_{\bar{x}}$ = standard deviation of the monthly averages

\bar{x} = arithmetic average of monthly averages

The resulting estimate represents an estimate of the 99th percentile of the monthly averages assuming that:

1. The observations are statistically independent,
2. The number of days sampled per month is large enough to warrant the use of the Central Limit Theorem to assure approximate normality of the monthly means,
3. The number of observations used to compute each monthly average is equal to 30 if M_m is being calculated.

The monthly variability factor is then calculated by the following equations depending on whether monthly or daily data are available.

$$VF_m = \frac{M_d}{\bar{x}} \quad \text{or} \quad \frac{M_m}{\bar{x}}$$

The results of this analysis for each of the available plant/pollutant data sets are presented in the Contractor Technical Report.

Table 22 PRIORITY POLLUTANTS TO BE MONITORED IN PESTICIDE WASTEWATERS

Pesticide	Priority Pollutant Group	Priority Pollutant To Be Monitored
Acephate	Halomethanes Metals Volatile Aromatics	Carbon tetrachloride Chloroform Methyl chloride Methylene chloride Zinc Benzene Toluene
Alachlor	Chlorinated Ethanes and Ethylenes Haloethers Halomethanes Volatile Aromatics	1,2-Dichloroethane Bis(2-chloroethyl)ether Carbon tetrachloride Chloroform Methyl chloride Methylene chloride Benzene Chlorobenzene Toluene
Aldicarb		None
Alkylamine hydrochloride		None
Ametryne	Cyanides Volatile Aromatics	Cyanide Benzene Toluene
Aminocarb	Phenols	Phenol
Amobam		None
Anilazine	Chlorinated Ethanes and Ethylenes Cyanides Volatile Aromatics	1,2-Dichloroethane Tetrachloroethylene Cyanide Chlorobenzene
Aquatreat DNM 30	Metals	Zinc
Aspon	Volatile Aromatics	Benzene Toluene
Atrazine	Cyanides Halomethanes Volatile Aromatics	Cyanide* Carbon tetrachloride* Chloroform* Methyl chloride* Methylene chloride* Benzene* Toluene*

* Subcategory 10 only

Table 22 **PRIORITY POLLUTANTS TO BE MONITORED IN PESTICIDE WASTEWATERS**
(Continued, Page 2 of 21)

Pesticide	Priority Pollutant Group	Priority Pollutant To Be Monitored
Azinphos methyl	Chlorinated Ethanes and Ethylenes	1,2-Dichloroethane Tetrachloroethylene
Barban		None
BBTAC		None
Benodiocarb	Polynuclear Aromatic Hydrocarbons	Naphthalene
Benfluralin	Nitrosamines	N-nitrosodi-n-propylamine
Benomyl		None
Bensulide	Volatile Aromatics	Benzene Toluene
Bentazon	Chlorinated Ethanes and Ethylenes Volatile Aromatics	1,2-Dichloroethane Tetrachloroethylene Chlorobenzene
Benzethonium chloride	Volatile Aromatics	Benzene Toluene
Benzyl bromoacetate	Volatile Aromatics	Benzene Toluene
BHC	Volatile Aromatics	Benzene Toluene
Bifenox	Halomethanes	Chloroform Methyl chloride Methylene chloride
	Phenols	2,4-Dichlorophenol
Biphenyl	Polynuclear Aromatic Hydrocarbons	Naphthalene*
Bolstar	Chlorinated Ethanes and Ethylenes Halomethanes	1,2-Dichloroethane Tetrachloroethylene Carbon tetrachloride Chloroform Methyl chloride Methylene chloride
	Phenols	2,4-Dichlorophenol

* Subcategory 1 only

Table 22 **PRIORITY POLLUTANTS TO BE MONITORED IN PESTICIDE WASTEWATERS**
(Continued, Page 3 of 21)

