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REMOVAL AND FATE OF RCRA AND CERCLA
TOXIC ORGANIC POLLUTANTS IN WASTEWATER
TREATMENT

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REMOVAL AND FATE OF RCRA AND CERCLA TOXIC ORGANIC
POLLUTANTS IN WASTEWATER TREATMENT

by

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FOREWORD

Today's rapidly developing and changing technologies and industrial products and practices frequently carry with them the increased generation of materials that, if improperly dealt with, can threaten both public health and the environment. The U.S. Environmental Protection Agency is charged by Congress with protecting the Nation's land, air, and water systems. Under a mandate of national environmental laws, the agency strives to formulate and implement actions leading to a compatible balance between human activities and the ability of natural systems to support and nurture life. These laws direct the EPA to perform research to define our environmental problems, measure the impacts, and search for solutions.

The Risk Reduction Engineering Laboratory is responsible for planning, implementation, and management of research, development, and demonstration programs to provide an authoritative, defensible engineering basis in support of the policies, programs, and regulations of the EPA with respect to drinking water, wastewater, pesticides, toxic substances, solid and hazardous wastes, and Superfund-related activities.

This publication is one of the products of that research and provides a vital communication link between the researcher and the user community. It contains the results from two pilot scale studies conducted to investigate the removal and fate of 28 RCRA toxic compounds and 19 CERCLA toxics by conventional activated sludge. Related work is underway to measure removals of these and similar toxics by other aerobic and anaerobic processes and results will be presented in subsequent publications.

E. Timothy Oppelt, Director
Risk Reduction Engineering Laboratory

ABSTRACT

Two separate studies were conducted to investigate the removal and fate of 28 selected RCRA compounds (0.25 mg/L of each compound) and 19 selected CERCLA compounds (0.5 mg/L of each compound) in conventional activated sludge treatment. In each study, two pilot-scale (35 gpm) activated sludge systems (SRT: 4 days for RCRA study and 8 days for CERCLA study) were operated in parallel at the U.S. EPA Test and Evaluation Facility in Cincinnati, Ohio. One system was spiked continuously with either RCRA or CERCLA toxics to produce an acclimated biomass; the other was spiked intermittently with the same toxics and sampled to determine performance under unacclimated conditions. The selected RCRA or CERCLA compounds did not cause any adverse effects on COD and SS removals. The concentrations of organics (RCRA study) in air emissions indicated that the chlorinated aliphatic solvents were essentially volatilized into the plant air emission stream, whereas the aromatic volatile benzenes were substantially degraded. Additional work is planned to attempt to reduce the analytical variability encountered in these studies.

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INTRODUCTION

The Risk Reduction Engineering Laboratory has evaluated the removal and fate of selected RCRA and CERCLA toxic organic pollutants (Table 1) during pilot-scale primary-activated sludge treatment of municipal wastewater at the Agency's Test and Evaluation Facility in Cincinnati, Ohio. This report summarizes the results of the removal and fate-in-treatment of the selected volatile and semivolatile organic compounds. The pilot treatment systems, chosen as a representative POTW design, consisted of primary clarification followed by conventional plug-flow activated sludge treatment and secondary sedimentation. Two parallel 2.2 liters/second (L/S) (35 gpm) pilot plants were used and are shown in Figure 1. Screened and degritted raw wastewater from the Cincinnati Mill Creek Wastewater Treatment Plant was the wastewater feed for the studies. The selected RCRA and CERCLA toxics were spiked into the raw wastewater in two sequential test periods. The first test (RCRA) period from October 1987 through March 1988 evaluated the removal and fate during treatment of selected volatile and semivolatile organic toxics. The second test (CERCLA) period from June 1988 through August 1988 evaluated the removal and fate of semivolatile organic toxics.

EXPERIMENTAL SYSTEM AND TESTING APPROACH

The primary clarifiers in the pilot treatment systems were 2.95 m in diameter and had a sidewater depth (SWD) of 3.6 m. At 2.2 L/S wastewater flow, the overflow rate in the center feed clarifier was $28 \text{ m}^3/\text{m}^2 \text{ day}$. The activated sludge aeration basins were 5.4 m long, 3 m wide and had a SWD of 3.6 m. At a flow of 2.2 L/S, the hydraulic residence time in the basins was 7.5 hrs. Conventional coarse bubble diffusers were used in

TABLE 1. RCRA AND CERCLA TOXIC ORGANIC POLLUTANTS

RCRA Study Period	CERCLA Study Period
acetone	1,2-dichlorobenzene
cyclohexanone	1,3-dichlorobenzene
furfural	1,4-dichlorobenzene
2-butanone	1,2,4-trichlorobenzene
4-methyl-2-pentanone	nitrobenzene
tetrahydrofuran	1,3-dinitrobenzene
carbon tetrachloride	2,6-dinitrotoluene
chlorobenzene	p-cresol
chloroform	4-chloroaniline
1,2-dichloroethane	hexachloroethane
1,2-dichloropropane	hexachlorobutadiene
methylene chloride	dimethyl phthalate
tetrachloroethylene	diethyl phthalate
trichloroethylene	dibutyl phthalate
1,1,1-trichloroethane	butyl benzyl phthalate
1,1,2-trichloroethane	bis(2-ethylhexyl) phthalate
ethylbenzene	naphthalene
toluene	lindane
total xylenes	dieldrin
bis(2-ethylhexyl) phthalate	
butyl benzyl phthalate	
1,4-dichlorobenzene	
2,4-dimethylphenol	
2,4-dinitrophenol	
naphthalene	
nitrobenzene	
4-nitrophenol	
phenol	

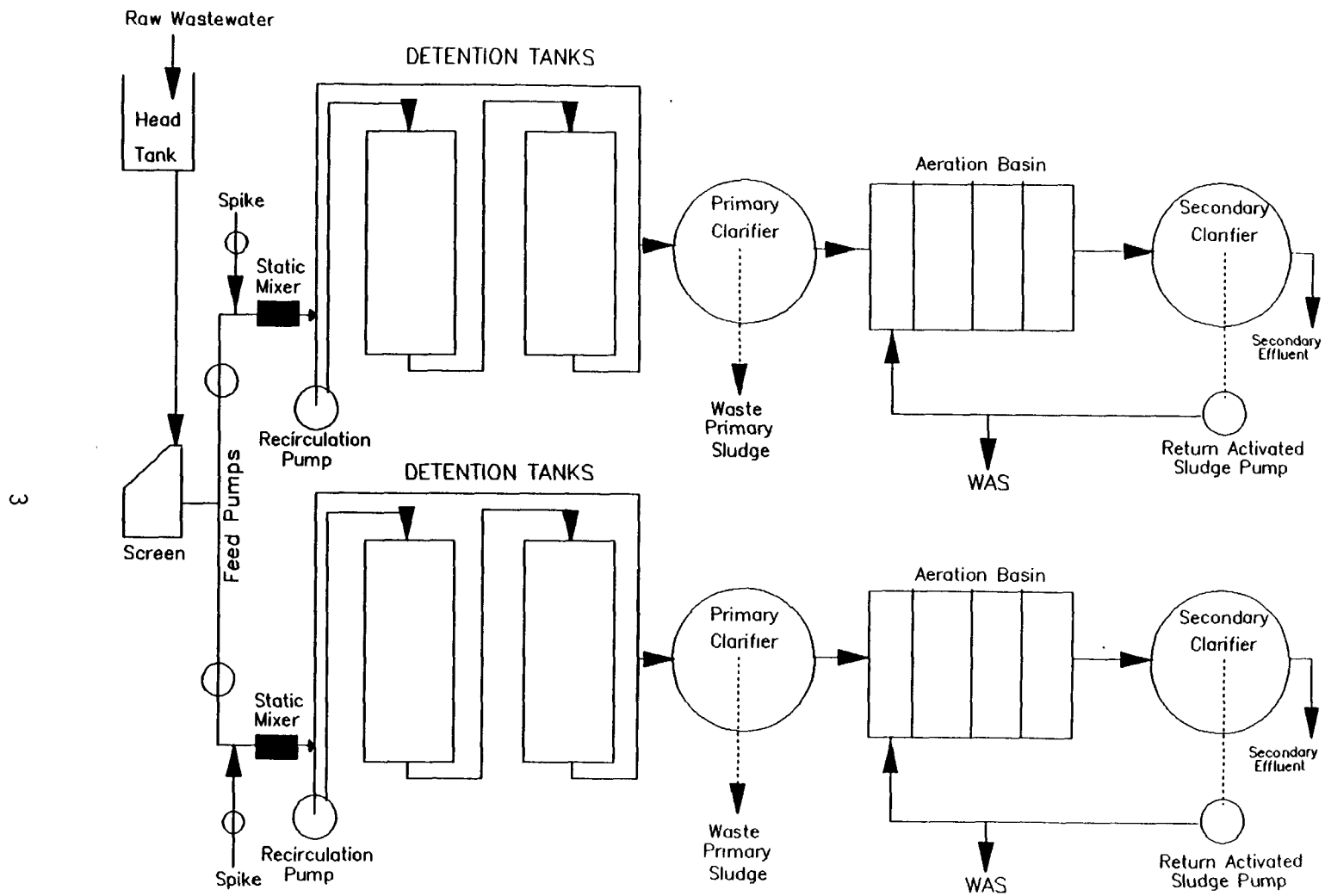


Figure 1. SIMPLIFIED SCHEMATIC DIAGRAM OF PILOT SYSTEMS

the basins. The center feed secondary clarifiers were 3.6 m in diameter and had a SWD of 3.6 m. At a 2.2 L/S flow, the overflow rate in the clarifier was $18.4 \text{ m}^3/\text{m}^2 \text{ day}$. The nominal operating conditions and design characteristics for the two identical systems used in the study are given in Table 2 in English units. A nominal operational sludge retention time (SRT) of 4 days was employed in the RCRA study period. In the CERCLA study period, the nominal SRT was 8 days.

In order to sample the air space above the primary clarifier, a cover was fabricated with approximately an inch opening around the unit. The cover was vented through a duct to the roof. An air sweep equivalent to a 5 km per hour wind was maintained over the surface of the clarifier by exhausting air at 14,000 liters/min. The aeration basin was fitted with an air tight cover and the offgas was also vented to the roof. Air flow in the aeration basins averaged 5,600 liters/min and maintained a dissolved oxygen level of at least 2.0 mg/L.

Operations Approach and Conventional Pollutant Removals

The evaluation of the removal and fate during treatment of the spiked RCRA and CERCLA toxic organics in the large pilot-scale primary-activated sludge treatment systems was performed at two steady-flow operational conditions; operation with a continuous feed of spike toxic cocktail in one pilot train under steady operating conditions and operation of the parallel pilot train under the same steady conditions except with intermittent spiking of the toxic cocktail. The operation with continuous feeding of the spiking cocktail produced "acclimated" biomass. In the operation with intermittent spiking of the cocktail,

TABLE 2. NOMINAL OPERATING CONDITIONS AND DESIGN CHARACTERISTICS OF THE PILOT SYSTEMS

I. Design Flow, Q_d = 35 gpm = 50,400 gpd	
II. Primary Clarifiers - Diameter = 9'-8"	
Weir Diameter = 9'-1"	
SWD = 12'-0"	
Surface Area = 73.4 ft ²	
Surface Overflow Rate = 687 gpd/ft ²	
III. Aeration Basins - L:W:D = 17'-7":10'-0":12'-0"	
Surface Area = 175.8 ft ²	
Volume = 2,110 ft ³	
= 15,780 gal.	
Hydraulic Residence Time (Q_d) = 7.5 hrs.	
IV. Secondary Clarifiers - Diameter = 11'-11"	
SWD = 12'-0"	
Surface Area = 111.5 ft ²	
Surface Overflow Rate = 452 gpd/ft ²	

spike was added at steady nominal concentrations of toxic organics equal to that in the continuously spiked train for a 24 hour period after every 3 SRT periods of unspiked operation. During the spiking episodes, the intermittently spiked train provided removal and fate-in-treatment data for the toxic organics intermittent loading ("unacclimated") operation. The intermittent spiked treatment train also provided conventional pollutant performance control data during unspiked operation for comparison to the conventional pollutant performance of the continuously spiked train.

The pilot treatment trains were operated at a 4-day ($4 \pm .3$) SRT with a nominal spike of 0.25 mg/L of each individual toxic organic during the RCRA study period. The pilot treatment trains were operated at an 8-day (8 ± 1 day) SRT with a nominal spike of 0.5 mg/L of each individual toxic organic during the CERCLA spiking period. The overall performance of the parallel treatment systems were characterized for removal of chemical oxygen demand (COD), suspended solids (SS), ammonia ($\text{NH}_3\text{-N}$), and for the removal and fate-in-treatment of the individual toxic organics using automated analytical procedures for the conventional pollutants and Agency GC/MS procedures for the toxic organic compounds.

Average removals of conventional pollutants in the pilot systems during both study periods ranged 81 to 88 percent for the COD and 94 to 97 percent for SS. In the RCRA study period at the nominal 4-day SRT and with a nominal toxic spike of 0.25 mg/L of each individual organic, nitrification occurred in the activated sludge processes with average $\text{NH}_3\text{-N}$ reductions ranging 76 to 81 percent for the two spiked pilot treatment trains. In the CERCLA study period at a nominal 8-day SRT and with a nominal spike of 0.5 mg/L of each individual organic, complete nitrification usually occurred in the intermittently spiked activated

sludge process but frequent interference with nitrification was observed in the continuously spiked system. The $\text{NH}_3\text{-N}$ reductions during the CERCLA study averaged 98 percent for the intermittently spiked system and 88 percent for the continuously spiked system. Data tables showing removals of the conventional pollutants are included in Appendix 3. As an overview of the operational performance, the pilot treatment represents effective performance for control of conventional pollutants. The presence of the spiked toxic organics in the wastewater produced no significant adverse effects on the treatment of conventional pollutants except on ammonia removal during continuous spiking with the CERCLA compounds.

SAMPLING AND ANALYTICAL METHODOLOGY

RCRA Offgas Sampling and Analysis

The sampling system used to collect each offgas sample consisted of a 33 liter stainless steel polished canister, a pneumatic flow controller and nickel sample tubing. Previous studies have shown that the canisters are well suited for collecting air samples for VOC analysis and that VOC levels do not deteriorate in the canisters during reasonable holding times.

Canisters and flow controllers were cleaned and prepared for sampling by repeated high-pressure purging with ultrapure zero air. The canisters were then pressurized, and blank checked by gas chromatography/mass spectrometry (GC/MS). After blank checking, clean canisters were evacuated to 28 inches of Hg for sample collection. The nickel tubing was cleaned by heating the tubing to 150°C and flushing with purified nitrogen for 2 hours.

Samples were collected by attaching the nickel tubing to the canister and extending the free end into the offgas duct. The canister vacuum was recorded, the valve opened, and the canister allowed to fill at a constant rate during the sampling event. The canister valve was then closed, sample tubing disconnected, and a final pressure reading recorded at the conclusion of sampling. When the collected samples arrived at the Laboratory they were allowed to equilibrate, then a pressure reading was taken using a mercury manometer before any other manipulations of the sample. The final pressure reading was recorded along with the date, temperature, and barometric pressure. From these data, the sample volume was calculated.

Canister samples were analyzed on a Finnigan Model OWA 1050 GC/MS system with a quadrupole mass spectrometer. This system is equipped with a Tekmar Model 5000 cryogenic concentration and sample introduction system. The GC/MS interface consists of a quartz jet separator. The MS is scanned from 40 to 260 m/z (mass charge ratio) every 2 seconds.

Samples were analyzed by withdrawing 0.1 liter or 0.5 liter from a canister using the system mass flow controller. The volatile organics were concentrated on a cryogenic trap and then desorbed to the GC column for component separation and mass spectral analysis. The GC/MS system was calibrated in units of ng of RCRA organic on column and results were recalculated to yield ug/liter in air sample as collected. From these data, masses of each RCRA organic stripped during the sampling event were calculated. The method used was the contractor's standard operating procedure for canister analysis, SOP No. 09-002-00.

Quality control

The analytical standard was prepared from the neat compounds and internal audits were analyzed for each test series and the results included with the data. The audit gases were obtained from Scott Speciality Gases as Certified Mixtures in Nitrogen (± 5 percent). The audit compounds were 1,1,1-trichloroethane, carbon tetrachloride, trichloroethene, toluene, and tetrachloroethene.

Since duplicate field samples were analyzed with good precision and calibration precision was excellent, duplicate analyses on the same canister were not run.

Blanks were analyzed and met the method QC criteria before samples were analyzed on each analysis day. In addition, if a highly concentrated sample was analyzed, blanks were run until the system met the QC blank criteria before proceeding with sample analysis. In all cases, it was found that carry-over was not extensive and this is documented in the Canister QC files. Calibration criteria and other QC procedures follow the SOP.

RCRA Liquid and Sludge Sample Analysis

Sludge and liquid samples were analyzed by gas chromatography/mass spectrometry (GC/MS) according to the methods outlined in the USEPA Methods for Evaluating Solid Waste, SW846, 3rd edition, November 1986.

Volatiles

Samples to be analyzed for volatile organic compounds were collected by filling one 40 ml volatile organic analysis (VOA) bottle at each sample interval from each sampling point during the sampling event. The first

step in analyzing these samples involved compositing the individual VOA samples from each sample point into one composite sample for each sample point. Samples to be composited were stored chilled at 4°C. Precleaned glassware were also chilled to this temperature. During the compositing step, the samples were poured down the side of the mixing flask to avoid agitation. After all samples were added, the composite was stirred with a chilled glass stirring rod. Agitation was avoided wherever possible. Two 40 ml composites were then collected and stored at 4°C in headspace-free vials until analysis.

The volatile fractions were analyzed on Finnigan DWA and Extrel ELQ400 GC/MS systems using Method 8240 (Purge and Trap). In this method, 5 ml of sample or an aliquot of sample diluted to 5 ml is purged with an inert gas (helium) in a specially designed purge vessel. Volatile organic compounds are partitioned into the gaseous phase and swept by the purge gas onto a multi-phase sorbent trap. After the purge cycle is complete, the flow of carrier gas is reversed, and the trap is heated rapidly. Volatile organic compounds are thermally desorbed from the trap into the gas chromatograph where the individual components are separated. Identification and quantitation were done by mass spectrometry.

Semi-Volatiles

Semi-volatile (extractable) compounds were extracted from the samples according to Method 3520 (continuous liquid-liquid extraction). This method outlines procedures for the isolation of acidic and base/neutral organic compounds from aqueous samples. One liter of

sample, or an aliquot of sample diluted to one liter is pH adjusted to greater than pH 11. It is then mixed with an organic solvent (methylene chloride in this project). Base/neutral organic compounds have greater solubility in the organic phase and are concentrated there. After the base/neutral extract has been removed, the pH of the sample is re-adjusted to less than pH 2. A second extraction is then performed to remove acidic compounds. The organic extracts are then concentrated to one ml. Portions of the acidic and base/neutral extracts from a sample were mixed and an aliquot was injected into the GC/MS for analysis. Samples were analyzed on Finnigan 5100 and Extrel ELQ 400 GC/MS systems in accordance with Method 8270. This method specified GC/MS analysis of organic extracts using a fused silica capillary column, with mass spectrometry for detection and quantitation.

CERCLA Liquid and Sludge Sample Analysis

Liquid and sludge samples in the CERCLA study were collected for either 24 or 48 hours and composited for analysis. The CERCLA compounds were all classified as semivolatiles and were analyzed following EPA Extraction Method 1625.

All samples were spiked with a mixture of deuterated or ^{13}C -labeled priority pollutant organics to represent the priority pollutants spiked into the wastewater feed. Analytical results for the nonlabeled priority pollutant organics were corrected automatically for the recoveries of the labeled priority pollutant organics. The isotopically labeled compounds were used as internal standards for the corresponding priority pollutants. Furthermore, percent recovery of the labeled

compounds, and by inference, of their corresponding natural-isotope analogs, was measured as a function of an internal standard added just before gas chromatography/mass spectrometry (GC/MS) analysis. Anthracene-d₁₀ was used for Method 1625. A capillary column was used in the GC/MS procedure. Both instruments were attached to a computer data system. To ensure precision, duplicate analyses of individual collected samples and analyses of samples collected and processed in duplicate were performed.

REMOVAL AND FATE-IN TREATMENT

Five sample events were performed during the RCRA study period to evaluate the removal and fate-in treatment of the spiked toxic organics. In this study period, the removals and fate of the toxic organics were characterized by GC/MS analyses of the influent to and all discharges from the two treatment systems, i.e., in the raw wastewater, the primary influent, the primary effluent, the secondary effluent, the primary sludge, the waste activated sludge, and the air emissions from both primary clarification and the activated sludge process. In the first two sample events of the RCRA study period, the air samples proved to be too small for the GC/MS sensitivity. With larger samples, precise and quantitatively accurate data were generated on the volatile organic compounds in the primary and activated sludge air emissions from the pilot systems for the last three sample events. In the CERCLA study, eleven sample events on the continuously spiked (acclimated) pilot train and 4 sample events on the intermittently spiked pilot train have been included in the summary tables of average toxic organic removal and toxic organic fate-in-treatment performance of the pilot systems.

The removal and fate-in-treatment performance for the RCRA study period on both volatile and semivolatile organics are summarized in Tables 3 through 10 for "acclimated" and "unacclimated" operation. The performance data for the continuously spiked (acclimated) treatment system are based on 24-hour composite samples with average concentrations reported for the various plant discharges (Tables 3 and 4) including air emissions and removals reported (Tables 5 and 6) across the treatment processes and by treatment mechanism. In the intermittently spiked ("unacclimated") pilot trains, the episodal spiking lasted 24 hours but the sampling composite was extended to 48 hours to permit measurement of the gradual washout of the organic toxics. Thus, the performance data for the unacclimated operation are reported for the toxic organics in the discharges (Tables 7 and 8) as average masses in grams rather than as concentration units. The masses in grams are then used to calculate the removals (Tables 9 and 10) across the treatment processes and in the removal mechanisms. The raw data for the individual sample events are included in the Appendix 1.

The removal and fate-in-treatment performance for the CERCLA study period on semivolatile toxic organics is summarized in Tables 11 through 14. Since only semivolatile organics were employed, air emission sampling was not performed. As in the RCRA study period described above, the performance data for continuously spiked operation ("acclimated") were based on 24-hour composite samples with average toxic organic concentrations reported in the various plant discharges. For intermittently spiked ("unacclimated") operation, the performance data are reported as masses of toxic organics because of the 24-hour spiking episode and the 48-hour composite sampling for organic washout. While air stripping of organics was expected to be an insignificant removal mechanism and air

TABLE 3. AVERAGE CONCENTRATIONS OF RCRA ORGANICS IN WASTEWATER AND SLUDGES FROM THE ACCLIMATED SYSTEM

NAME	WASTEWATER FEED		PRIMARY EFFLUENT		SECONDARY EFFLUENT		PRIMARY SLUDGE		SECONDARY SLUDGE	
	AVERAGE	STANDARD	AVERAGE	STANDARD	AVERAGE	STANDARD	AVERAGE	STANDARD	AVERAGE	STANDARD
	DEVIATION		DEVIATION		DEVIATION		DEVIATION		DEVIATION	
	ug/L		ug/L		ug/L		ug/L		ug/L	
Acetone	1447	1313	1082	839	29	23	1241	241	127	127
Cyclohexanone										
Furfural										
2-Butanone	134	88	88	91	5	0	63	62	5	0
4-Methyl-2-Pentanone	238	187	162	26	3	3	105	128	6	1
Tetrahydrofuran	199	9	225	25	128	114	146	111	171	266
Carbon Tetrachloride	260	111	247	110	3	1	163	189	5	2
Chlorobenzene	255	33	238	60	3	1	259	217	3	1
Chloroform	255	83	242	98	39	14	289	254	44	46
1,2-Dichloroethane	304	33	323	18	140	42	378	88	129	175
1,2-Dichloropropane	228	50	212	73	54	20	210	180	43	68
Methylene Chloride	434	146	398	167	107	62				
Tetrachloroethylene	211	44	194	66	10	3	163	153	48	73
Trichloroethylene	201	57	186	75	5	2	254	209	6	4
1,1,1-Trichloroethane	260	61	233	88	5	5	273	259	3	1
1,1,2-Trichloroethane	216	49	202	66	97	14	191	165	97	130
Ethylbenzene	196	47	192	71	3	0	246	201	3	2
Toluene	284	28	295	100	3	1	329	276	10	9
Total Xylenes	175	35	163	59	2	0	190	179	3	2
Bis-(2-ethylhexyl)-phthalate	120	33	95	24	4	1	730	321	142	128
Butylbenzylphthalate	62	26	33	9	5	0	447	119	5	0
1,4-dichlorobenzene	102	33	95	37	5	0	133	113	6	1
2,4-Dimethylphenol										
2,4-Dinitrophenol										
Naphthalene	144	61	133	52	5	0	228	87	5	0
Nitrobenzene	129	47	122	38	5	0	65	30	7	4
4-Nitrophenol										
Phenol	295	80	290	106	5	1	287	35	5	0

TABLE 4. AVERAGE CONCENTRATIONS OF RCRA ORGANICS IN AIR
SAMPLES FROM THE ACCLIMATED SYSTEM

NAME	PRIMARY AIR		AERATION AIR	
	AVERAGE	STANDARD	AVERAGE	STANDARD
	DEVIATION		DEVIATION	
	ug/L		ug/L	
Acetone	0.13	0.06	0.20	0.20
Cyclohexanone				
Furfural				
2-butanone	0.03	0.01	0.01	0.00
4-methyl-2-pentanone	0.03	0.00	0.02	0.02
Tetrahydrofuran	0.02	0.02	0.34	0.05
Carbon Tetrachloride	0.26	0.05	8.00	0.62
Chlorobenzene	0.24	0.13	2.37	1.33
Chloroform	0.20	0.01	6.10	0.82
1,2-dichloroethane	0.18	0.04	3.72	0.54
1,2-dichloropropane	0.19	0.03	5.50	0.44
Methylene Chloride	0.34	0.07	7.19	2.12
Tetrachloroethylene	0.20	0.01	7.68	1.42
Trichloroethylene	0.20	0.01	5.84	0.66
1,1,1-trichloroethane	0.26	0.05	7.35	0.73
1,1,2-trichloroethane	0.10	0.01	3.22	0.52
Ethylbenzene	0.19	0.03	0.94	0.10
Toluene	0.29	0.03	1.92	0.60
Total Xylenes	0.18	0.04	1.73	0.55
bis-(2-ethylhexyl)-phthalate				
Butylbenzylphthalate				
1,4-dichlorobenzene				
2,4-dimethylphenol				
2,4-dinitrophenol				
Naphthalene				
Nitrobenzene				
4-nitrophenol				
Phenol				

TABLE 5. AVERAGE PERCENT REMOVALS OF RCRA ORGANICS
BY THE ACCLIMATED SYSTEM

NAME	PRIMARY TREATMENT		TOTAL TREATMENT	
	REMOVAL	STANDARD	REMOVAL	STANDARD
	(%)	DEVIATION	(%)	DEVIATION
Acetone	16.0	26.8	97.0	2.6
Cyclohexanone				
Furfural				
2-Butanone	44.0	31.1	95.0	2.8
4-Methyl-2-Pentanone	8.0	60.8	97.5	3.5
Tetrahydrofuran	-12.6	8.5	36.6	54.7
Carbon Tetrachloride	5.7	15.3	98.3	0.6
Chlorobenzene	7.0	17.1	99.0	0.0
Chloroform	6.7	19.1	84.3	5.1
1,2-Dichloroethane	-7.5	17.7	53.0	18.8
1,2-Dichloropropane	9.0	15.5	77.3	10.2
Methylene Chloride	9.0	27.9	73.0	15.6
Tetrachloroethylene	9.0	21.6	95.3	1.5
Trichloroethylene	9.3	21.4	97.3	1.5
1,1,1-Trichloroethane	12.0	17.8	98.0	1.7
1,1,2-Trichloroethane	8.3	12.2	52.3	18.9
Ethylbenzene	4.0	24.1	98.7	0.6
Toluene	18.3	22.7	99.0	0.7
Total Xylenes	7.3	20.7	98.7	0.6
Bis-(2-ethylhexyl)-phthalate	20.7	6.0	96.7	0.6
Butylbenzylphthalate	44.0	9.0	91.0	3.5
1,4-Dichlorobenzene	8.3	7.6	94.3	2.1
2,4-Dimethylphenol				
2,4-Dinitrophenol				
Naphthalene	6.7	4.2	96.3	1.5
Nitrobenzene	4.3	7.2	95.7	1.5
4-Nitrophenol				
Phenol	3.0	17.1	98.0	1.0

TABLE 6. AVERAGE PERCENT REMOVAL OF RCRA ORGANICS BY
TREATMENT MECHANISM FOR THE ACCLIMATED SYSTEM

NAME	REMOVED IN SLUDGE		STRIPPING		BIODEGRADATION	
	REMOVAL	STANDARD	REMOVAL	STANDARD	REMOVAL	STANDARD
	(%)	DEVIATION	(%)	DEVIATION	(%)	DEVIATION
Acetone	2	1	3	1	92	5
Cyclohexanone						
Furfural						
2-Butanone	1	0	1	1	94	1
4-Methyl-2-Pentanone	1	2	2	1	95	6
Tetrahydrofuran	3	4	6	1	28	52
Carbon Tetrachloride	1	1	139	11	-42	12
Chlorobenzene	1	1	38	9	60	9
Chloroform	2	1	104	12	-21	17
1,2-Dichloroethane	3	2	67	11	-17	32
1,2-Dichloropropane	2	1	97	9	-25	12
Methylene Chloride			124	40		
Tetrachloroethylene	1	2	129	22	-35	23
Trichloroethylene	1	1	103	11	-6	12
1,1,1-Trichloroethane	1	1	122	15	-25	17
1,1,2-Trichloroethane	2	2	56	9	-6	24
Ethylbenzene	1	1	22	3	76	3
Toluene	1	1	25	6	72	8
Total Xylenes	1	1	32	10	66	9
Bis(2 ethylhexyl)phthalate	11	8			85	8
Butylbenzylphthalate	11	6			81	9
1,4-Dichlorobenzene	2	1			93	3
2,4-Dimethylphenol						
2,4-Dinitrophenol						
Naphthalene	2	1			94	2
Nitrobenzene	1	1			93	6
4-Nitrophenol						
Phenol	1	0			97	2

TABLE 7. AVERAGE MASSES IN GRAMS OF RCRA ORGANICS IN WASTEWATERS AND SLUDGES FROM THE UNACCLIMATED SYSTEM

	WASTEWATER FEED		PRIMARY EFFLUENT		SECONDARY EFFLUENT		PRIMARY SLUDGE		SECONDARY SLUDGE	
NAME	AVERAGE	STANDARD	AVERAGE	STANDARD	AVERAGE	STANDARD	AVERAGE	STANDARD	AVERAGE	STANDARD
	DEVIATION		DEVIATION		DEVIATION		DEVIATION		DEVIATION	
	mass (gm)		mass (gm)		mass (gm)		mass (gm)		mass (gm)	
Acetone	167.3	58.5	188.6	51.4	7.6	6.6	4.3	3.6	3.5	5.5
Cyclohexanone	15.7 *		13.4 *		1.9 *		0.1 *		0.0 *	
Furfural										
2-Butanone	36.6	4.5	36.8	1.3	1.9 *		0.4	0.5	0.0	0.0
4-Methyl-2-Pentanone	24.5	20.6	20.6	10.4	2.1	0.3	0.6	0.3	0.0	0.0
Tetrahydrofuran	34.6	1.6	36.8	5.4	36.5	1.6	0.7	0.9	0.0	0.0
Carbon Tetrachloride	40.5	2.8	27.4	11.4	0.9	0.4	0.3	0.2	0.0	0.0
Chlorobenzene	44.6	7.8	38.7	21.4	3.1	1.7	0.5	0.4	0.0	0.0
Chloroform	40.6	5.6	28.8	9.1	5.7	2.3	0.6	0.5	0.1	0.1
1,2-Dichloroethane	32.3	1.1	25.8	11.0	12.3	2.6	0.4	0.3	0.2	0.1
1,2-Dichloropropane	32.9	0.6	24.8	10.1	9.0	2.8	0.5	0.4	0.1	0.1
Methylene Chloride	78.8	25.2	77.0	33.4	23.3	2.0				
Tetrachloroethylene	31.9	9.0	26.1	11.9	3.1	1.4	0.4	0.3	0.1	0.0
Trichloroethylene	31.2	1.9	25.0	7.8	2.5	1.5	0.4	0.4	0.0	0.0
1,1,1-Trichloroethane	41.2	5.5	30.6	14.3	1.7	0.5	0.5	0.4	0.0	0.0
1,1,2-Trichloroethane	36.1	3.6	26.8	9.8	19.0	5.3	0.5	0.4	0.2	0.2
Ethylbenzene	30.4	2.8	21.1	8.9	2.0	0.6	0.3	0.3	0.3	0.5
Toluene	50.0	12.3	46.3	23.1	1.1	0.4	0.8	0.6	0.3	0.4
Total Xylenes	35.0	6.6	25.3	7.2	2.1	1.6	0.3	0.3	0.3	0.5
Bis-(2-ethylhexyl)-phthalate	18.9	6.2	9.1	0.8	1.9	0.0	0.7	0.6	0.3	0.3
Butylbenzylphthalate	8.4	5.3	3.0	1.0	1.9	0.0	0.2	0.4	0.0	0.0
1,4-Dichlorobenzene	24.7	9.2	22.1	8.3	5.3	1.6	0.3	0.0	0.2	0.0
2,4-Dimethylphenol										
2,4-Dinitrophenol										
Naphthalene	20.8	7.4	21.2	8.4	1.9	0.0	0.3	0.2	0.0	0.0
Nitrobenzene	21.7	9.0	20.3	13.2	6.5	4.8	0.1	0.1	0.0	0.0
4-Nitrophenol	26.8 *		30.4 *		9.5 *		0.1 *		0.2 *	
Phenol	52.1	31.2	50.3	38.0	1.9	0.0	0.5	0.8	0.0	0.0

* Only one data point available.

TABLE 8. AVERAGE MASSES OF RCRA ORGANICS IN AIR SAMPLES FROM THE UNACCLIMATED SYSTEM

NAME	PRIMARY AIR		SECONDARY AIR	
	AVERAGE STANDARD		AVERAGE STANDARD	
	DEVIATION		DEVIATION	
	mass (gm)		mass (gm)	
Acetone	5.6	4.5	2.8	3.5
Cyclohexanone	0.2 *		0.1 *	
Furfural				
2-butanone	0.9	1.0	0.1	
4-methyl-2-pentanone	1.0	0.3	0.0	0.1
Tetrahydrofuran	0.4	0.6	2.7	1.0
Carbon Tetrachloride	8.1	0.2	56.9	21.9
Chlorobenzene	10.3	5.4	34.4	6.9
Chloroform	7.7	0.9	43.0	12.9
1,2-dichloroethane	3.8	0.5	23.0	5.6
1,2-dichloropropane	4.1	0.0	35.7	13.4
Methylene Chloride	12.3	4.1	50.7	23.5
Tetrachloroethylene	8.2	0.0	63.1	22.1
Trichloroethylene	7.9	0.5	47.1	15.5
1,1,1-trichloroethane	8.6	0.7	64.6	26.9
1,1,2-trichloroethane	3.7	0.4	22.1	4.5
Ethylbenzene	4.2	0.2	31.7	12.6
Toluene	12.6	3.7	31.6	12.7
Total Xylenes	4.1	0.0	22.8	10.4
bis-(2-ethylhexyl)-phthalate				
Butylbenzylphthalate				
1,4-dichlorobenzene				
2,4-dimethylphenol				
2,4-dinitrophenol				
Naphthalene				
Nitrobenzene				
4-nitrophenol				
Phenol				

* Only data point available.