Pesticide	Priority Pollutant Group	Priority Pollutant To Be Monitored
Bromacil	Halomethanes	Bromoform Carbon tetrachloride Chloroform Methylene chloride
Bromoxynil	Polynuclear Aromatic Hydrocarbons Volatile Aromatics	Naphthalene Benzene Toluene
Bromoxynil octanoate	Volatile Aromatics	Benzene Toluene
Busan 40		None
Busan 85		None
Busan 90	Chlorinated Ethanes and Ethylenes Haloethers Halomethanes Phenols	1,2-Dichloroethane Bis(2-chloroethyl) ether Carbon tetrachloride Chloroform Methyl chloride Methylene chloride Phenol
Butachlor	Volatile Aromatics	Benzene Toluene
Butylate	Halomethanes	Carbon tetrachloride Chloroform Methyl chloride Methylene chloride
Captafol		None
Captan		None
Carbaryl	Polynuclear Aromatic Hydrocarbons Volatile Aromatics	Naphthalene Benzene Toluene
Carbendazim		None
Carbofuran		None

Table 22

PRIORITY POLLUTANTS TO BE MONITORED IN PESTICIDE WASTEWATERS
(Continued, Page 4 of 21)

Pesticide	Priority Pollutant Group	Priority Pollutant To Be Monitored
Carbophenothion	Haloethers Halomethanes	Bis(2-chloroethyl) ether Carbon tetrachloride Chloroform Methyl chloride Methylene chloride
	Volatile Aromatics	Benzene Toluene
CDN	Polynuclear Aromatic Hydrocarbons Volatile Aromatics	Naphthalene Benzene Chlorobenzene Toluene
Chloramben		None
Chlordane	Dienes Pesticides	Hexachlorocyclopentadiene Chlordane Heptachlor
Chlorobenzene	Phenols Volatile Aromatics	2,4-Dichlorophenol Phenol Benzene Chlorobenzene Toluene
Chlorobenzilate	Volatile Aromatics	Benzene Toluene
Chlorothalonil	Chlorinated Ethanes and Ethylenes Cyanides Halomethanes	1,2-Dichloroethane Tetrachloroethylene Cyanide Carbon tetrachloride Chloroform Methyl chloride Methylene chloride
Chlorpicrin		None
Chlorpropham	Chlorinated Ethanes and Ethylenes	1,2-Dichloroethane Tetrachloroethylene
Chlorpyrifos	Halomethanes	Carbon tetrachloride Chloroform Methyl chloride Methylene chloride

Table 22 **PRIORITY POLLUTANTS TO BE MONITORED IN PESTICIDE WASTEWATERS**
(Continued, Page 5 of 21)

Pesticide	Priority Pollutant Group	Priority Pollutant To Be Monitored
Chlorpyrifos methyl	Halomethanes	Carbon tetrachloride Chloroform Methyl chloride Methylene chloride
Coumaphos		None
Cyanazine	Cyanides	Cyanide
Cycloate	Halomethanes	Carbon tetrachloride Chloroform Methyl chloride Methylene chloride
Cycloheximide	Halomethanes	Carbon tetrachloride Chloroform Methyl chloride Methylene chloride
Cycloprate	Volatile Aromatics	Benzene Toluene
Cyhexatin	Volatile Aromatics	Benzene Toluene
Cythioate	Volatile Aromatics	Benzene Toluene
2,4-D	Phenols	2,4-Dichlorophenol Phenol
	Volatile Aromatics	Benzene Chlorobenzene
2,4-D isobutyl ester		None
2,4-D isooctyl ester		None
2,4-D salt		None
Dalapon		None
Dazomet		None

Table 22

PRIORITY POLLUTANTS TO BE MONITORED IN PESTICIDE WASTEWATERS
(Continued, Page 6 of 21)

Pesticide	Priority Pollutant Group	Priority Pollutant To Be Monitored
2,4-DB	Halomethanes	Carbon tetrachloride Chloroform Methyl chloride Methylene chloride
	Phenols	2,4-Dichlorophenol
2,4-DB isobutyl ester		None
2,4-DB isooctyl ester		None
DBCP		None
DCNA		None
DCPA	Halomethanes	Carbon tetrachloride Chloroform Methyl chloride Methylene chloride
	Polynuclear Aromatic Hydrocarbons	Naphthalene
	Volatile Aromatics	Benzene Chlorobenzene Toluene
DDD	Haloethers	Bis(2-chloroethyl) ether
	Volatile Aromatics	Benzene Chlorobenzene
DDE	Haloethers	Bis(2-chloroethyl) ether
	Volatile Aromatics	Benzene Chlorobenzene
DDT	Volatile Aromatics	Benzene Chlorobenzene Toluene
Deet	Volatile Aromatics	Benzene Toluene
Demeton	Halomethanes	Carbon tetrachloride Chloroform Methyl chloride Methylene chloride
	Volatile Aromatics	Benzene Toluene

Table 22

PRIORITY POLLUTANTS TO BE MONITORED IN PESTICIDE WASTEWATERS
(Continued, Page 7 of 21)

Pesticide	Priority Pollutant Group	Priority Pollutant To Be Monitored
Demeton-o	Volatile Aromatics	Benzene Toluene
Demeton-s	Volatile Aromatics	Benzene Toluene
Diazinon	Volatile Aromatics	Benzene Toluene
Dicamba	Halomethanes	Chloroform Methyl chloride Methylene chloride
	Phenols	2,4-Dichlorophenol Pentachlorophenol Phenol
	Polynuclear Aromatic Hydrocarbons	Naphthalene
	Volatile Aromatics	Benzene Chlorobenzene Toluene
Dichlofenthion	Phenols	2,4-Dichlorophenol Pentachlorophenol
Dichlorobenzene, ortho	Volatile Aromatics	Benzene Chlorobenzene Toluene
Dichlorobenzene, para	Volatile Aromatics	Benzene Chlorobenzene Toluene
Dichloroethyl ether		None
Dichlorophen	Phenols	Phenol
Dichlorophen salt		None
Dichloropropane-dichloropropene mixture		None
Dichloropropene		None
Dichlorprop	Phenols	2,4-Dichlorophenol

Table 22

PRIORITY POLLUTANTS TO BE MONITORED IN PESTICIDE WASTEWATERS
(Continued, Page 8 of 21)

Pesticide	Priority Pollutant Group	Priority Pollutant To Be Monitored
Dichlorvos		None
Dicofol	Chlorinated Ethanes and Ethylenes	1,2-Dichloroethane
Dienochlor	Dienes Metals Volatile Aromatics	Hexachlorocyclopentadiene Copper Benzene Toluene
Dimethoxane		None
Dinocap	Phenols	2,4-Dinitrophenol Phenol
Dinoseb		None
Dioxathion		None
Diphacinone		None
Diphenamid	Chlorinated Ethanes and Ethylenes Volatile Aromatics	1,2-Dichloroethane Benzene Chlorobenzene
Diphenylamine		None
Disulfoton	Chlorinated Ethanes and Ethylenes Volatile Aromatics	1,2-Dichloroethane Tetrachloroethylene Benzene Toluene
Diuron	Volatile Aromatics	Benzene Chlorobenzene Toluene
Dodine	Cyanides	Cyanide
Dowicide Q		None
Endosulfan	Dienes	Hexachlorocyclopentadiene
Endothall		None

Table 22 **PRIORITY POLLUTANTS TO BE MONITORED IN PESTICIDE WASTEWATERS**
 (Continued, Page 9 of 21)

Pesticide	Priority Pollutant Group	Priority Pollutant To Be Monitored
Endrin	Chlorinated Ethanes and Ethylenes Dichloropropane and Dichloropropene Dienes Halomethanes Polynuclear Aromatic Hydrocarbons	1,2-Dichloroethane Tetrachloroethylene 1,2-Dichloropropane. 1,3-Dichloropropene Hexachlorocyclopentadiene Carbon tetrachloride Chloroform Methyl chloride Methylene chloride Naphthalene
EPN	Nitrosamines Phenols Polynuclear Aromatic Hydrocarbons Volatile Aromatics	N-nitrosodi-n-propylamine 4-Nitrophenol Phenol Naphthalene Benzene Chlorobenzene Toluene
EPTC	Halomethanes	Carbon tetrachloride Chloroform Methyl chloride Methylene chloride
Ethalfuralin	Nitrosamines	N-nitrosodi-n-propylamine
Ethion	Halomethanes Volatile Aromatics	Bromoform Methyl bromide Benzene Toluene
Ethoprop		None
Ethoxyquin 66%	Volatile Aromatics	Toluene
Ethoxyquin 86%	Volatile Aromatics	Toluene
Ethylene dibromide		None
Etridazole	Volatile Aromatics	Benzene
EXD		None