TABLE 9. AVERAGE PERCENT REMOVALS OF RCRA ORGANICS
BY UNACCLIMATED SYSTEM

NAME	PRIMARY TREATMENT		TOTAL TREATMENT	
	REMOVAL	STANDARD	REMOVAL	STANDARD
	DEVIATION		DEVIATION	
	(%)		(%)	
Acetone	-14.7	7.8	96.0	2.0
Cyclohexanone	15.0 *		88.0 *	
Furfural				
2-Butanone	-3.0	15.6	94.5	0.7
4-Methyl-2-Pentanone	-2.0	43.8	86.0	12.7
Tetrahydrofuran	-6.0	11.3	-5.0	0.0
Carbon Tetrachloride	33.0	26.5	98.0	1.0
Chlorobenzene	33.0	25.2	92.7	4.5
Chloroform	27.0	29.1	86.3	4.0
1,2-Dichloroethane	20.7	32.6	61.7	9.1
1,2-Dichloropropane	24.0	32.0	73.0	7.8
Methylene Chloride	-3.0	19.1	68.7	8.3
Tetrachloroethylene	21.3	18.1	88.7	9.2
Trichloroethylene	20.7	21.1	92.0	5.2
1,1,1-Trichloroethane	27.7	27.2	96.0	1.7
1,1,2-Trichloroethane	23.7	32.6	48.0	9.5
Ethylbenzene	28.7	33.7	93.7	1.5
Toluene	11.3	29.2	97.7	1.5
Total Xylenes	24.0	30.6	94.7	3.2
Bis-(2-ethylhexyl)-phthalate	49.3	13.9	89.3	3.8
Butylbenzylphthalate	58.3	14.2	70.3	18.7
1,4-Dichlorobenzene	11.0	0.0	78.0	1.4
2,4-Dimethylphenol				
2,4-Dinitrophenol				
Naphthalene	-0.7	4.0	90.0	3.0
Nitrobenzene	8.0	32.1	73.7	13.3
4-Nitrophenol	-13.0 *		65.0 *	
Phenol	8.0	19.5	95.0	2.1

* Only one data point available.

TABLE 10. AVERAGE PERCENT REMOVAL OF RCRA ORGANICS BY TREATMENT MECHANISM FOR THE UNACCLIMATED SYSTEM

NAME	REMOVED IN SLUDGE		STRIPPING		BIODEGRADATION	
	REMOVAL	STANDARD	REMOVAL	STANDARD	REMOVAL	STANDARD
	(%)	DEVIATION	(%)	DEVIATION	(%)	DEVIATION
Acetone	4	3	3	3	88	3
Cyclohexanone	1 *		0 *		87 *	
Furfural						
2-Butanone	1	1	1	1	93	1
4-Methyl-2-Pentanone			2	1	81	16
Tetrahydrofuran	2	3	5	1	-13	3
Carbon Tetrachloride	1	1	135	46	-38	46
Chlorobenzene	1	1	75	14	17	13
Chloroform	2	1	100	28	-16	25
1,2-Dichloroethane	2	1	55	13	4	7
1,2-Dichloropropane	1	1	84	28	-12	27
Methylene Chloride			104	40		
Tetrachloroethylene	2	2	138	44	-51	40
Trichloroethylene	1	1	115	33	-25	33
1,1,1-Trichloroethane	1	1	136	48	-41	48
1,1,2-Trichloroethane	2	2	54	10	-8	16
Ethylbenzene	2	2	68	21	24	21
Toluene	2	3	40	11	56	12
Total Xylenes	2	2	45	13	48	13
Bis(2 ethylhexyl)phthalate	5	4			84	2
Butylbenzylphthalate	3	5			67	19
1,4-Dichlorobenzene					76	2
2,4-Dimethylphenol						
2,4-Dinitrophenol						
Naphthalene	1	1			89	3
Nitrobenzene	1	1			73	13
4-Nitrophenol	1 *				64 *	
Phenol	1	1			96	2

* Only one data point available.

TABLE 11. AVERAGE CONCENTRATIONS OF CERCLA ORGANICS IN WASTEWATER AND SLUDGES FROM THE ACCLIMATED SYSTEM

Compounds	WASTEWATER FEED		PRIMARY EFFLUENT		SECONDARY EFFLUENT		PRIMARY SLUDGE		SECONDARY SLUDGE	
	AVERAGE STANDARD		AVERAGE STANDARD		AVERAGE STANDARD		AVERAGE STANDARD		AVERAGE STANDARD	
	DEVIATION		DEVIATION		DEVIATION		DEVIATION		DEVIATION	
	UG/L		UG/L		UG/L		UG/L		UG/L	
DICHLOROBENZENE, PROBABLY 1,2	368.2	49.2	307.8	19.2	22.7	18.8	11716	5282	233	174
DICHLOROBENZENE, PROBABLY 1,3	375.4	41.5	318.6	45.1	41.4	18.7	10485	6194	373	223
DICHLOROBENZENE, PROBABLY 1,4	390.8	31.6	344.0	30.4	18.8	22.3	11278	5264	120	134
1,2,4-TRICHLOROBENZENE	655.0	206.6	458.9	91.5	89.1	34.4	39392	17807	2709	1736
NITROBENZENE	447.3	78.8	415.0	84.8	31.9	12.5	377	808	152	152
1,3-DINITROBENZENE	263.7	41.4	59.4	33.1	7.8	7.1	716	561	1101	411
2,6-DINITROTOLUENE	405.6	50.5	310.9	91.5	124.5	53.0	78	163	1460	2570
P-CRESOL	547.3	78.7	578.1	123.1	173.5	125.5	1534	623	85	64
4-CHLOROANILINE	393.3	180.4	269.2	87.9	34.2	55.5	854	639	93	57
HEXACHLOROETHANE	345.9	41.9	222.8	40.6	9.9	8.3	98	133	269	304
HEXACHLOROBUTADIENE	398.0	33.4	238.6	55.3	14.8	17.3	41586	20151	1962	1385
DIMETHYL PHTHALATE	576.3	345.9	560.3	357.7	12.9	16.0	484	164	68	92
DIETHYL PHTHALATE	497.4	39.2	479.7	57.7	11.9	8.4	1040	397	105	140
DIBUTYL PHTHALATE	427.9	23.4	271.6	46.6	16.7	15.4	25709	9874	566	447
BUTYL BENZYL PHTHALATE	398.4	22.7	223.8	43.6	12.4	15.6	29667	10940	596	501
BIS(2-ETHYLHEXYL)PHTHALATE	1072.0	361.5	556.1	294.5	386.4	185.5	79811	49454	35915	36469
NAPHTHALENE	431.4	73.4	383.7	40.4	8.9	5.0	10227	6567	108	112
LINDANE	424.7	63.2	349.3	52.2	177.9	184.1	15719	5866	1919	1620
DIELDRIN	605.6	314.8	264.5	120.2	98.7	59.5	16549	18119	13538	7180

* Only one data point available

TABLE 12. AVERAGE PERCENT REMOVALS AND PARTITIONING OF CERCLA
ORGANICS FOR THE ACCLIMATED SYSTEM

COMPOUNDS	PRIMARY TREATMENT		TOTAL TREATMENT		REMOVED IN SLUDGE		BIODEGRADATION	
	REMOVAL	STANDARD	REMOVAL	STANDARD	REMOVAL	STANDARD	REMOVAL	STANDARD
	%	DEVIATION	%	DEVIATION	%	DEVIATION	%	DEVIATION
DICHLOROBENZENE, PROBABLY 1,2	15.1	11.7	93.4	4.3	20.0	8.9	72.9	9.9
DICHLOROBENZENE, PROBABLY 1,3	15.0	9.9	88.9	5.1	15.8	9.9	72.1	10.5
DICHLOROBENZENE, PROBABLY 1,4	11.3	11.6	95.3	5.2	17.1	9.4	78.8	10.0
1,2,4-TRICHLOROBENZENE	27.2	15.0	85.1	7.8	37.0	11.6	48.1	13.9
NITROBENZENE	6.9	12.8	92.8	2.6	0.9	1.3	91.3	3.4
1,3-DINITROBENZENE	79.0	9.8	96.7	3.7				
2,6-DINITROTOLUENE	23.3	18.5	68.2	15.3	11.8	15.3	57.1	38.3
P-CRESOL	-5.2	11.3	73.9	21.9	1.9	0.8	69.0	20.6
4-CHLOROANILINE	21.4	35.2	87.6	23.1	1.9	0.8	78.2	27.7
HEXACHLOROETHANE	34.3	16.2	97.1	2.5	0.0	*	99.7	*
HEXACHLOROBUTADIENE	39.8	13.6	96.2	4.5	50.1	16.1	47.2	16.5
DIMETHYL PHTHALATE	3.5	6.2	98.1	1.5	0.7	0.3	97.4	1.5
DIETHYL PHTHALATE	3.6	7.8	97.6	1.6	1.5	0.5	96.2	1.8
DIBUTYL PHTHALATE	36.5	10.7	96.1	3.7	41.5	10.4	53.6	9.9
BUTYL BENZYL PHTHALATE	43.6	11.3	96.9	3.9	49.0	12.1	47.0	12.3
BIS(2-ETHYLHEXYL)PHTHALATE	49.8	12.7	63.3	14.4	71.5	23.8	-13.2	22.0
NAPHTHALENE	9.9	9.6	97.9	1.3	14.2	8.7	83.6	8.4
LINDANE	18.7	8.0	55.9	39.2	27.5	10.0	28.5	38.3
DIELDRIN	54.0	15.2	81.4	9.1	48.1	18.5	35.9	24.0

* Only one data point available

TABLE 13. AVERAGE MASSES IN GRAMS OF CERCLA ORGANICS IN WASTEWATER AND SLUDGES FROM THE UNACCLIMATED SYSTEM

Compounds	WASTEWATER FEED		PRIMARY EFFLUENT		SECONDARY EFFLUENT		PRIMARY SLUDGE		SECONDARY SLUDGE	
	AVERAGE	STANDARD	AVERAGE	STANDARD	AVERAGE	STANDARD	AVERAGE	STANDARD	AVERAGE	STANDARD
	DEVIATION	DEVIATION	DEVIATION	DEVIATION	DEVIATION	DEVIATION	DEVIATION	DEVIATION	DEVIATION	DEVIATION
DICHLOROBENZENE, PROBABLY 1,2	93.0	26.2	76.8	16.2	13.8	5.9	9.6	9.4	2.2	2.9
DICHLOROBENZENE, PROBABLY 1,3	104.8	35.4	85.2	20.3	14.8	4.1	9.3	10.7	2.5	3.4
DICHLOROBENZENE, PROBABLY 1,4	96.6	26.0	78.8	14.7	11.2	3.5	7.9	7.6	1.6	2.4
1,2,4-TRICHLOROBENZENE	164.4	37.0	124.2	7.7	20.2	4.0	56.0	55.9	13.2	14.4
NITROBENZENE	113.3	33.7	105.3	31.8	44.1	16.3	0.7	0.7	1.4	2.5
1,3-DINITROBENZENE	61.7	14.7	8.4	2.0	8.4	6.7	0.9	1.0	2.1	1.6
2,6-DINITROTOLUENE	96.0	18.8	73.5	34.2	12.7	5.8	15.8	31.5	0.0	0.0
P-CRESOL	152.5	37.9	109.7	73.3	5.8	8.6	6.0	4.6	0.0	0.0
4-CHLOROANILINE										
HEXACHLOROETHANE	56.5	16.3	31.8	10.0	0.0	0.0	28.2	48.1	0.0	0.0
HEXACHLOROBUTADIENE	75.7	25.5	36.0	12.7	1.7	0.4	5.4	5.0	5.7	7.9
DIMETHYL PHTHALATE	72.3	19.3	61.8	24.4	2.2	1.2	16.8	23.7	0.0	0.0
DIETHYL PHTHALATE	118.8	30.6	112.4	28.3	3.6	1.1	13.2	25.1	0.1	0.1
DIBUTYL PHTHALATE	102.7	16.7	80.4	26.7	3.8	1.2	28.8	48.3	0.8	0.5
BUTYL BENZYL PHTHALATE	80.5	19.5	49.1	13.0	2.0	0.5	15.1	11.3	0.6	0.5
BIS(2-ETHYLHEXYL)PHTHALATE										
NAPHTHALENE	120.7	30.2	109.7	34.6	6.1	5.1	10.5	16.9	0.5	0.4
LINDANE	87.9	20.9	73.0	16.0	39.7	18.3	5.2	2.5	9.2	11.6
DIELDRIN	189.4	125.5	99.6	97.0	10.1	11.6	4.0	5.2	10.2	10.5

TABLE 14. AVERAGE PERCENT REMOVALS AND PARTITIONING OF CERCLA ORGANICS FOR THE UNACCLIMATED SYSTEM

Compounds	PRIMARY TREATMENT		TOTAL TREATMENT		REMOVAL IN SLUDGE		BIODEGRADATION + STRIPPING	
	REMOVAL	STANDARD	REMOVAL	STANDARD	REMOVAL	STANDARD	REMOVAL	STANDARD
	DEVIATION		DEVIATION		DEVIATION		DEVIATION	
	%		%		%		%	
DICHLOROBENZENE, PROBABLY 1,2	20	10	84	8	11	8	74	7
DICHLOROBENZENE, PROBABLY 1,3	17	7	85	7	9	8	75	5
DICHLOROBENZENE, PROBABLY 1,4	17	6	88	4	9	7	79	6
1,2,4-TRICHLOROBENZENE	22	15	87	6	19	6	66	1
NITROBENZENE	17	6	58	20	2	2	50	18
1,3-DINITROBENZENE	88	2	86	11				
2,6-DINITROTOLUENE	31	24	86	9				
P-CRESOL	20	43	97	4	6	#	94	#
4-CHLOROANILINE				0				
HEXACHLOROETHANE	43	8	100	0				
HEXACHLOROBUTADIENE	50	16	98	1	30	#	66	#
DIMETHYL PHTHALATE	10	36	96	2	11	14	85	10
DIETHYL PHTHALATE	4	12	97	1	1	0	96	1
DIBUTYL PHTHALATE	22	19	96	1	7	#	88	#
BUTYL BENZYL PHTHALATE	39	3	97	1	26	11	71	10
BIS(2-ETHYLHEXYL)PHTHALATE								
NAPHTHALENE	13	3	95	4	19	26	79	25
LINDANE	16	15	52	26	18	10	28	19
DIELDRIN	43	31	95	3	19	13	78	16

Only one data point available.

emissions were not measured for the semivolatile organics, the removal mechanisms during the CERCLA study period are reported in Table 14 as removal in sludge and the combined biodegradation + stripping. The raw data on the individual sample events in the CERCLA study period are also included in Appendix 2.

OVERVIEW OF THE RESULTS

Substantial variability occurs in the reported results because some compounds, especially in the RCRA study period, were not satisfactorily identified in the analytical tests. In the RCRA study five spiked toxics, two volatile polar solvents (cyclohexanone and furfural) and three phenols (2,4-dimethyl phenol, 2,4-dinitrophenol, and 4-nitrophenol) were not satisfactorily identified by the analytical methodology. In the CERCLA study, all of the tested toxics were measurable by the analytical procedures, but in the small data base for the unacclimated operation, two compounds, 4-chloroaniline and bis(2-ethylhexyl) phthalate, were not satisfactorily identified by the analytical tests.

The concentrations or masses of the organics in the various samples from the treatment systems revealed good results in the air samples from the RCRA study and reasonable results in the secondary effluents for both studies. The analytical methodology used by the contractor laboratory for the RCRA study period produced poor results on the concentrations or masses of organics in the samples on raw, primary and sludge streams. The contractor laboratory did not use the stable-labelled isotopes in their analytical procedures. In the CERCLA study period, the in-house U.S. EPA laboratory used stable-labelled isotopes in the analytical procedures. The results were generally improved for the raw and primary wastewater

samples compared to the RCRA study period. However, even with the stable-labelled isotopes in the procedure, the amounts of organics found in the complex sludge samples are substantially lower than the measured removals across the primary process. There is a strong indication that organics quantitation by available methods is not reliable in a sludge matrix, and, as a result, mass balance closure in these studies is generally poor.

Appendix 4 provides a quality assurance summary of the RCRA and CERCLA data. Included are analytical recoveries, percent of collected data usable for removal and fate calculations and relative percent differences between collected duplicate samples. There is also a discussion of the process used to retain or exclude data.

The overall organic removals reasonably correspond with overall removals for these organic compounds in other studies. The concentrations of organics in the air emissions generally indicate that the chlorinated aliphatic solvents are essentially volatilized into the plant air emission stream, whereas the aromatic volatile benzenes (toluene, xylenes, chlorobenzenes) are substantially degraded. Pesticides and phthalates are removed by both sorption on sludges and by biodegradation. These air emission results qualitatively confirm results from earlier bench scale studies which had superior analytical reliability but without the real world sampling and wastewater matrix effects. Unfortunately, the variability in the results does not reliably permit calibration of a mechanistic model which is being developed through other treatability studies. Additional work is planned to attempt to reduce the analytical variability encountered in these studies.