Table 22 **PRIORITY POLLUTANTS TO BE MONITORED IN PESTICIDE WASTEWATERS**
(Continued, Page 10 of 21)

Pesticide	Priority Pollutant Group	Priority Pollutant To Be Monitored
Famphur	Polynuclear Aromatic Hydrocarbons Volatile Aromatics	Naphthalene Benzene Toluene
Fenarimol		None
Fenitrothion	Cyanides Metals Volatile Aromatics	Cyanide Copper Benzene Toluene
Fensulfothion	Metals Volatile Aromatics	Copper Benzene Toluene
Fenthion	Halomethanes Phenols	Carbon tetrachloride Chloroform Methylene chloride Phenol
Fentin hydroxide	Volatile Aromatics	Benzene Chlorobenzene Toluene
Fenuron		None
Fenuron-TCA	Chlorinated Ethanes and Ethylenes	1,2-Dichloroethane Tetrachloroethylene
Ferbam		None
Fluchloralin	Nitrosamines	N-nitrosodi-n-propylamine
Fluoridone	Halomethanes Volatile Aromatics	Carbon tetrachloride Chloroform Methyl chloride Methylene chloride Benzene Toluene
Fluometuron	Cyanides	Cyanide
Fluoroacetamide		None

Table 22 **PRIORITY POLLUTANTS TO BE MONITORED IN PESTICIDE WASTEWATERS**
(Continued, Page 11 of 21)

Pesticide	Priority Pollutant Group	Priority Pollutant To Be Monitored
Folpet		None
Fonofos	Chlorinated Ethanes and Ethylenes Volatile Aromatics	1,2-Dichloroethane Tetrachloroethylene Benzene Toluene
Giv-gard	Nitrosamines Volatile Aromatics	N-nitrosodi-n-propylamine Benzene Toluene
Glyodin		None
Glyphosate	Haloethers Halomethanes	Bis(2-chloroethyl) ether Carbon tetrachloride Chloroform Methyl chloride Methylene chloride
HAE		None
HAMP		None
Heptachlor	Chlorinated Ethanes and Ethylenes Dichloropropane and Dichloropropene Dienes Halomethanes Pesticides	1,2-Dichloroethane Tetrachloroethylene 1,2-Dichloropropane 1,3-Dichloropropene Hexachlorocyclopentadiene Carbon tetrachloride Chloroform Methyl chloride Methylene chloride Chlordane Heptachlor
Hexachlorophene	Chlorinated Ethanes and Ethylenes Phenols	1,2-Dichloroethane Pentachlorophenol
Hexazinone	Volatile Aromatics	Benzene Toluene
HPTMS		None
Hyamine 2389	Volatile Aromatics	Benzene Toluene

Table 22 PRIORITY POLLUTANTS TO BE MONITORED IN PESTICIDE WASTEWATERS
(Continued, Page 12 of 21)

Pesticide	Priority Pollutant Group	Priority Pollutant To Be Monitored
Hyamine 3500	Volatile Aromatics	Toluene
Isopropalin	Nitrosamines Polynuclear Aromatic Hydrocarbons	N-nitrosodi-n-propylamine Naphthalene
Kathon 886	Volatile Aromatics	Benzene Toluene
Kinoprene		None
KN methyl		None
Lethane 384	Cyanides Haloethers Polynuclear Aromatic Hydrocarbons Volatile Aromatics	Cyanide Bis(2-chloroethyl) ether Naphthalene Benzene Toluene
Lindane	Volatile Aromatics	Benzene Toluene
Linuron	Volatile Aromatics	Benzene Chlorobenzene
Malathion		None
Maleic hydrazide		None
Mancozeb	Metals	Zinc
Maneb	Metals	Zinc
MCPA	Dichloropropane and Dichloropropene Phenols Volatile Aromatics	1,2-Dichloropropane 1,3-Dichloropropene 2,4-Dichlorophenol Phenol Benzene Toluene
MCPA isooctyl ester		None
MCPP	Phenols Volatile Aromatics	2,4-Dichlorophenol Phenol Benzene Toluene