APPENDIX 1. RCRA STUDY PERIOD

CONCENTRATIONS OF RCRA ORGANICS IN WASTEWATER, SLUDGE AND AIR
SAMPLES - ACCLIMATED SYSTEM EVENT 3

NAME	PRI	PRI	PRI	PRI	SEC	SEC	PRI	PRI	PRI	AERTM
	INF	INF	EFF	EFF	EFF	WAS	WAS	WAS	AIR	AIR
	Ug/L	(DUP) Ug/L	(DUP) Ug/L	(DUP) Ug/L	Ug/L	Ug/L	Ug/L	(DUP) Ug/L	Ug/L	Ug/L
=====										
Acetone	3400	2500	2700	1400	50	260	800	2200	0.10	0.00
Cyclohexanone										
Furfural										
2-butanone										
4-methyl-2-pentanone										
Tetrahydrofuran	218	170	210	190	150	10	150	200	0.00	0.32
Carbon Tetrachloride		360	300	310	2.5	5	110	105	0.23	7.31
Chlorobenzene	283	290	260	260	4	5	300	300	0.17	1.50
Chloroform	340	320	290	280	34	34	330	340	0.18	5.20
1,2-dichloroethane	314	340	310	310	110	5	300	330	0.13	3.33
1,2-dichloropropane		260	230	240	40	5	250	240	0.15	4.99
Methylene Chloride	660	503	450	455	60				0.27	4.86
Tetrachloroethylene	257	250	220	213	9	10	150	160	0.19	6.05
Trichloroethylene	255	250	220	216	2.5	7	360	350	0.19	5.11
1,1,1-trichloroethane		300	240	250	2.5	5	280	260	0.23	6.56
1,1,2-trichloroethane	254	230	210	220	100	25	220	210	0.09	2.67
Ethylbenzene	238	250	230	230	2.5	5	300	370	0.15	0.83
Toluene	313	310	380	400	2.5	10	400	410	0.25	1.46
Total Xylenes	129	140	120	120	2.5	5	160	190	0.13	1.10
bis-(2-ethylhexyl)-phthalate	120	130	93	90	5	160	1100	760		
Butylbenzylphthalate	52	41	22	30	5	5	740	320		
1,4-dichlorobenzene	130	130	130	130	5	5	230	200		
2,4-dimethylphenol										
2,4-dinitrophenol										
Naphthalene		210	190	190	5	5	340	250		
Nitrobenzene	170	180	170	150	5	5	29	69		
4-nitrophenol										
Phenol	350	370	320	340	5	5	320	320		
=====										

MASSES IN GRAMS OF RCRA ORGANICS IN WASTEWATER, SLUDGE AND
AIR STREAMS - ACCLIMATED SYSTEM EVENT 3

NAME	RW	PRI INF	PRI INF	PRI EFF	PRI EFF	PRI AIR	PRI WAST	PRI WAST	AERTN AIR	SEC EFF	SEC WAST
			(DUP)	(DUP)	(DUP)						
Acetone	316.8	1297.2	953.8	1030.1	534.1	3.7	3.7	10.2	0.0	19.1	2.2
Cyclohexanone											
Furfural											
2-butanone											
4-methyl-2-pentanone											
Tetrahydrofuran	0.0	83.2	64.9	80.1	72.5	0.0	0.7	0.9	5.0	57.2	0.1
Carbon Tetrachloride			137.4	114.5	118.3	8.5	0.5	0.5	113.9	1.0	0.0
Chlorobenzene	4.6	108.0	110.6	99.2	99.2	6.3	1.4	1.4	23.4	1.5	0.0
Chloroform	3.1	129.7	122.1	110.6	106.8	6.7	1.5	1.6	81.0	13.0	0.3
1,2-dichloroethane	0.0	119.8	129.7	118.3	118.3	4.8	1.4	1.5	51.9	42.0	0.0
1,2-dichloropropane	0.0		99.2	87.8	91.6	5.6	1.2	1.1	77.7	15.3	0.0
Methylene Chloride	25.1	251.8	191.9	171.7	173.6	10.0			75.7	22.9	
Tetrachloroethylene	2.2	98.1	95.4	83.9	81.3	7.0	0.7	0.7	94.2	3.4	0.1
Trichloroethylene	0.0	97.3	95.4	83.9	82.4	7.0	1.7	1.6	79.6	1.0	0.1
1,1,1-trichloroethane	4.3		114.5	91.6	95.4	8.5	1.3	1.2	102.2	1.0	0.0
1,1,2-trichloroethane	0.0	96.9	87.8	80.1	83.9	3.3	1.0	1.0	41.6	38.2	0.2
Ethylbenzene	3.4	90.8	95.4	87.8	87.8	5.6	1.4	1.7	12.9	1.0	0.0
Toluene	25.6	119.4	118.3	145.0	152.6	9.3	1.9	1.9	22.7	1.0	0.1
Total Xylenes	6.5	49.2	53.4	45.8	45.8	4.8	0.7	0.9	17.1	1.0	0.0
bis-(2-ethylhexyl)-phthalate	5.3	45.8	49.6	35.5	34.3		5.1	3.5		1.9	1.3
Butylbenzylphthalate	0.0	19.8	15.6	8.4	11.4		3.4	1.5		1.9	0.0
1,4-dichlorobenzene	0.0	49.6	49.6	49.6	49.6		1.1	0.9		1.9	0.0
2,4-dimethylphenol											
2,4-dinitrophenol											
Naphthalene			80.1	72.5	72.5		1.6	1.2		1.9	0.0
Nitrobenzene	0.0	64.9	68.7	64.9	57.2		0.1	0.3		1.9	0.0
4-nitrophenol											
Phenol	74.4	133.5	141.2	122.1	129.7		1.5	1.5		1.9	0.0

REMOVAL AND PARTITIONING OF RCRA ORGANICS DURING
TREATMENT - ACCLIMATED SYSTEM EVENT 3

NAME	% PRIMARY REMOVAL	% TOTAL REMOVAL	% IN PRIMARY AIR	% IN AERATION AIR	% IN TOTAL AIR	% ADSORBED	% BIODEGRADED +CHEM. TRANS.
Acetone	31	98	3	0	3	1	95
Cyclohexanone							
Furfural							
2-butanone							
4-methyl-2-pentanone							
Tetrahydrofuran	-3	23	0	5	5	1	16
Carbon Tetrachloride	15	99	9	119	128	1	-31
Chlorobenzene	9	99	6	24	30	1	68
Chloroform	14	90	7	83	90	2	-2
1,2-dichloroethane	5	66	5	34	59	1	6
1,2-dichloropropane	10	89	6	81	87	2	-11
Methylene Chloride	22	90	9	70	80		
Tetrachloroethylene	15	97	7	97	104	1	-8
Trichloroethylene	14	99	7	83	91	2	7
1,1,1-trichloroethane	18	99	8	101	109	2	-12
1,1,2-trichloroethane	11	59	4	44	47	1	10
Ethylbenzene	6	99	6	13	19	2	79
Toluene	37	100	8	19	26	2	71
Total Xylenes	11	98	4	16	20	2	76
bis-(2-ethylhexyl)-phthalate	27	96				12	84
Butylbenzylphthalate	44	89				14	76
1,4-dichlorobenzene	0	96				2	94
2,4-dimethylphenol							
2,4-dinitrophenol							
Naphthalene	10	98				2	95
Nitrobenzene	9	97				0	97
4-nitrophenol							
Phenol	8	99				1	98

CONCENTRATIONS OF RCRA ORGANICS IN WASTEWATER, SLUDGE AND AIR
SAMPLES - ACCLIMATED SYSTEM - EVENT 4

NAME	PRI	PRI	SEC	SEC	SEC	PRI	PRIM	PRIM	AERTN
	INF	EFF	EFF	EFF	WAS	WAS	AIR	AIR	AIR
	Ug/L	Ug/L	Ug/L	Ug/L	Ug/L	Ug/L	Ug/L	Ug/L	Ug/L
Acetone	526	605	23	40	112	1023	0.2	0.2	0.4
Cyclohexanone									
Furfural									
2-Butanone	196	152	5	5	5	107	0.03	0.05	0.005
4-Methyl-2-Pentanone	106	143	5	5	5	195	0.03	0.03	0.03
Tetrahydrofuran	194	225	5	5	478	240	0.01	0.03	0.3
Carbon Tetrachloride	281	315	3	6	7	373	0.3	0.3	8.5
Chlorobenzene	257	285	2.5	2.5	2.5	453	0.2	0.2	1.7
Chloroform	269	310	42	68	95	517	0.2	0.2	6.3
1,2-Dichloroethane	280	335	124	214	252	440	0.2	0.2	4.1
1,2-Dichloropropane	253	270	60	93	122	370	0.2	0.2	5.7
Methylene Chloride	431	530	126	229			0.4	0.4	7.7
Tetrachloroethylene	213	245	12	14	132	320	0.2	0.2	8.4
Trichloroethylene	211	240	7		9	393	0.2	0.2	6
1,1,1-Trichloroethane	291	315	8	13	2.5	533	0.3	0.3	8
1,1,2-Trichloroethane	247	260	132	32	247	343	0.1	0.1	3.3
Ethylbenzene	194	235	2.5	2.5	2.5	387	0.2	0.2	1
Toluene	286	305	5	4	19	560	0.3	0.3	1.7
Total Xylenes	200	230	2	2.5	2.5	377	0.2	0.2	2
Bis-(2-ethylhexyl)-phthalate	150	120	5	5	5	360			
Butylbenzylphthalate	92	43	5	5	5	310			
1,4-dichlorobenzene	110	99	5	5	5	5			
2,4-Dimethylphenol									
2,4-Dinitrophenol									
Naphthalene	130	120	5	5	5	130			
Nitrobenzene	130	120	5	5	5	47			
4-Nitrophenol									
Phenol	320	370	5	5	5	250			

MASSES IN GRAMS OF RCRA ORGANICS IN WASTEWATER, SLUDGE AND
AIR STREAMS - ACCLIMATED SYSTEM EVENT 4

NAME	RW	PR1 INF	PR1 EFF	PR1M AIR	PR1M AIR	PR1 WAST	SEC EFF	SEC EFF	SEC WAST	AERTN AIR	MIXED LIQUOR
Acetone	169.1	200.7	230.8	7.4	7.4	4.7	8.8	15.3	0.9	6.2	
Cyclohexanone											
Furfural											
2-Butanone	40.7	74.8	58.0	1.1	1.9	0.5	1.9	1.9	0.0	0.1	
4-Methyl-2-Pentanone	0.0	40.4	54.6	1.1	1.1	0.9	1.9	1.9	0.0	0.5	
Tetrahydrofuran	0.0	74.0	85.8	0.4	1.1	1.1	1.9	1.9	4.0	4.7	
Carbon Tetrachloride	0.0	107.2	120.2	1.1	1.1	1.7	1.1	2.3	0.1	132.4	
Chlorobenzene	3.1	98.1	108.7	7.4	7.4	2.1	1.0	1.0	0.0	26.5	
Chloroform	1.9	102.6	118.3	7.4	7.4	2.4	16.0	25.9	0.8	98.1	
1,2-Dichloroethane	0.0	106.8	127.8	7.4	7.4	2.0	47.3	81.6	2.1	63.9	
1,2-Dichloropropane	0.0	96.5	103.0	7.4	7.4	1.7	22.9	35.5	1.0	88.8	
Methylene Chloride	18.8	164.4	202.2	14.8	14.8		48.1	87.4		120.0	
Tetrachloroethylene	2.6	81.3	93.5	7.4	7.4	1.5	4.6	5.3	1.1	130.9	
Trichloroethylene	0.0	80.5	91.6	7.4	7.4	1.8	2.7		0.1	93.5	
1,1,1-Trichloroethane	6.2	111.0	120.2	11.1	11.1	2.5	3.1	5.0	0.0	124.6	
1,1,2-Trichloroethane	0.0	94.2	99.2	3.7	3.7	1.6	50.4	12.2	2.1	51.4	
Ethylbenzene	3.9	74.0	89.7	7.4	7.4	1.8	1.0	1.0	0.0	15.6	
Toluene	36.6	109.1	116.4	11.1	11.1	2.6	1.9	1.5	0.2	26.5	
Total Xylenes	10.1	76.3	87.8	7.4	7.4	1.7	0.8	1.0	0.0	31.2	
Bis-(2-ethylhexyl)-phthalate	9.4	57.2	45.8			1.7	1.9	1.9	0.0		
Butylbenzylphthalate	1.9	35.1	16.4			1.4	1.9	1.9	0.0		
1,4-dichlorobenzene	1.9	42.0	37.8			0.0	1.9	1.9	0.0		
2,4-Dimethylphenol											
2,4-Dinitrophenol											
Naphthalene	2.2	49.6	45.8			0.6	1.9	1.9	0.0		
Nitrobenzene	1.9	49.6	45.8			0.2	1.9	1.9	0.0		
4-Nitrophenol											
Phenol	35.2	122.1	141.2			1.2	1.9	1.9	0.0		

REMOVAL AND PARTITIONING OF RCRA ORGANICS DURING
TREATMENT - ACCLIMATED SYSTEM EVENT 4

NAME	% PRIMARY REMOVAL	% TOTAL REMOVAL	% IN PRIMARY AIR	% IN AERATION AIR	% IN TOTAL AIR	% ADSORBED	% BIODEGRADED +CHEM. TRANS.
Acetone	-15	94	2	2	4	3	87
Cyclohexanone							
Furfural							
2-Butanone	22	97	1	0	1	1	95
4-Methyl-2-Pentanone	-35	95	1	1	2	2	91
Tetrahydrofuran	-16	97	1	5	6	7	84
Carbon Tetrachloride	-12	98	12	139	151	2	-55
Chlorobenzene	-11	99	8	27	35	2	62
Chloroform	-15	80	8	102	110	3	-33
1,2-Dichloroethane	-20	40	8	67	75	4	-39
1,2-Dichloropropane	-7	70	8	93	101	3	-34
Methylene Chloride	-23	59	15	118	133		
Tetrachloroethylene	-15	94	8	135	143	3	-52
Trichloroethylene	-14	98	8	98	106	2	-10
1,1,1-Trichloroethane	-8	96	11	127	138	2	-44
1,1,2-Trichloroethane	-5	67	4	54	58	4	5
Ethylbenzene	-21	99	8	16	24	2	73
Toluene	-7	98	9	22	31	3	64
Total Xylenes	-15	99	7	30	37	2	60
Bis-(2-ethylhexyl)-phthalate	20	97				3	94
Butylbenzylphthalate	53	95				4	91
1,4-dichlorobenzene	10	95				0	95
2,4-Dimethylphenol							
2,4-Dinitrophenol							
Naphthalene	8	96				1	95
Nitrobenzene	8	96				0	96
4-Nitrophenol							
Phenol	-16	98				1	97

CONCENTRATIONS OF RCRA ORGANICS IN WASTEWATER, SLUDGE AND AIR
SAMPLES - ACCLIMATED SYSTEM EVENT 5

=====										
ACCLIMATED SYSTEM		PRI	PRI	PRI	SEC	SEC	SEC	PRI	PRI	AERTM
		INF	INF	EFF	EFF	WAS	WAS	WAS	AIR	AIR
		(DUP)					(DUP)			
NAME		Ug/L	Ug/L	Ug/L	Ug/L	Ug/L	Ug/L	Ug/L	(Ug/L)	(Ug/L)
=====										
Acetone		1100	630	590	5	5	11	1200	0.10	0.20
Cyclohexanone										
Furfural										
2-butanone		63	81	24	5	5	5	19	0.02	0.005
4-methyl-2-pentanone		420	320	180	1	5	7	14	0.03	0.005
Tetrahydrofuran		220	200	250	230	42	5	24	0.04	0.40
Carbon Tetrachloride		160	120	120	3	2.5	2.5	8	0.20	8.20
Chlorobenzene		230	210	170	2.5	2.5	2.5	24	0.40	3.90
Chloroform		170	160	130	28	4	4	16	0.20	6.80
1,2-dichloroethane										
1,2-dichloropropene		180	160	130	46	2.5	2.5	15	0.20	5.80
Methylene Chloride		330	250	210	83				0.30	9.00
Tetrachloroethylene		180	150	120	8	2	2	14	0.20	8.60
Trichloroethylene		150	130	100	5	1	1	14	0.20	6.40
1,1,1-trichloroethane		200	180	140	2.5	2.5	2.5	16	0.20	7.50
1,1,2-trichloroethane		170	150	130	110	17	18	15	0.10	3.70
Ethylbenzene		160	140	110	2.5	1	1	15	0.20	1.00
Toluene		270	240	190	2.5	1	1	23	0.30	2.60
Total Xylenes		200	180	140	2	2	2	19	0.20	2.10
bis-(2-ethylhexyl)-phthalate		94	77	73	2.5	300	220	900		
Butylbenzylphthalate		62	30	30	5	5	5	500		
1,4-dichlorobenzene		60	71	56	5	6	7	180		
2,4-dimethylphenol										
2,4-dinitrophenol										
Naphthalene		91	91	89	5	5	5	260		
Nitrobenzene		82		85	5	18	5	100		
4-nitrophenol										
Phenol		270	140	170	6	5	5	290		
=====										

MASSES IN GRAMS OF RCRA ORGANICS IN WASTEWATER, SLUDGE AND AIR
STREAMS - ACCLIMATED SYSTEM EVENT 5

ACCLIMATED SYSTEM	RW	PRI	PRI	PRI	PRI	PRI	AERTM	SEC	SEC	SEC
	INF	INF	EFF	AIR	WAS	AIR	EFF	WAS	WAS	
NAME	(DUP)					(DUP)				
Acetone	160.2	419.7	240.4	225.1	3.7	5.6	3.1	1.9	0.0	0.1
Cyclohexanone										
Furfural										
2-butanone	21.0	24.0	30.9	9.2	0.7	0.1	0.1	1.9	0.0	0.0
4-methyl-2-pentanone	0.0	160.2	122.1	68.7	1.1	0.1	0.1	0.4	0.0	0.1
Tetrahydrofuran	6.5	83.9	76.3	95.4	1.5	0.1	6.2	87.8	0.3	0.0
Carbon Tetrachloride	0.7	61.0	45.8	45.8	7.4	0.0	127.7	1.1	0.0	0.0
Chlorobenzene	23.2	87.8	80.1	64.9	14.8	0.1	60.8	1.0	0.0	0.0
Chloroform	2.2	64.9	61.0	49.6	7.4	0.1	105.9	10.7	0.0	0.0
1,2-dichloroethane										
1,2-dichloropropane	0.0	68.7	61.0	49.6	7.4	0.1	90.4	17.6	0.0	0.0
Methylene Chloride	0.0	125.9	95.4	80.1	11.1		140.2	31.7		
Tetrachloroethylene	2.2	68.7	57.2	45.8	7.4	0.1	134.0	3.1	0.0	0.0
Trichloroethylene	0.3	57.2	49.6	38.2	7.4	0.1	99.7	1.9	0.0	0.0
1,1,1-trichloroethane	4.3	76.3	68.7	53.4	7.4	0.1	116.8	1.0	0.0	0.0
1,1,2-trichloroethane	0.0	64.9	57.2	49.6	3.7	0.1	57.6	42.0	0.1	0.1
Ethylbenzene	1.5	61.0	53.4	42.0	7.4	0.1	15.6	1.0	0.0	0.0
Toluene	49.6	103.0	91.6	72.5	11.1	0.1	40.5	1.0	0.0	0.0
Total Xylenes	3.8	76.3	68.7	53.4	7.4	0.1	32.7	0.8	0.0	0.0
bis-(2-ethylhexyl)-phthalate	5.6	35.9	29.4	27.9		4.2		1.0	2.5	1.8
Butylbenzylphthalate	0.0	23.7	11.4	11.4		2.3		1.9	0.0	0.0
1,4-dichlorobenzene	0.0	22.9	27.1	21.4		0.8		1.9	0.0	0.1
2,4-dimethylphenol										
2,4-dinitrophenol										
Naphthalene	3.1	34.7	34.7	34.0		1.2		1.9	0.0	0.0
Nitrobenzene	0.0	31.3		32.4		0.5		1.9	0.1	0.0
4-nitrophenol										
Phenol	27.0	103.0	53.4	64.9		1.3		2.3	0.0	0.0

REMOVAL AND PARTITIONING OF RCRA ORGANICS DURING
TREATMENT - ACCLIMATED SYSTEM EVENT 5

ACCLIMATED SYSTEM	%	%	% IN	% IN	% IN	%	%
NAME	PRIMARY REMOVAL	TOTAL REMOVAL	PRIMARY AIR	AERATION AIR	TOTAL AIR	ADSORBED	BIODEGRADED +CHEM. TRAN
Acetone	32	99	1	1	2	2	95
Cyclohexanone							
Furfural							
2-butanone	66	93	0	0	0	0	93
4-methyl-2-pentanone	51	100	1	0	1	0	99
Tetrahydrofuran	-19	-10	1	6	7	0	-17
Carbon Tetrachloride	14	98	8	131	139	0	-41
Chlorobenzene	23	99	9	39	48	0	51
Chloroform	21	83	7	105	112	0	-29
1,2-dichloroethane							
1,2-dichloropropene	24	73	8	95	103	0	-30
Methylene Chloride	28	71	12	147	159		
Tetrachloroethylene	27	95	7	132	139	0	-44
Trichloroethylene	28	96	8	104	112	0	-16
1,1,1-trichloroethane	26	99	7	111	118	0	-19
1,1,2-trichloroethane	19	31	4	60	64	0	-33
Ethylbenzene	27	98	7	16	23	0	75
Toluene	25	99	4	15	19	0	80
Total Xylenes	26	99	7	31	38	0	61
bis-(2-ethylhexyl)-phthalate	15	97	0	0	0	19	78
Butylbenzylphthalate	35	89	0	0	0	13	76
1,4-dichlorobenzene	14	92	0	0	0	3	89
2,4-dimethylphenol							
2,4-dinitrophenol							
Naphthalene	2	95	0	0	0	3	92
Nitrobenzene	-4	94	0	0	0	2	92
4-nitrophenol							
Phenol	17	97	0	0	0	2	95

CONCENTRATIONS OF RCRA ORGANICS IN WASTEWATER, SLUDGE AND AIR
SAMPLES - UNACCLIMATED SYSTEM EVENT 3

NAME	RW	PRI	PRI	PRI	PRI	PRI	MIXED	MIXED	SEC	PRI	PRI	PRI	AERTN.
		INF	INF	EFF	EFF	EFF	LIQUOR	LIQUOR	WAS	WAS	WAS	AIR	AIR
			(DUP)			(DUP)	0 HRS	48 HRS			(DUP)		
	Ug/L	Ug/L	Ug/L	Ug/L	Ug/L	Ug/L	Ug/L	Ug/L	Ug/L	Ug/L	Ug/L	Ug/L	Ug/L
Acetone	830	990	1100	970	34	45	17	15	1200	1500	1300	0.01	0.01
Cyclohexanone													
Furfural													
2-butanone													
4-methyl-2-pentanone	30	160	190	110	5	5	5	5	5	190	150	0.02	0.00
Tetrahydrofuran		150	150	130	92	93	11	35	5	300	210	0.00	0.12
Carbon Tetrachloride		220	120	57	2.5	4	2.5	2.5	2.5	64	71	0.19	2.81
Chlorobenzene	12	220	150	72	14	12	3	1	2.5	160	170	0.15	1.55
Chloroform	8	200	210	72	23	21	2	2	2.5	200	200	0.16	2.07
1,2-dichloroethane		140	140	52	42	37	2.5	4	2.5	120	110	0.08	1.05
1,2-dichloropropane		160	140	52	34	30	2.5	2	2.5	130	120	0.10	1.69
Methylene Chloride	66	340	330	220	53	80	22	43				0.20	1.82
Tetrachloroethylene	6	96	96	49	13	12	2.5	1	2.5	130	130	0.20	3.01
Trichloroethylene		130	130	63	12	10	2.5	2.5	2.5	120	140	0.18	2.39
1,1,1-trichloroethane	11	160	160	57	6	6	2.5	2.5	2.5	100	130	0.23	3.07
1,1,2-trichloroethane		180	180	62	68	62	2.5	11	46	130	130	0.08	1.19
Ethylbenzene	9	150	150	44	7	7	2.5	1	110	100	100	0.11	1.58
Toluene	67	170	170	82	4	4	39	3	86	240	270	0.22	1.56
Total Xylenes	17	190	190	69	11	10	2	1	110	19	200	0.10	1.22
bis-(2-ethylhexyl)-phthalate	14	86	93	37	5	5	30	69	37	170	250		
Butylbenzylphthalate		31	34	11	5	5	5	5	5	120	140		
1,4-dichlorobenzene		150	130	110	22	12	5	5	20	51	73		
2,4-dimethylphenol													
2,4-dinitrophenol													
Naphthalene	18	130	130	120	5	5	5	5	5	73	100		
Nitrobenzene		140	130	140	40	24	5	5	6	5	54		
4-nitrophenol		120	120	120	25	25	25	25	25	25	25		
Phenol	195	410	380	370	5	5	28	5	6	140	380		

MASSES IN GRAMS OF RCRA ORGANICS IN WASTEWATER, SLUDGE AND AIR
STREAMS - UNACCLIMATED SYSTEM EVENT 3

NAME	RW	PRI INF	PRI INF	PRI EFF	PRI AIR	PRI WAS	PRI WAS	AERTN AIR	SEC EFF	SEC EFF	SEC WAS	MIXED LIQUOR
			(DUP)				(DUP)			(DUP)		
Acetone	185.3	221.0	245.5	246.1	0.4	7.7	6.7	0.2	13.0	17.2	9.8	-0
Cyclohexanone												
Furfural												
2-butanone												
4-methyl-2-pentanone	6.7	35.7	42.4	27.9	0.8	1.0	0.8	0.0	1.9	1.9	0.0	0
Tetrahydrofuran	0.0	33.5	33.5	33.0	0.0	1.5	1.1	2.0	35.1	35.5	0.0	1
Carbon Tetrachloride	0.0	49.1	26.8	14.5	7.8	0.3	0.4	47.9	1.0	1.5	0.0	0
Chlorobenzene	2.7	49.1	33.5	18.3	6.2	0.8	0.9	26.4	5.3	4.6	0.0	-0
Chloroform	1.8	44.6	46.9	18.3	6.6	1.0	1.0	35.3	8.8	8.0	0.0	0
1,2-dichloroethane	0.0	31.2	31.2	13.2	3.3	0.6	0.6	17.9	16.0	14.1	0.0	0
1,2-dichloropropane	0.0	35.7	31.2	13.2	4.1	0.7	0.6	28.8	13.0	11.4	0.0	0
Methylene Chloride	14.7	75.9	73.7	55.8	8.2			31.0	20.2	30.5		1
Tetrachloroethylene	1.3	21.4	21.4	12.4	8.2	0.7	0.7	51.3	5.0	4.6	0.0	-0
Trichloroethylene	0.0	29.0	29.0	16.0	7.4	0.6	0.7	40.7	4.6	3.8	0.0	0
1,1,1-trichloroethane	2.5	35.7	35.7	14.5	9.5	0.5	0.7	52.3	2.3	2.3	0.0	0
1,1,2-trichloroethane	0.0	40.2	40.2	15.7	3.3	0.7	0.7	20.3	25.9	23.7	0.4	1
Ethylbenzene	2.0	33.5	33.5	11.2	4.5	0.5	0.5	26.9	2.7	2.7	0.9	-0
Toluene	15.0	37.9	37.9	20.8	9.0	1.2	1.4	26.6	1.5	1.5	0.7	-2
Total Xylenes	3.8	42.4	42.4	17.5	4.1	0.1	1.0	20.8	4.2	3.8	0.9	-0
bis-(2-ethylhexyl)-phthalate	3.1	19.2	20.8	9.4		0.9	1.3		1.9	1.9	0.3	2
Butylbenzylphthalate	0.0	6.9	7.6	2.8		0.6	0.7		1.9	1.9	0.0	0
1,4-dichlorobenzene	0.0	33.5	29.0	27.9		0.3	0.4		8.4	4.6	0.2	0
2,4-dimethylphenol												
2,4-dinitrophenol												
Naphthalene	4.0	29.0	29.0	30.4		0.4	0.5		1.9	1.9	0.0	0
Nitrobenzene	0.0	31.2	29.0	35.5		0.0	0.3		15.3	9.2	0.0	0
4-nitrophenol	0.0	26.8	26.8	30.4		0.1	0.1		9.5	9.5	0.2	0
Phenol	43.5	91.5	84.8	93.9		0.7	2.0		1.9	1.9	0.0	-1

REMOVAL AND PARTITIONING OF RCRA ORGANICS DURING
TREATMENT - UNACCLIMATED SYSTEM EVENT 3

NAME	% PRIMARY REMOVAL	% TOTAL REMOVAL	% IN AIR	% IN AIR	% IN AIR	% ADSORBED	% BIODEGRADED +CHEM. TRANS.
Acetone	-6	94	0	0	0	7	86
Cyclohexanone							
Furfural							
2-butanone							
4-methyl-2-pentanone	29	95	1	0	1	2	92
Tetrahydrofuran	2	-5	0	4	4	4	-15
Carbon Tetrachloride	62	97	16	100	117	1	-21
Chlorobenzene	56	88	12	49	61	2	25
Chloroform	60	82	13	69	82	2	-3
1,2-dichloroethane	58	52	7	38	44	2	5
1,2-dichloropropane	61	64	9	60	69	2	-7
Methylene Chloride	25	66	12	46	58		
Tetrachloroethylene	42	78	16	97	112	3	-38
Trichloroethylene	45	86	16	85	101	2	-18
1,1,1-trichloroethane	59	94	18	97	115	2	-23
1,1,2-trichloroethane	61	38	7	43	50	3	-14
Ethylbenzene	67	92	9	51	59	4	28
Toluene	45	96	9	26	35	5	58
Total Xylenes	59	91	7	37	45	3	43
bis-(2-ethylhexyl)-phthalate	53	91				7	81
Butylbenzylphthalate	61	74				9	65
1,4-dichlorobenzene	11	79				2	77
2,4-dimethylphenol							
2,4-dinitrophenol							
Naphthalene	-5	93				2	92
Nitrobenzene	-18	59				1	59
4-nitrophenol	-13	65				1	64
Phenol	-7	98				2	98

CONCENTRATIONS OF RCRA ORGANICS IN WASTEWATER, SLUDGE AND AIR
SAMPLES - UNACCLIMATED SYSTEM EVENT 4

NAME	RW	RW	PRI	PRI	PRI	SEC	MIXED	MIXED	SEC	SEC	PRI	PRI	AERTN.
		(DUP)	INF	INF	EFF	EFF	LIQUOR	LIQUOR	WAS	WAS	WAS	AIR	AIR
	Ug/L	Ug/L	Ug/L	Ug/L	Ug/L	Ug/L	Ug/L	Ug/L	Ug/L	Ug/L	Ug/L	Ug/L	Ug/L
Acetone	443	443	634	683	680	7	5	150	5	5	1040	0.200	0.400
Cyclohexanone			65	76	53	5	5	5	5	5	17	0.005	0.005
Furfural													
2-Butanone	102	111	180	177	145	5	5	5	5	5	153	0.040	0.005
4-Methyl-2-Pentanone			43	46	52	6	5	5	5	5	82	0.030	0.005
Tetrahydrofuran													
Carbon Tetrachloride			183	177	142	1	2.5	2.5	2.5	2.5	88	0.200	4.800
Chlorobenzene	8	8	181	169	145	7	2.5	4	2.5	2.5	120	0.200	2.200
Chloroform	5	5	166	206	138	11	2.5	7	12	17	137	0.200	3.400
1,2-Dichloroethane			151	148	123	26	2.5	2.5	33	33	113	0.100	1.700
1,2-Dichloropropane			150	144	122	20	2.5	4	17	16	137	0.100	3.000
Methylene Chloride	37	62		474	455	61	9	29				0.400	4.500
Tetrachloroethylene	6	7	171	164	135	6	2.5	2.5	6	9	87	0.200	5.200
Trichloroethylene			150	139	118	4	2.5	2.5	2.5	2.5	113	0.200	3.800
1,1,1-Trichloroethane	16	16	210	209	165	4	2.5	6	2.5	2.5	157	0.200	5.600
1,1,2-Trichloroethane			161	150	135	46	2.5	4	39	37	160	0.100	1.600
Ethylbenzene	10	11	139	127	112	5	2.5	2.5	3	4	71	0.100	2.700
Toluene	93	99	214	230	205	2	4	5	6	8	173	0.300	2.700
Total Xylenes	19	34	149	141	125	3	2.5	2.5	2.5	2.5	75	0.100	2.000
Bis-(2-ethylhexyl)-phthalate	29	20	120	100	38	5	52	42	5	140	210		
Butylbenzylphthalate	5	5	66	61	16	5	5	5	5	5	5		
1,4-Dichlorobenzene	5	5	88	75	64	11	5	5	19	18	68		
2,4-Dimethylphenol													
2,4-Dinitrophenol													
Naphthalene	6	6	89	81	75	5	5	5	5	5	81		
Nitrobenzene	5	5	110	93	50	14	5	5	5	10	48		
4-Nitrophenol													
Phenol	97	88	180	130	95	5	5	5	5	5	5		

MASSES IN GRAMS OF RCRA ORGANICS IN WASTEWATER, SLUDGE AND
AIR STREAMS - UNACCLIMATED SYSTEM EVENT 4

NAME	R/W	PRI INF	PRI INF	PRIM EFF	PRIM WAS	PRIM AIR	SEC EFF	SEC WAS	SEC WAS	AERTN AIR	MIXED LIQUOR
			(DUP)						(DUP)		
Acetone	98.9	141.5	152.4	172.5	5.4	8.2	2.7	0.0	0.0	6.8	4.2
Cyclohexanone	0.0	14.5	17.0	13.4	0.1	0.2	1.9	0.0	0.0	0.1	0.0
Furfural											
2-Butanone	23.8	40.2	39.5	36.8	0.8	1.6	1.9	0.0	0.0	0.1	0.0
4-Methyl-2-Pentanone	0.0	9.6	10.3	13.2	0.4	1.2	2.3	0.0	0.0	0.1	0.0
Tetrahydrofuran											
Carbon Tetrachloride	0.0	40.8	39.5	36.0	0.5	8.2	0.4	0.0	0.0		0.0
Chlorobenzene	1.8	40.4	37.7	36.8	0.6	8.2	2.7	0.0	0.0	37.5	0.0
Chloroform	1.1	37.1	46.0	35.0	0.7	8.2	4.2	0.1	0.1		0.1
1,2-Dichloroethane	0.0	33.7	33.0	31.2	0.6	4.1	9.9	0.3	0.3	29.0	0.0
1,2-Dichloropropane	0.0	33.5	32.1	31.0	0.7	4.1	7.6	0.1	0.1		0.0
Methylene Chloride	11.0		105.8	115.4		16.4	23.3			76.7	0.6
Tetrachloroethylene	1.5	38.2	36.6	34.3	0.4	8.2	2.3	0.0	0.1		0.0
Trichloroethylene	0.0	33.5	31.0	29.9	0.6	8.2	1.5	0.0	0.0		0.0
1,1,1-Trichloroethane	3.6	46.9	46.6	41.9	0.8	8.2	1.5	0.0	0.0		0.1
1,1,2-Trichloroethane	0.0	35.9	33.5	34.3	0.8	4.1	17.6	0.3	0.3	27.3	0.0
Ethylbenzene	2.3	31.0	28.3	28.4	0.4	4.1	1.9	0.0	0.0		0.0
Toluene	21.4	47.8	51.3	52.0	0.9	12.3	0.8	0.0	0.1	46.0	0.0
Total Xylenes	5.9	33.3	31.5	31.7	0.4	4.1	1.1	0.0	0.0	34.1	0.0
Bis-(2-ethylhexyl)-phthalate	5.5	26.8	22.3	9.6	1.1		1.9	0.0	1.1		-0.3
Butylbenzylphthalate	1.1	14.7	13.6	4.1	0.0		1.9	0.0	0.0		0.0
1,4-Dichlorobenzene	1.1	19.6	16.7	16.2	0.4		4.2	0.2	0.1		0.0
2,4-Dimethylphenol											
2,4-Dinitrophenol											
Naphthalene	1.3	19.9	18.1	19.0	0.4		1.9	0.0	0.0		0.0
Nitrobenzene	1.1	24.6	20.8	12.7	0.2		5.3	0.0	0.1		0.0
4-Nitrophenol											
Phenol	20.6	40.2	29.0	24.1	0.0		1.9	0.0	0.0		0.0