Table 22 **PRIORITY POLLUTANTS TO BE MONITORED IN PESTICIDE WASTEWATERS**
 (Continued, Page 13 of 21)

Pesticide	Priority Pollutant Group	Priority Pollutant To Be Monitored
Mephosfolan	Volatile Aromatics	Benzene Toluene
Merphos		None
Metasol DGH	Cyanides	Cyanide
Metasol J-26		None
Metham		None
Methamidophos	Chlorinated Ethanes and Ethylenes	1,2-Dichloroethane
Methiocarb	Phenols	Phenol
Methomyl	Haloethers Halomethanes	Bis(2-chloroethyl) ether Carbon tetrachloride Chloroform Methyl chloride Methylene chloride
Methoprene		None
Methoxychlor	Halomethanes	Carbon tetrachloride Chloroform Methyl chloride Methylene chloride
	Phenols	Phenols
Methylbenzethonium chloride	Volatile Aromatics	Benzene Toluene
Methyl bromide	Halomethanes	Bromoform
Methylene bithiocyanate	Cyanides Halomethanes	Cyanide Carbon tetrachloride Chloroform Methyl chloride Methylene chloride
Metribuzin	Cyanides	Cyanide
Mevinphos		None

Table 22 **PRIORITY POLLUTANTS TO BE MONITORED IN PESTICIDE WASTEWATERS**
(Continued, Page 14 of 21)

Pesticide	Priority Pollutant Group	Priority Pollutant To Be Monitored
Hexacarbate	Phenols	Phenol
MKG 264	Volatile Aromatics	Benzene Toluene
MKG 326	Volatile Aromatics	Benzene Toluene
Mirex	Dienes	Hexachlorocyclopentadiene
Molinate	Halomethanes	Carbon tetrachloride Chloroform Methyl chloride Methylene chloride
Monocrotophos	Halomethanes	Carbon tetrachloride Chloroform Methyl chloride Methylene chloride
	Metals	Copper
Monuron		None
Monuron-TCA	Chlorinated Ethanes and Ethylenes Volatile Aromatics	1,2-Dichloroethane Benzene Toluene
Nabam		None
Nabonate	Cyanides	Cyanide
Neburon	Volatile Aromatics	Benzene Toluene
Naled	Halomethanes	Carbon tetrachloride Chloroform Methyl chloride Methylene chloride
Napropamide	Dichloropropane and Dichloropropene Polynuclear Aromatic Hydrocarbons Volatile Aromatics	1,2-Dichloropropane 1,3-Dichloropropene Naphthalene Benzene Toluene

Table 22 PRIORITY POLLUTANTS TO BE MONITORED IN PESTICIDE WASTEWATERS
 (Continued, Page 15 of 21)

Pesticide	Priority Pollutant Group	Priority Pollutant To Be Monitored
Naptalam	Polynuclear Aromatic Hydrocarbons Volatile Aromatics	Naphthalene Benzene Toluene
Niacide		None
Nitrofen	Phenols Polynuclear Aromatic Hydrocarbons Volatile Aromatics	2,4-Dichlorophenol 4-Nitrophenol Pentachlorophenol Phenol Naphthalene Benzene Chlorobenzene Toluene
NMI	Volatile Aromatics	Benzene Toluene
Norflurazon		None
Octhilinone		None
Oryzalin	Nitrosamines	N-nitrosodi-n-propylamine
Oxamyl		None
Oxydemeton	Halomethanes	Carbon tetrachloride Chloroform Methyl chloride Methylene chloride
Oxyfluorfen	Chlorinated Ethanes and Ethylenes	1,2-Dichloroethane Tetrachloroethylene
Paraquat	Halomethanes	Chloroform Methyl chloride Methylene chloride
Parathion ethyl	Phenols Polynuclear Aromatic Hydrocarbons	4-Nitrophenol Naphthalene

Table 22 **PRIORITY POLLUTANTS TO BE MONITORED IN PESTICIDE WASTEWATERS**
(Continued, Page 16 of 21)

Pesticide	Priority Pollutant Group	Priority Pollutant To Be Monitored
Parathion methyl	Phenols	2,4-Dinitrophenol 4-Nitrophenol
	Polynuclear Aromatic Hydrocarbons	Naphthalene
PBED	Chlorinated Ethanes and Ethylenes	1,2-Dichloroethane
	Haloethers	Bis(2-chloroethyl) ether
PCNB	Volatile Aromatics	Benzene
		Chlorobenzene
		Toluene
PCP	Phenols	2,4-Dichlorophenol Pentachlorophenol Phenol
	Volatile Aromatics	Chlorobenzene
PCP salt		None
Pebulate	Halomethanes	Carbon tetrachloride Chloroform Methyl chloride Methylene chloride
	Metals	Zinc
Permethrin		None
Perthane	Chlorinated Ethanes and Ethylenes	1,2-Dichloroethane
	Polynuclear Aromatic Hydrocarbons	Naphthalene
	Volatile Aromatics	Benzene Chlorobenzene Toluene
Phenylphenol	Phenols	2,4-Dichlorophenol Phenol
	Polynuclear Aromatic Hydrocarbons	Naphthalene
	Volatile Aromatics	Benzene Chlorobenzene
Phenylphenol sodium salt	Phenols	2,4-Dichlorophenol Phenol
	Polynuclear Aromatic Hydrocarbons	Naphthalene
	Volatile Aromatics	Benzene Chlorobenzene

Table 22

PRIORITY POLLUTANTS TO BE MONITORED IN PESTICIDE WASTEWATERS
(Continued, Page 17 of 21)

Pesticide	Priority Pollutant Group	Priority Pollutant To Be Monitored
Phorate		None
Phosfolan	Volatile Aromatics	Benzene Toluene
Phosmet	Volatile Aromatics	Benzene Toluene
Picloram	Cyanides Halomethanes	Cyanide Carbon tetrachloride Chloroform Methyl chloride Methylene chloride
Pindone	Volatile Aromatics	Benzene Toluene
Piperalin	Volatile Aromatics	Benzene Chlorobenzene Toluene
Piperonyl butoxide		None
Polyphase antimildew		None
Polyram	Metals	Zinc
Profluralin	Halomethanes Nitrosamines	Carbon tetrachloride Chloroform Methyl chloride Methylene chloride N-nitrosodi-n-propylamine
Prometon	Cyanides Volatile Aromatics	Cyanide Benzene Toluene
Prometryn	Cyanides Volatile Aromatics	Cyanide Benzene Toluene
Pronamide	Volatile Aromatics	Benzene Toluene

Table 22 **PRIORITY POLLUTANTS TO BE MONITORED IN PESTICIDE WASTEWATERS**
 (Continued, Page 18 of 21)

Pesticide	Priority Pollutant Group	Priority Pollutant To Be Monitored
Propachlor	Volatile Aromatics	Benzene Toluene
Propanil	Dichloropropane and Dichloropropene Polynuclear Aromatic Hydrocarbons Volatile Aromatics	1,2-Dichloropropane 1,3-Dichloropropene Naphthalene Benzene Toluene
Propargite		None
Propazine	Cyanides Halomethanes Volatile Aromatics	Cyanide Carbon tetrachloride Chloroform Methyl chloride Methylene chloride Benzene Toluene
Propham		None
Propionic acid		None
Propoxur	Phenols	Phenol
Pyrethrins		None
8 Quinolinol citrate		None
8 Quinolinol sulfate		None
Resmethrin	Cyanides Volatile Aromatics	Cyanide Benzene Toluene
RH 787	Polynuclear Aromatic Hydrocarbons	Naphthalene
Ronnel	Phenols	2,4-Dichlorophenol
Rotenone	Volatile Aromatics	Benzene Toluene
Siduron	Volatile Aromatics	Chlorobenzene

Table 22

PRIORITY POLLUTANTS TO BE MONITORED IN PESTICIDE WASTEWATERS
(Continued, Page 19 of 21)