REMOVAL AND PARTITIONING OF RCRA ORGANICS DURING
TREATMENT - UNACCLIMATED SYSTEM EVENT 4

NAME	% PRIMARY REMOVAL	% TOTAL REMOVAL	% IN PRIMARY AIR	% IN AERATION AIR	% IN TOTAL AIR	% ADSORBED	% BIODEGRADED +CHEM. TRANS.
Acetone	-17	98	4	3	7	4	87
Cyclohexanone	15	88	0	0	0	1	87
Furfural							
2-Butanone	8	95	1	0	1	2	92
4-Methyl-2-Pentanone	-33	77	3	0	3	4	70
Tetrahydrofuran							
Carbon Tetrachloride	10	99	17	171	188	1	-90
Chlorobenzene	6	93	16	73	89	2	2
Chloroform	16	90	16	116	132	2	-44
1,2-Dichloroethane	6	70	9	61	70	3	-3
1,2-Dichloropropane	5	77	9	107	116	2	-41
Methylene Chloride	-9	78	24	111	135		
Tetrachloroethylene	8	94	16	173	189	1	-96
Trichloroethylene	7	95	17	136	153	2	-60
1,1,1-Trichloroethane	10	97	15	175	190	2	-95
1,1,2-Trichloroethane	1	49	9	57	66	3	-20
Ethylbenzene	4	94	8	84	92	1	1
Toluene	-5	98	11	42	53	2	43
Total Xylenes	2	97	6	52	58	1	38
Bis-(2-ethylhexyl)-phthalate	61	92				7	85
Butylbenzylphthalate	71	87				0	87
1,4-Dichlorobenzene	11	77				3	74
2,4-Dimethylphenol							
2,4-Dinitrophenol							
Naphthalene	0	90				2	88
Nitrobenzene	44	77				1	76
4-Nitrophenol							
Phenol	30	95				0	95

CONCENTRATIONS OF RCRA ORGANICS IN WASTEWATER, SLUDGE AND AIR
SAMPLES - UNACCLIMATED SYSTEM EVENT 5

UNACCLIMATED SYSTEM	RW	PRI	PRI	PRI	PRI	SEC	SEC	MIXED	MIXED	SEC	PRI	PRI	AERTN
		INF	INF	EFF	EFF	EFF	EFF	LIQUOR	LIQUOR	WAS	WAS	AIR	AIR
			(DUP)		(DUP)		(DUP)	0 HRS	48 HRS				
NAME	Ug/L	Ug/L	Ug/L	Ug/L	Ug/L	Ug/L	Ug/L	Ug/L	Ug/L	Ug/L	Ug/L	Ug/L	Ug/L
Acetone	420	530	560	590	570	21	5	41	53	62	46	0.20	0.09
Cyclohexanone													
Furfural													
2-butanone	55	160	140	150	150	5	5	5	5	5	5	0.005	0.005
4-methyl-2-pentanone													
Tetrahydrofuran	17	160		160	160	100	97	5	14	5	8	0.02	0.20
Carbon Tetrachloride	2	170	220	130	120	3	2	2.5	2.5	2.5	3	0.20	2.40
Chlorobenzene	61	220	260	240		5	4	3	2.5	2.5	14	0.40	2.30
Chloroform	6	150	160	130	130	12	12	2.5	2.5	21	5	0.20	2.10
1,2-dichloroethane	5	140	150	130	130	32	31	3	2.5	22	2.5	0.10	1.30
1,2-dichloropropane		140	150	120	120	19	18	2.5	2.5	10	5	0.10	1.60
Methylene Chloride		230	270	230	240	53	59	10	160			0.30	2.60
Tetrachloroethylene	6	160	170	130	120	6	6	2.5	2.5	9	5	0.20	2.90
Trichloroethylene	1	140	150	120	110	5	4	2.5	2.5	3	4	0.20	2.10
1,1,1-trichloroethane	11	170	200	140	140	4	3	2.5	2.5	2.5	6	0.20	2.70
1,1,2-trichloroethane		140	160	120	120	38	38	2.5	2.5	2.5	5	0.09	1.10
Ethylbenzene	4	120	130	97	91	5	2.5	2.5	2.5	3	5	0.10	1.30
Toluene	130	260	300	260	260	2	2.5	2	2	5	12	0.40	1.30
Total Xylenes	10	130	140	110	100	4	2.5	2.5	2.5	2.5	7	0.1	0.80
bis-(2-ethylhexyl)-phthalate	15	55		29	35	5	5		5	5	5		
Butylbenzylphthalate		17		7	10	5	5	5	5	5	5		
1,4-dichlorobenzene													
2,4-dimethylphenol													
2,4-dinitrophenol													
Naphthalene	8	65		57	54	5	5	5	5	5	5		
Nitrobenzene		55		52	47	5	5	5	5	5	5		
4-nitrophenol													
Phenol	71	150		130	130	5	5	5	5	5	5		

MASSES IN GRAMS OF RCRA ORGANICS IN WASTEWATER, SLUDGE AND AIR
STREAMS - UNACCLIMATED SYSTEM EVENT 5

UNACCLIMATED SYSTEM	RWM	PRI INF	PRI INF	PRI EFF	PRI EFF	PRI AIR	PRI WAS	AERTN AIR	SEC EFF	SEC EFF	SEC WAS
NAME	(DUP)			(DUP)			(DUP)			(DUP)	
Acetone	93.7	118.3	125.0	149.7	144.6	8.2	0.2	1.5	8.0	1.9	0.5
Cyclohexanone											
Furfural											
2-butanone	12.3	35.7	31.2	38.1	38.1	0.2	0.0	0.1	1.9	1.9	0.0
4-methyl-2-pentanone											
Tetrahydrofuran	3.8	35.7		40.6	40.6	0.8	0.0	3.4	38.2	37.0	0.0
Carbon Tetrachloride	0.4	37.9	49.1	33.0	30.4	8.2	0.0	40.9	1.1	0.8	0.0
Chlorobenzene	13.6	49.1	58.0	60.9		16.4	0.1	39.2	1.9	1.5	0.0
Chloroform	1.3	33.5	35.7	33.0	33.0	8.2	0.0	35.8	4.6	4.6	0.2
1,2-dichloroethane	1.1	31.2	33.5	33.0	33.0	4.1	0.0	22.2	12.2	11.8	0.2
1,2-dichloropropene	0.0	31.2	33.5	30.4	30.4	4.1	0.0	27.3	7.2	6.9	0.1
Methylene Chloride		51.3	60.3	58.4	60.9	12.3		44.3	20.2	22.5	
Tetrachloroethylene	1.3	35.7	37.9	33.0	30.4	8.2	0.0	49.4	2.3	2.3	0.1
Trichloroethylene	0.2	31.2	33.5	30.4	27.9	8.2	0.0	35.8	1.9	1.5	0.0
1,1,1-trichloroethane	2.5	37.9	44.6	35.5	35.5	8.2	0.0	46.0	1.5	1.1	0.0
1,1,2-trichloroethane	0.0	31.2	35.7	30.4	30.4	3.7	0.0	18.8	14.5	14.5	0.0
Ethylbenzene	0.9	26.8	29.0	24.6	23.1	4.1	0.0	22.2	1.9	1.0	0.0
Toluene	29.0	58.0	67.0	66.0	66.0	16.4	0.1	22.2	0.8	1.0	0.0
Total Xylenes	2.2	29.0	31.2	27.9	25.4	4.1	0.0	13.6	1.5	1.0	0.0
bis-(2-ethylhexyl)-phthalate	3.3	12.3		7.4	8.9		0.0		1.9	1.9	0.0
Butylbenzylphthalate	0.0	3.8		1.8	2.5		0.0		1.9	1.9	0.0
1,4-dichlorobenzene											
2,4-dimethylphenol											
2,4-dinitrophenol											
Naphthalene	1.8	14.5		14.5	13.7		0.0		1.9	1.9	0.0
Nitrobenzene	0.0	12.3		13.2	11.9		0.0		1.9	1.9	0.0
4-nitrophenol											
Phenol	15.8	33.5		33.0	33.0		0.0		1.9	1.9	0.0

REMOVAL AND PARTITIONING OF RCRA ORGANICS DURING
TREATMENT - UNACCLIMATED SYSTEM EVENT 5

UNACCLIMATED SYSTEM	%	%	% IN	% IN	% IN	%	%
NAME	PRIMARY REMOVAL	TOTAL REMOVAL	PRIMARY AIR	AERATION AIR	TOTAL AIR	ADSORBED	BIODEGRADED +CHEM. TRAN
Acetone	-21	96	3	0	3	1	92
Cyclohexanone							
Furfural							
2-butanone	-14	94	0	0	0	0	94
4-methyl-2-pentanone							
Tetrahydrofuran	-14	-5	1	5	6	0	-11
Carbon Tetrachloride	27	98	17	84	101	0	-3
Chlorobenzene	37	97	22	52	74	0	23
Chloroform	5	87	16	70	86	1	0
1,2-dichloroethane	-2	63	8	44	52	1	10
1,2-dichloropropane	6	78	9	57	66	0	12
Methylene Chloride	-7	62	26	93	119		
Tetrachloroethylene	14	94	16	97	113	0	-19
Trichloroethylene	10	95	17	74	91	0	4
1,1,1-trichloroethane	14	97	15	87	102	0	-5
1,1,2-trichloroethane	9	57	8	39	47	0	10
Ethylbenzene	15	95	8	44	52	0	43
Toluene	-6	99	14	19	33	0	66
Total Xylenes	11	96	8	25	33	0	63
bis-(2-ethylhexyl)-phthalate	34	85				0	85
Butylbenzylphthalate	43	50				0	50
1,4-dichlorobenzene							
2,4-dimethylphenol							
2,4-dinitrophenol							
Naphthalene	3	87				0	87
Nitrobenzene	-2	85				0	85
4-nitrophenol							
Phenol	1	94				0	94

APPENDIX 2. CERCLA STUDY PERIOD

CONCENTRATIONS OF CERCLA ORGANICS IN WASTEWATER AND
-- SLUDGE SAMPLES - ACCLIMATED SYSTEM DATA SET 1

Compounds	CONCENTRATION OF TOXICS								
	RWW	PRI	PRI	PRI	SEC	SEC	SEC	SEC	PRI
		INF	INF	EFF	EFF	EFF	WAS	WAS	WAS
	UG/L	UG/L	(DUP) UG/L	UG/L	UG/L	(DUP) UG/L	UG/L	(DUP) UG/L	UG/L
DICHLOROBENZENE, PROBABLY 1,2	10.2	451.7	462.5	325.2	24.8	21.1	147	142	6912
DICHLOROBENZENE, PROBABLY 1,3	11.5	450.6	466.7	331.3	49.7	47.7	296	278	6551
DICHLOROBENZENE, PROBABLY 1,4	10.0	426.3	451.3	332.9	7.9	3.5	40	34	5677
1,2,4-TRICHLOROBENZENE									
NITROBENZENE	3.9	483.7	508.3	374.2	31.9	28.8	46	38	84
1,3-DINITROBENZENE	2.8	272.2	283.6	21.5	3.0	2.0	325	388	464
2,6-DINITROTOLUENE	0.0	446.9	451.8	266.0	132.0	125.0	206	0	0
P-CRESOL	71.5	600.1	632.4	621.9	244.9	567.2	28	19	1104
4-CHLOROANILINE	7.9	337.5	359.8	331.4	0.0	0.0	99	91	698
HEXACHLOROETHANE	0.0	378.1	434.2	181.0	0.0	3.0	0	0	0
HEXACHLOROBUTADIENE	19.8	432.6	445.6	147.9	7.6	5.9	821	794	17528
DIMETHYL PHTHALATE	5.9	500.6	515.2	455.1	7.1	0.9	0	0	379
DIETHYL PHTHALATE	18.9	510.3	525.5	451.4	7.3	1.1	83	67	728
DIBUTYL PHTHALATE	37.6	436.7	481.6	208.0	5.8	6.1	255	253	12611
BUTYL BENZYL PHTHALATE	41.0	436.2	440.9	157.4	3.9	2.7	191	208	14785
BIS(2-ETHYLHEXYL)PHTHALATE									
NAPHTHALENE	29.3	563.2	635.2	446.7	7.1	1.2	61	56	8095
LINDANE	20.5	457.1	521.3	306.3	307.9	307.1	2784	2641	9980
DIELDRIN	66.7	636.0	1068.3	280.6	60.2	69.0	12178	30197	0

MASSSES OF CERCLA ORGANICS IN WASTEWATER AND SLUDGE
STREAMS - ACCLIMATED SYSTEM DATA SET 1

Compounds	MASS OF TOXICS							
	PRI	PRI	PRI	SEC	SEC	SEC	SEC	PRI
	INF	INF	EFF	EFF	EFF	WAS	WAS	WAS
		(DUP)		(DUP)	(DUP)			
	GMS	GMS	GMS	GMS	GMS	GMS	GMS	GMS
DICHLOROBENZENE, PROBABLY 1,2	172.3	176.5	124.1	9.4	8.0	0.6	0.6	16.0
DICHLOROBENZENE, PROBABLY 1,3	171.9	178.1	126.4	19.0	18.2	1.2	1.1	15.2
DICHLOROBENZENE, PROBABLY 1,4	162.7	172.2	127.0	3.0	1.4	0.2	0.1	13.1
1,2,4-TRICHLOROBENZENE								
NITROBENZENE	184.5	193.9	142.8	12.2	11.0	0.2	0.2	0.2
1,3-DINITROBENZENE	103.8	108.2	8.2	1.1	0.8	1.3	1.6	1.1
2,6-DINITROTOLUENE	170.5	172.4	101.5	50.3	47.7	0.8	0.0	0.0
P-CRESOL	228.9	241.3	237.3	93.4	216.4	0.1	0.1	2.6
4-CHOLOROANILINE	128.8	137.3	126.4	0.0	0.0	0.4	0.4	1.6
HEXACHLOROETHANE	144.3	165.7	69.1	0.0	1.1	0.0	0.0	0.0
HEXACHLOROBUTADIENE	165.1	170.0	56.4	2.9	2.3	3.4	3.2	40.6
DIMETHYL PHTHALATE	191.0	196.6	173.6	2.7	0.3	0.0	0.0	0.9
DIETHYL PHTHALATE	194.7	200.5	172.2	2.8	0.4	0.3	0.3	1.7
DIBUTYL PHTHALATE	166.6	183.7	79.4	2.2	2.3	1.0	1.0	29.2
BUTYL BENZYL PHTHALATE	166.4	168.2	60.1	1.5	1.0	0.8	0.9	34.2
BIS(2-ETHYLHEXYL)PHTHALATE								
NAPHTHALENE	214.9	242.4	170.4	2.7	0.5	0.3	0.2	18.7
LINDANE	174.4	198.9	116.8	117.5	117.2	11.4	10.8	23.1
DIELDRIN	242.6	407.6	107.1	23.0	26.3	49.8	123.4	0.0

REMOVAL AND PARTITIONING OF CERCLA ORGANICS DURING
TREATMENT - ACCLIMATED SYSTEM DATA SET 1

Compounds	% PRIMARY REMOVAL	% TOTAL REMOVAL	% ADSORBED	% BIO+STRIP +CHE. TRAN
DICHLOROBENZENE, PROBABLY 1,2	28.9	95.0	9.5	85.5
DICHLOROBENZENE, PROBABLY 1,3	27.8	89.4	9.3	80.0
DICHLOROBENZENE, PROBABLY 1,4	24.1	98.7	7.9	90.8
1,2,4-TRICHLOROBENZENE				
NITROBENZENE	24.6	93.9	*	*
1,3-DINITROBENZENE	92.2	99.1	*	*
2,6-DINITROTOLUENE	40.8	71.4	*	*
P-CRESOL	-0.9	34.1	1.1	33.0
4-CHOLOROANILINE	4.9	100.0	1.5	98.5
HEXACHLOROETHANE	55.4	99.6	*	*
HEXACHLOROBUTADIENE	66.3	98.5	*	*
DIMETHYL PHTHALATE	10.4	99.2	0.5	98.8
DIETHYL PHTHALATE	12.8	99.2	1.0	98.2
DIBUTYL PHTHALATE	54.7	98.7	*	*
BUTYL BENZYL PHTHALATE	64.1	99.2	*	*
BIS(2-ETHYLHEXYL)PHTHALATE				
NAPHTHALENE	25.5	99.3	8.3	91.0
LINDANE	37.4	37.1	18.3	18.8
DIELDRIN	67.1	92.4	26.6	65.8