Pesticide	Priority Pollutant Group	Priority Pollutant To Be Monitored
Silvex	Dichloropropane and Dichloropropene Phenols Volatile Aromatics	1,2-Dichloropropane 1,3-Dichloropropene 2,4-Dichlorophenol Phenol Benzene Toluene
Silvex isocytl ester		None
Silvex salt		None
Simazine	Cyanides Halomethanes Volatile Aromatics	Cyanide Carbon tetrachloride Chloroform Methyl chloride Methylene chloride Benzene Toluene
Simetryne	Cyanides Volatile Aromatics	Cyanide Benzene Toluene
Sodium monofluoroacetate		None
Stirofos	Chlorinated Ethanes and Ethylenes Halomethanes Volatile Aromatics	1,2-Dichloroethane Tetrachloroethylene Carbon tetrachloride Chloroform Methyl chloride Methylene chloride Chlorobenzene
Sulfallate		None
SWEP	Volatile Aromatics	Benzene Toluene
2,4,5-T	Phenols Volatile Aromatics	2,4-Dichlorophenol Phenol Benzene Toluene

Table 22 **PRIORITY POLLUTANTS TO BE MONITORED IN PESTICIDE WASTEWATERS**
(Continued, Page 20 of 21)

Pesticide	Priority Pollutant Group	Priority Pollutant To Be Monitored
TCMTB	Cyanides Halomethanes	Cyanide Carbon tetrachloride Chloroform Methyl chloride Methylene chloride Copper
	Metals	
Tebuthiuron		None
Temephos	Chlorinated Ethanes and Ethylenes	1,2-Dichloroethane
Terbacil		None
Terbufos		None
Terbuthylazine	Cyanides Volatile Aromatics	Cyanide Benzene Toluene
Terbutryn	Cyanides Volatile Aromatics	Cyanide Benzene Toluene
Thiabendazole	Cyanides Volatile Aromatics	Cyanide Benzene
Thiofanox		None
Thionazin		None
Tokuthion	Phenols Volatile Aromatics	2,4-Dichlorophenol Benzene Toluene
Toxaphene	Halomethanes	Carbon tetrachloride Chloroform Methyl chloride Methylene chloride
	Polynuclear Aromatic Hydrocarbons Volatile Aromatics	Naphthalene Benzene Chlorobenzene Toluene

Table 22

PRIORITY POLLUTANTS TO BE MONITORED IN PESTICIDE WASTEWATERS
(Continued, Page 21 of 21)

Pesticide	Priority Pollutant Group	Priority Pollutant To Be Monitored
Triadimefon	Halomethanes	Carbon tetrachloride Chloroform Methyl chloride Methylene chloride
	Phenols	2,4-Dichlorophenol Pentachlorophenol
	Volatile Aromatics	Benzene Toluene
Tributyltin benzoate		None
Tributyltin fluoride		None
Tributyltin oxide	Volatile Aromatics	Benzene* Toluene*
Trichlorobenzene	Volatile Aromatics	Benzene Chlorobenzene Toluene
Tricyclazole	Polynuclear Aromatic Hydrocarbons	Naphthalene
Trifluralin	Nitrosamines Volatile Aromatics	N-nitrosodi-n-propylamine Benzene Chlorobenzene Toluene
Vancide TH		None
Vancide 512		None
Vancide 512 dispersion		None
Vancide PA		None
Vernolate	Halomethanes	Carbon tetrachloride Chloroform Methyl chloride Methylene chloride
Zineb	Metals	Zinc
Ziram	Metals	Zinc**

* Subcategory 2 only

** Subcategory 3 only

ADDENDUM

On Page 5 under E. Subcategorization, the following sentence should be inserted at the end of the paragraph:

"Table 6A lists the five basic pollutant groups found to be of concern, and lists the combinations of pollutant groups used to define the 10 subcategories which have wastewater discharges."

On Page 7, at the end of the paragraph that begins "Using the definitions above. insert the following statement:

"Therefore, the contractor recommends setting effluent limits only for those pollutants classified as of primary significance."

The title of Table 8 should read, "Recommended Treatment Technologies for Level 1 for Each Subcategory"