* Partitioning not calculated because of inconsistent data

CONCENTRATIONS OF CERCLA ORGANICS IN WASTEWATER AND
SLUDGE SAMPLES - ACCLIMATED SYSTEM DATA SET 2

Compounds	CONCENTRATION OF TOXICS						
	RWW	PRI	PRI	PRI	SEC	SEC	PRI
		INF	INF	EFF	EFF	WAS	WAS
	UG/L	UG/L	(DUP) UG/L	UG/L	UG/L	UG/L	UG/L
DICHLOROBENZENE, PROBABLY 1,2	1.6		416.3	314.7	70.0	102	12475
DICHLOROBENZENE, PROBABLY 1,3	6.0	291.8	334.0	288.5	49.6	215	0
DICHLOROBENZENE, PROBABLY 1,4	7.7	433.9	430.9	372.2	66.3	36	7679
1,2,4-TRICHLOROBENZENE							
NITROBENZENE	9.8	410.9	517.1	516.4	51.6	155	2655
1,3-DINITROBENZENE							
2,6-DINITROTOLUENE	0.0	368.1	483.8	328.4	68.6	0	0
P-CRESOL	49.9	610.8		592.5	0.0	126	984
4-CHLOROANILINE	13.5	491.7	519.5	311.5	0.0	0	2145
HEXACHLOROETHANE	14.9	372.0	347.4	207.6	16.8	0	0
HEXACHLOROBUTADIENE	0.0	401.2	415.1	261.0	11.2	1133	36258
DIMETHYL PHTHALATE	5.5	474.8	447.4	428.4	15.3	0	397
DIETHYL PHTHALATE	13.9	504.7	478.5	480.4	16.2	18	760
DIBUTYL PHTHALATE	15.5	399.2	413.1	234.4	9.2	79	20701
BUTYL BENZYL PHTHALATE	26.0	405.0	439.7	199.1	6.1	0	24400
BIS(2-ETHYLHEXYL)PHTHALATE	706.4	944.5	786.0	355.6	187.9	3184	39206
NAPHTHALENE	11.0	493.8	472.9	420.4	13.4	24	18048
LINDANE	0.0	472.9	576.7	448.5	492.6	3007	16770
DIELDRIN							

MASSSES OF CERCLA ORGANICS IN WASTEWATER AND SLUDGE
STREAMS - ACCLIMATED SYSTEM DATA SET 2

Compounds	MASS OF TOXICS					
	PRI	PRI	PRI	SEC	SEC	PRI
	INF	INF	EFF	EFF	WAS	WAS
	(DUP)					
	GMS	GMS	GMS	GMS	GMS	GMS
DICHLOROBENZENE, PROBABLY 1,2		79.4	60.0	13.3	0.2	14.4
DICHLOROBENZENE, PROBABLY 1,3	55.7	63.7	55.0	9.5	0.4	0.0
DICHLOROBENZENE, PROBABLY 1,4	82.8	82.2	71.0	12.6	0.1	8.9
1,2,4-TRICHLOROBENZENE						
NITROBENZENE	78.4	98.6	98.5	9.8	0.3	3.1
1,3-DINITROBENZENE						
2,6-DINITROTOLUENE	70.2	92.3	62.6	13.1	0.0	0.0
P-CRESOL	116.5		113.0	0.0	0.3	1.1
4-CHOLORANILINE	93.8	99.1	59.4	0.0	0.0	2.5
HEXACHLOROETHANE	71.0	66.3	39.6	3.2	0.0	0.0
HEXACHLOROBUTADIENE	76.5	79.2	49.8	2.1	2.3	42.0
DIMETHYL PHTHALATE	90.6	85.3	81.7	2.9	0.0	0.5
DIETHYL PHTHALATE	96.3	91.3	91.6	3.1	0.0	0.9
DIBUTYL PHTHALATE	76.1	78.8	44.7	1.8	0.2	24.0
BUTYL BENZYL PHTHALATE	77.3	83.9	38.0	1.2	0.0	28.3
BIS(2-ETHYLHEXYL)PHTHALATE	180.2	149.9	67.8	35.8	6.5	45.4
NAPHTHALENE	94.2	90.2	80.2	2.6	0.0	20.9
LINDANE	90.2	110.0	85.6	94.0	6.1	19.4
DIELDRIN						

REMOVAL AND PARTITIONING OF CERCLA ORGANICS DURING
TREATMENT - ACCLIMATED SYSTEM DATA SET 2

Compounds	%	%	%	%
	PRIMARY REMOVAL	TOTAL REMOVAL	ADSORBED BIO+STRIP +CHE. TRAN	
DICHLOROBENZENE, PROBABLY 1,2	24.4	83.2	18.5	64.7
DICHLOROBENZENE, PROBABLY 1,3	7.8	84.1	0.7	83.4
DICHLOROBENZENE, PROBABLY 1,4	13.9	84.7	10.9	73.8
1,2,4-TRICHLOROBENZENE				
NITROBENZENE	-11.3	88.9	3.8	85.1
1,3-DINITROBENZENE				
2,6-DINITROTOLUENE	22.9	83.9	*	*
P-CRESOL	3.0	100.0	*	*
4-CHLOROANILINE	38.4	100.0	*	*
HEXACHLOROETHANE	42.3	95.3	*	*
HEXACHLOROBUTADIENE	36.1	97.2	56.9	40.3
DIMETHYL PHTHALATE	7.1	96.7	0.5	96.2
DIETHYL PHTHALATE	2.3	96.7	1.0	95.7
DIBUTYL PHTHALATE	42.3	97.7	31.1	66.6
BUTYL BENZYL PHTHALATE	52.9	98.5	35.1	63.5
BIS(2-ETHYLHEXYL)PHTHALATE	58.9	78.3	*	*
NAPHTHALENE	13.0	97.2	22.7	74.5
LINDANE	14.5	6.1	25.5	-19.4
DIELDRIN				

* Partitioning not calculated because of inconsistent data

CONCENTRATIONS OF CERCLA ORGANICS IN WASTEWATER AND
SLUDGE SAMPLES - ACCLIMATED SYSTEM DATA SET 3

Compounds	CONCENTRATION OF TOXICS						
	RWW	PRI	PRI	SEC	SEC	SEC	PRI
		INF	EFF	EFF	WAS	WAS	WAS
	UG/L	UG/L	UG/L	UG/L	UG/L	(DUP) UG/L	UG/L
DICHLOROBENZENE, PROBABLY 1,2	2.5	410.5	261.2	24.4	145	159	6259
DICHLOROBENZENE, PROBABLY 1,3	8.2	315.4	222.0	13.0	222	140	4870
DICHLOROBENZENE, PROBABLY 1,4	2.9	416.5	273.0	59.9	34	30	5891
1,2,4-TRICHLOROBENZENE	121.7	583.3	330.0	80.4	1662	1906	13372
NITROBENZENE	0.0	621.2	539.7	52.8	177	86	0
1,3-DINITROBENZENE							
2,6-DINITROTOLUENE	0.0	458.3	323.0	138.7	0	0	0
P-CRESOL	65.9	714.5	887.3	196.9	218	118	845
4-CHOLOROANILINE	0.0	787.5	208.8	0.0	0	0	0
HEXACHLOROETHANE	0.0	353.4	143.1	17.2	0	282	409
HEXACHLOROBUTADIENE	7.6	394.8	174.0	8.9	1138	1450	18362
DIMETHYL PHTHALATE	11.4	444.3	383.0	12.3	10	0	451
DIETHYL PHTHALATE	34.6	479.1	412.0	15.6	0	64	536
DIBUTYL PHTHALATE	44.0	404.7	211.1	14.8	220	520	17740
BUTYL BENZYL PHTHALATE	33.7	378.8	176.7	6.6	155	546	21064
BIS(2-ETHYLHEXYL)PHTHALATE							
NAPHTHALENE	15.1	475.5	358.1	10.8	39	0	0
LINDANE	0.0	384.9	297.3	320.8	3770	2928	10980
DIELDRIN	0.0	338.4	137.8	68.3	13031	22626	26555

MASES OF CERCLA ORGANICS IN WASTEWATER AND SLUDGE
STREAMS - ACCLIMATED SYSTEM DATA SET 3

Compounds	MASS OF TOXICS					
	PRI	PRI	SEC	SEC	SEC	PRI
	INF	EFF	EFF	WAS	WAS	WAS
	GMS	GMS	GMS	GMS	(DUP) GMS	GMS
DICHLOROBENZENE, PROBABLY 1,2	78.3	49.8	4.7	0.3	0.3	7.2
DICHLOROBENZENE, PROBABLY 1,3	60.2	42.3	2.5	0.5	0.3	5.6
DICHLOROBENZENE, PROBABLY 1,4	79.5	52.1	11.4	0.1	0.1	6.8
1,2,4-TRICHLOROBENZENE	111.3	63.0	15.3	3.4	3.9	15.5
NITROBENZENE	118.5	103.0	10.1	0.4	0.2	0.0
1,3-DINITROBENZENE						
2,6-DINITROTOLUENE	87.4	61.6	26.5	0.0	0.0	0.0
P-CRESOL	136.3	169.3	37.6	0.4	0.2	1.0
4-CHLOROANILINE	150.2	39.8	0.0	0.0	0.0	0.0
HEXACHLOROETHANE	67.4	27.3	3.3	0.0	0.6	0.5
HEXACHLOROBUTADIENE	75.3	33.2	1.7	2.3	3.0	21.3
DIMETHYL PHTHALATE	84.8	73.1	2.3	0.0	0.0	0.5
DIETHYL PHTHALATE	91.4	78.6	3.0	0.0	0.1	0.6
DIBUTYL PHTHALATE	77.2	40.3	2.8	0.4	1.1	20.5
BUTYL BENZYL PHTHALATE	72.3	33.7	1.3	0.3	1.1	24.4
BIS(2-ETHYLHEXYL)PHTHALATE						
NAPHTHALENE	90.7	68.3	2.1	0.1	0.0	0.0
LINDANE	73.4	56.7	61.2	7.7	6.0	12.7
DIELDRIN	64.6	26.3	13.0	26.6	46.2	30.8

REMOVAL AND PARTITIONING OF CERCLA ORGANICS DURING
TREATMENT - ACCLIMATED SYSTEM DATA SET 3

Compounds	%	%	%	%
	PRIMARY REMOVAL	TOTAL REMOVAL	ADSORBED BIO+STRIP +CHE. TRAN	
DICHLOROBENZENE, PROBABLY 1,2	36.4	94.1	*	*
DICHLOROBENZENE, PROBABLY 1,3	29.6	95.9	*	*
DICHLOROBENZENE, PROBABLY 1,4	34.5	85.6	*	*
1,2,4-TRICHLOROBENZENE	43.4	86.2	*	*
NITROBENZENE	13.1	91.5	0.2	91.3
1,3-DINITROBENZENE				
2,6-DINITROTOLUENE	29.5	69.7	*	*
P-CRESOL	-24.2	72.4	1.0	71.5
4-CHLOROANILINE	73.5	100.0	*	*
HEXACHLOROETHANE	59.5	95.1	*	*
HEXACHLOROBUTADIENE	55.9	97.8	31.7	66.0
DIMETHYL PHTHALATE	13.8	97.2	0.6	96.6
DIETHYL PHTHALATE	14.0	96.7	0.8	96.0
DIBUTYL PHTHALATE	47.8	96.3	27.6	68.7
BUTYL BENZYL PHTHALATE	53.3	98.3	34.8	63.5
BIS(2-ETHYLHEXYL)PHTHALATE				
NAPHTHALENE	24.7	97.7	*	*
LINDANE	22.8	16.7	26.6	-10.0
DIELDRIN	59.3	79.8	*	*

* Partitioning not calculated because of inconsistent data

CONCENTRATIONS OF CERCLA ORGANICS IN WASTEWATER AND
SLUDGE SAMPLES - ACCLIMATED SYSTEM DATA SET 4

COMPOUNDS	CONCENTRATION OF TOXICS							
	RWW	PRI	PRI	SEC	SEC	SEC	PRI	PRI
		INF	EFF	EFF	WAS	WAS	WAS	WAS
	UG/L	UG/L	UG/L	UG/L	UG/L	(DUP) UG/L	(DUP) UG/L	(DUP) UG/L
DICHLOROBENZENE, PROBABLY 1,2	4.0	368.7	318.0	41.9	6	7	12960	11145
DICHLOROBENZENE, PROBABLY 1,3	5.5	377.0	273.2	89.2	6	6	12656	10730
DICHLOROBENZENE, PROBABLY 1,4	3.5	387.3	337.6	16.3	2	5	11771	10173
1,2,4-TRICHLOROBENZENE	110.6	527.7	406.1	179.0	42	43	31291	29845
NITROBENZENE	1.1	379.7	416.7	35.9	0	0	151	102
1,3-DINITROBENZENE	0.0	195.8		20.3	0	0	35	435
2,6-DINITROTOLUENE	0.0	386.9	245.0	246.2	0	0	126	0
P-CRESOL	52.8	558.5	477.5	60.1	15	8	2181	1764
4-CHLOROANILINE	11.8	334.1	92.6	0.0	0	0	905	744
HEXACHLOROETHANE	0.0	264.5	252.9	0.7	0	11	0	0
HEXACHLOROBUTADIENE	10.8	383.2	282.7	66.3	47	35	36081	31838
DIMETHYL PHTHALATE	4.1	451.3	459.0	1.6	7	7	544	408
DIETHYL PHTHALATE	13.3	468.1	394.2	2.9	8	7	1105	955
DIBUTYL PHTHALATE	29.9	421.1	285.6	59.2	10	11	24226	19782
BUTYL BENZYL PHTHALATE	31.3	399.5	239.2	58.1	0	0	31380	26108
BIS(2-ETHYLHEXYL)PHTHALATE	495.8	668.4	313.5	343.8	215	224	51994	47068
NAPHTHALENE	11.0	432.1	372.9	15.1	6	4	11673	9961
LINDANE	13.4	425.8	355.5		71	66	19154	15861
DIELDRIN	48.5	311.6		83.4	486	222	0	0

MASES OF CERCLA ORGANICS IN WASTEWATER AND SLUDGE
STREAMS - ACCLIMATED SYSTEM DATA SET 4

COMPOUNDS	PRI	PRI	SEC	SEC	SEC	PRI	PRI
	INF	EFF	EFF	WAS	WAS	WAS	WAS
					(DUP)	(DUP)	
	GMS	GMS	GMS	GMS	GMS	GMS	GMS
DICHLOROBENZENE, PROBABLY 1,2	70.3	60.7	8.0	0.0	0.0	15.0	12.9
DICHLOROBENZENE, PROBABLY 1,3	71.9	52.1	17.0	0.0	0.0	14.7	12.4
DICHLOROBENZENE, PROBABLY 1,4	73.9	64.4	3.1	0.0	0.0	13.6	11.8
1,2,4-TRICHLOROBENZENE	100.7	77.5	34.2	0.1	0.1	36.2	34.6
NITROBENZENE	72.4	79.5	6.8	0.0	0.0	0.2	0.1
1,3-DINITROBENZENE	37.4		3.9	0.0	0.0	0.0	0.5
2,6-DINITROTOLUENE	73.8	46.7	47.0	0.0	0.0	0.1	0.0
P-CRESOL	106.5	91.1	11.5	0.0	0.0	2.5	2.0
4-CHLOROANILINE	63.7	17.7	0.0	0.0	0.0	1.0	0.9
HEXACHLOROETHANE	50.5	48.2	0.1	0.0	0.0	0.0	0.0
HEXACHLOROBUTADIENE	73.1	53.9	12.6	0.1	0.1	41.8	36.9
DIMETHYL PHTHALATE	86.1	87.6	0.3	0.0	0.0	0.6	0.5
DIETHYL PHTHALATE	89.3	75.2	0.5	0.0	0.0	1.3	1.1
DIBUTYL PHTHALATE	80.3	54.5	11.3	0.0	0.0	28.1	22.9
BUTYL BENZYL PHTHALATE	76.2	45.6	11.1	0.0	0.0	36.3	30.2
BIS(2-ETHYLHEXYL)PHTHALATE	127.5	59.8	65.6	0.4	0.5	60.2	54.5
NAPHTHALENE	82.4	71.1	2.9	0.0	0.0	13.5	11.5
LINDANE	81.2	67.8	0.0	0.1	0.1	22.2	18.4
DIELDRIN	59.4		15.9	1.0	0.5	0.0	0.0

REMOVAL AND PARTITIONING OF CERCLA ORGANICS DURING
TREATMENT - ACCLIMATED SYSTEM DATA SET 4

COMPOUNDS	%	%	%	%
	PRIMARY REMOVAL	TOTAL REMOVAL	ADSORBED +CHE. TRAN	BIO+STRIP
DICHLOROBENZENE, PROBABLY 1,2	13.8	88.6	19.9	68.8
DICHLOROBENZENE, PROBABLY 1,3	27.5	76.3	18.8	57.5
DICHLOROBENZENE, PROBABLY 1,4	12.8	95.8	17.2	78.6
1,2,4-TRICHLOROBENZENE	23.1	66.1	35.2	30.8
NITROBENZENE	-9.7	90.6	0.2	90.4
1,3-DINITROBENZENE		89.6	*	*
2,6-DINITROTOLUENE	36.7	36.4	*	*
P-CRESOL	14.5	89.2	2.2	87.1
4-CHLOROANILINE	72.3	100.0	*	*
HEXACHLOROETHANE	4.4	99.7	0.0	99.7
HEXACHLOROBUTADIENE	26.2	82.7	*	*
DIMETHYL PHTHALATE	-1.7	99.6	0.7	99.0
DIETHYL PHTHALATE	15.8	99.4	1.4	98.0
DIBUTYL PHTHALATE	32.2	85.9	31.7	54.2
BUTYL BENZYL PHTHALATE	40.1	85.5	43.7	41.8
BIS(2-ETHYLHEXYL)PHTHALATE	53.1	48.6	45.3	3.2
NAPHTHALENE	13.7	96.5	15.2	81.3
LINDANE	16.5		*	*
DIELDRIN		73.2	*	*

* Partitioning not calculated because of inconsistent data

CONCENTRATIONS OF CERCLA ORGANICS IN WASTEWATER AND
SLUDGE SAMPLES - ACCLIMATED SYSTEM DATA SET 5

Compounds	CONCENTRATION OF TOXICS						
	RWW	PRI	PRI	PRI	SEC	SEC	PRI
		INF	INF	EFF	EFF	WAS	WAS
	UG/L	UG/L	(DUP) UG/L	UG/L	UG/L	UG/L	UG/L
DICHLOROBENZENE, PROBABLY 1,2	12.4	383.1	351.7	331.1	16.1	95	3721
DICHLOROBENZENE, PROBABLY 1,3	15.9	386.3	355.5	326.2	35.7	219	3370
DICHLOROBENZENE, PROBABLY 1,4	11.9	398.1	350.1	334.1	5.9	22	3154
1,2,4-TRICHLOROBENZENE	163.3	556.3	470.7	379.4	78.4	1490	13487
NITROBENZENE	0.0	385.0	409.2	342.9	25.1	48	43
1,3-DINITROBENZENE	234.2	327.5	311.7	111.2	9.9	1581	988
2,6-DINITROTOLUENE	0.0	395.8	398.5	270.8	125.6	243	15
P-CRESOL	33.6	505.4	493.2	539.4	203.3	31	1156
4-CHOLOROANILINE	3.9	333.7	305.2	326.8	0.0	61	507
HEXACHLOROETHANE	0.0	333.5	310.1	198.6	1.0	18	0
HEXACHLOROBUTADIENE	40.8	413.9	341.3	180.6	7.3	804	14089
DIMETHYL PHTHALATE	0.0	422.2	412.8	421.2	4.6	24	311
DIETHYL PHTHALATE	8.0	476.2	433.2	423.0	5.5	42	539
DIBUTYL PHTHALATE	24.7	441.7	493.6	243.0	5.8	195	9729
BUTYL BENZYL PHTHALATE	23.9	461.3	365.1	190.2	2.9	180	11237
BIS(2-ETHYLHEXYL)PHTHALATE							
NAPHTHALENE	19.7	504.4	447.7	441.8	4.8	20	4451
LINDANE	12.0	451.6	397.9	326.5	328.7	2160	5012
DIELDRIN	166.6	324.6	260.9	150.4	33.6	9785	3831

MASSSES OF CERCLA ORGANICS IN WASTEWATER AND SLUDGE
STREAMS - ACCLIMATED SYSTEM DATA SET 5

Compounds	MASS OF TOXICS					
	PRI	PRI	PRI	SEC	SEC	PRI
	INF	INF	EFF	EFF	WAS	WAS
		(DUP)				
	GMS	GMS	GMS	GMS	GMS	GMS
DICHLOROBENZENE, PROBABLY 1,2	146.2	134.2	126.3	6.2	0.4	8.6
DICHLOROBENZENE, PROBABLY 1,3	147.4	135.6	124.5	13.6	0.9	7.8
DICHLOROBENZENE, PROBABLY 1,4	151.9	133.6	127.5	2.3	0.1	7.3
1,2,4-TRICHLOROBENZENE	212.2	179.6	144.7	29.9	6.1	31.2
NITROBENZENE	146.9	156.1	130.8	9.6	0.2	0.1
1,3-DINITROBENZENE	124.9	118.9	42.4	3.8	6.5	2.3
2,6-DINITROTOLUENE	151.0	152.0	103.3	47.9	1.0	0.0
P-CRESOL	192.8	188.2	205.8	77.6	0.1	2.7
4-CHLOROANILINE	127.3	116.5	124.7	0.0	0.2	1.2
HEXACHLOROETHANE	127.2	118.3	75.8	0.4	0.1	0.0
HEXACHLOROBUTADIENE	157.9	130.2	68.9	2.8	3.3	32.6
DIMETHYL PHTHALATE	161.1	157.5	160.7	1.8	0.1	0.7
DIETHYL PHTHALATE	181.7	165.3	161.4	2.1	0.2	1.2
DIBUTYL PHTHALATE	168.5	188.3	92.7	2.2	0.8	22.5
BUTYL BENZYL PHTHALATE	176.0	139.3	72.6	1.1	0.7	26.0
BIS(2-ETHYLHEXYL)PHTHALATE						
NAPHTHALENE	192.5	170.8	168.6	1.8	0.1	10.3
LINDANE	172.3	151.8	124.6	125.4	8.8	11.6
DIELDRIN	123.9	99.5	57.4	12.8	40.0	8.9

REMOVAL AND PARTITIONING OF CERCLA ORGANICS DURING
TREATMENT - ACCLIMATED SYSTEM DATA SET 5

Compounds	%	%	%	%
	PRIMARY REMOVAL	TOTAL REMOVAL	ADSORBED +CHE. TRAN	BIO+STRIP
DICHLOROBENZENE, PROBABLY 1,2	9.9	95.6	6.4	89.2
DICHLOROBENZENE, PROBABLY 1,3	12.0	90.4	6.1	84.2
DICHLOROBENZENE, PROBABLY 1,4	10.7	98.4	5.2	93.2
1,2,4-TRICHLOROBENZENE	26.1	84.7	19.1	65.7
NITROBENZENE	13.6	93.7	0.2	93.5
1,3-DINITROBENZENE	65.2	96.9	*	*
2,6-DINITROTOLUENE	31.8	68.4	*	*
P-CRESOL	-8.0	59.3	1.5	57.8
4-CHOLOROANILINE	-2.3	100.0	1.2	98.8
HEXACHLOROETHANE	38.3	99.7	*	*
HEXACHLOROBUTADIENE	52.2	98.1	*	*
DIMETHYL PHTHALATE	-0.9	98.9	0.5	98.4
DIETHYL PHTHALATE	7.0	98.8	0.8	98.0
DIBUTYL PHTHALATE	48.1	98.8	*	*
BUTYL BENZYL PHTHALATE	54.0	99.3	*	*
BIS(2-ETHYLHEXYL)PHTHALATE				
NAPHTHALENE	7.2	99.0	5.7	93.3
LINDANE	23.1	22.6	12.6	10.0
DIELDRIN	48.6	88.5	43.8	44.8

* Partitioning not calculated because of inconsistent data

CONCENTRATIONS OF CERCLA ORGANICS IN WASTEWATER AND
SLUDGE SAMPLES - ACCLIMATED SYSTEM DATA SET 6

COMPOUNDS	CONCENTRATION OF TOXICS									
	RW	PRI	PRI	PRI	SEC	SEC	SEC	SEC	PRI	
		INF	INF	EFF	EFF	EFF	WAS	WAS	WAS	
			(DUP)			(DUP)		(DUP)		
	UG/L	UG/L	UG/L	UG/L	UG/L	UG/L	UG/L	UG/L	UG/L	
DICHLOROBENZENE, PROBABLY 1,2	1.8	377.5	344.9	307.3	21.8	17.1	639	264	19838	
DICHLOROBENZENE, PROBABLY 1,3	3.8	385.6	341.2	313.7	41.8	36.7	592	492	18109	
DICHLOROBENZENE, PROBABLY 1,4	7.9	380.7	351.3	313.6	8.4	4.5	201	91	16626	
1,2,4-TRICHLOROBENZENE	137.5	573.0	531.2	410.2	81.3	75.8	2927	2800	63363	
NITROBENZENE	0.0	417.7	396.2	358.9	23.8	20.4	151	84	120	
1,3-DINITROBENZENE	0.0	258.3	268.6	62.8	5.6	6.6	881	1162	0	
2,6-DINITROTOLUENE	0.0	397.1	393.3	258.9	128.7	125.4	492	445	86	
P-CRESOL	46.5	506.1	472.1	542.1	238.7		100	20	1084	
4-CHLOROANILINE	4.9	314.7	302.5	312.6	134.7	93.6	242	162	1289	
HEXACHLOROETHANE	0.0	344.4	324.1	206.5	2.9	3.5	288	0	28	
HEXACHLOROBUTADIENE	5.7	412.3	363.1	215.1	7.8	5.0	2428	2326	60516	
DIMETHYL PHTHALATE	13.5	431.3	420.5	444.6	8.3	1.3	125	39	444	
DIETHYL PHTHALATE	21.7	437.9	425.0	440.6	10.0	2.8	169	95	1070	
DIBUTYL PHTHALATE	38.7	409.7	394.1	257.2	11.3	7.8	786	649	35944	
BUTYL BENZYL PHTHALATE	35.8	393.5	349.5	206.7	8.6	6.5	707	548	38555	
BIS(2-ETHYLHEXYL)PHTHALATE										
NAPHTHALENE	13.1	448.0	389.8	391.5	5.3	1.2	129	68	17363	
LINDANE	6.6	439.1	409.9	347.8	276.1	261.8	4417	4279	25606	
DIELDRIN	0.0	1272.5	1209.2	243.0	70.4	63.4	29762	13776	0	

MASSSES OF CERCLA ORGANICS IN WASTEWATER AND SLUDGE
STREAMS - ACCLIMATED SYSTEM DATA SET 6

COMPOUNDS	MASS OF TOXICS								
	PRI	PRI	PRI	SEC	SEC	SEC	SEC	PRI	
	INF	INF	EFF	EFF	EFF	WAS	WAS	WAS	
		(DUP)			(DUP)		(DUP)		
	GMS	GMS	GMS	GMS	GMS	GMS	GMS	GMS	
DICHLOROBENZENE, PROBABLY 1,2	72.0	65.8	58.6	4.2	3.3	1.3	0.5	23.0	
DICHLOROBENZENE, PROBABLY 1,3	73.6	65.1	59.8	8.0	7.0	1.2	1.0	21.0	
DICHLOROBENZENE, PROBABLY 1,4	72.6	67.0	59.8	1.6	0.9	0.4	0.2	19.3	
1,2,4-TRICHLOROBENZENE	109.3	101.3	78.3	15.5	14.5	6.0	5.7	73.4	
NITROBENZENE	79.7	75.6	68.5	4.5	3.9	0.3	0.2	0.1	
1,3-DINITROBENZENE	49.3	51.2	12.0	1.1	1.3	1.8	2.4	0.0	
2,6-DINITROTOLUENE	75.8	75.0	49.4	24.5	23.9	1.0	0.9	0.1	
P-CRESOL	96.5	90.1	103.4	45.5		0.2	0.0	1.3	
4-CHLOROANILINE	60.0	57.7	59.6	25.7	17.8	0.5	0.3	1.5	
HEXACHLOROETHANE	65.7	61.8	39.4	0.6	0.7	0.6	0.0	0.0	
HEXACHLOROBUTADIENE	78.7	69.3	41.0	1.5	1.0	5.0	4.8	70.1	
DIMETHYL PHTHALATE	82.3	80.2	84.8	1.6	0.2	0.3	0.1	0.5	
DIETHYL PHTHALATE	83.5	81.1	84.1	1.9	0.5	0.3	0.2	1.2	
DIBUTYL PHTHALATE	78.2	75.2	49.1	2.2	1.5	1.6	1.3	41.6	
BUTYL BENZYL PHTHALATE	75.1	66.7	39.4	1.6	1.2	1.4	1.1	44.6	
BIS(2-ETHYLHEXYL)PHTHALATE									
NAPHTHALENE	85.5	74.4	74.7	1.0	0.2	0.3	0.1	20.1	
LINDANE	83.8	78.2	66.3	52.7	49.9	9.0	8.7	29.7	
DIELDRIN	242.7	230.7	46.4	13.4	12.1	60.8	28.2	0.0	

REMOVAL AND PARTITIONING OF CERCLA ORGANICS DURING
TREATMENT - ACCLIMATED SYSTEM DATA SET 6

COMPOUNDS	%	%	%	%
	PRIMARY	TOTAL	ADSORBED	BIO+STRIP
	REMOVAL	REMOVAL	+CHE. TRAN	
DICHLOROBENZENE, PROBABLY 1,2	14.9	94.6	34.7	59.9
DICHLOROBENZENE, PROBABLY 1,3	13.7	89.2	31.9	57.4
DICHLOROBENZENE, PROBABLY 1,4	14.3	98.2	28.0	70.2
1,2,4-TRICHLOROBENZENE	25.7	85.8	*	*
NITROBENZENE	11.8	94.6	0.5	94.1
1,3-DINITROBENZENE	76.2	97.7	*	*
2,6-DINITROTOLUENE	34.5	67.9	*	*
P-CRESOL	-10.8	75.6	1.5	74.1
4-CHLOROANILINE	-1.3	63.0	3.2	59.8
HEXACHLOROETHANE	38.2	99.0	*	*
HEXACHLOROBUTADIENE	44.5	98.3	*	*
DIMETHYL PHTHALATE	-4.4	98.9	0.8	98.0
DIETHYL PHTHALATE	-2.1	98.5	1.8	96.7
DIBUTYL PHTHALATE	36.0	97.6	56.2	41.4
BUTYL BENZYL PHTHALATE	44.4	98.0	64.8	33.2
BIS(2-ETHYLHEXYL)PHTHALATE				
NAPHTHALENE	6.5	99.2	25.4	73.8
LINDANE	18.1	36.6	47.6	-10.9
DIELDRIN	80.4	94.6	*	*

* Partitioning not calculated because of inconsistent data

CONCENTRATIONS OF CERCLA ORGANICS IN WASTEWATER AND
SLUDGE SAMPLES - ACCLIMATED SYSTEM DATA SET 7

COMPOUNDS	CONCENTRATION OF TOXICS							
	RWW	PRI	PRI	SEC	SEC	PRI	PRI	
		INF	EFF	EFF	WAS	WAS		
	UG/L	UG/L	UG/L	UG/L	UG/L	UG/L	(DUP) UG/L	
DICHLOROBENZENE, PROBABLY 1,2								
DICHLOROBENZENE, PROBABLY 1,3	20.7	356.3	344.3	44.7	475	11160	16731	
DICHLOROBENZENE, PROBABLY 1,4	23.6	340.3	368.3	10.9	79	14340	17359	
1,2,4-TRICHLOROBENZENE	205.4	489.8	409.7	82.5	2314	39545	40792	
NITROBENZENE								
1,3-DINITROBENZENE								
2,6-DINITROTOLUENE	55.8	288.5	261.7	136.5	6051	159	0	
P-CRESOL								
4-CHLOROANILINE								
HEXACHLOROETHANE	16.7	298.5	239.6	18.7	701	224	0	
HEXACHLOROBUTADIENE	74.7	350.0	250.4	13.1	3119	61744	68713	
DIMETHYL PHTHALATE								
DIETHYL PHTHALATE	15.4	479.8	517.7	16.0	85	1225	1694	
DIBUTYL PHTHALATE	38.9	443.4	310.7	17.5	408	29614	34765	
BUTYL BENZYL PHTHALATE	22.0	387.3	252.8	11.1	275	39012	40347	
BIS(2-ETHYLHEXYL)PHTHALATE								
NAPHTHALENE	26.6	365.5	391.9	11.3	101	14294	16256	
LINDANE								
DIELDRIN	389.2	604.2	227.3	137.0	21153	8045	9784	

MASSES OF CERCLA ORGANICS IN WASTEWATER AND SLUDGE
STREAMS - ACCLIMATED SYSTEM DATA SET 7

COMPOUNDS	MASS OF TOXICS					
	PRI	PRI	SEC	SEC	PRI	PRI
	INF	EFF	EFF	WAS	WAS	WAS
						(DUP)
	GMS	GMS	GMS	GMS	GMS	GMS
DICHLOROBENZENE, PROBABLY 1,2						
DICHLOROBENZENE, PROBABLY 1,3	68.0	65.7	8.5	1.0	12.9	19.4
DICHLOROBENZENE, PROBABLY 1,4	64.9	70.3	2.1	0.2	16.6	20.1
1,2,4-TRICHLOROBENZENE	93.4	78.2	15.7	4.7	45.8	47.2
NITROBENZENE						
1,3-DINITROBENZENE						
2,6-DINITROTOLUENE	55.0	49.9	26.0	12.4	0.2	0.0
P-CRESOL						
4-CHLOROANILINE						
HEXACHLOROETHANE	56.9	45.7	3.6	1.4	0.3	0.0
HEXACHLOROBUTADIENE	66.8	47.8	2.5	6.4	71.5	79.6
DIMETHYL PHTHALATE						
DIETHYL PHTHALATE	91.5	98.8	3.1	0.2	1.4	2.0
DIBUTYL PHTHALATE	84.6	59.3	3.3	0.8	34.3	40.3
BUTYL BENZYL PHTHALATE	73.9	48.2	2.1	0.6	45.2	46.7
BIS(2-ETHYLHEXYL)PHTHALATE						
NAPHTHALENE	69.7	74.8	2.1	0.2	16.6	18.8
LINDANE						
DIELDRIN	115.3	43.4	26.1	43.2	9.3	11.3

REMOVAL AND PARTITIONING OF CERCLA ORGANICS DURING
TREATMENT - ACCLIMATED SYSTEM DATA SET 7

COMPOUNDS	% PRIMARY REMOVAL	% TOTAL REMOVAL	% ADSORBED BIO+STRIP +CHE. TRAN	%
DICHLOROBENZENE, PROBABLY 1,2				
DICHLOROBENZENE, PROBABLY 1,3	3.3	87.5	*	*
DICHLOROBENZENE, PROBABLY 1,4	-8.2	96.8	*	*
1,2,4-TRICHLOROBENZENE	16.4	83.1	*	*
NITROBENZENE				
1,3-DINITROBENZENE				
2,6-DINITROTOLUENE	9.3	52.7	22.6	30.0
P-CRESOL				
4-CHLOROANILINE				
HEXACHLOROETHANE	19.7	93.7	*	*
HEXACHLOROBUTADIENE	28.5	96.2	*	*
DIMETHYL PHTHALATE				
DIETHYL PHTHALATE	-7.9	96.7	2.0	94.6
DIBUTYL PHTHALATE	29.9	96.1	45.1	51.0
BUTYL BENZYL PHTHALATE	34.7	97.1	*	*
BIS(2-ETHYLHEXYL)PHTHALATE				
NAPHTHALENE	-7.2	96.9	*	*
LINDANE				
DIELDRIN	62.4	77.3	*	*

* Partitioning not calculated because of inconsistent data

CONCENTRATIONS OF CERCLA ORGANICS IN WASTEWATER AND
SLUDGE SAMPLES - ACCLIMATED SYSTEM DATA SET 8

COMPOUNDS	CONCENTRATION OF TOXICS							
	RWW	PRI	PRI	PRI	SEC	SEC	SEC	PRI
		INF	INF	EFF	EFF	WAS	WAS	WAS
	UG/L	UG/L	(DUP) UG/L	UG/L	UG/L	UG/L	(DUP) UG/L	UG/L
DICHLOROBENZENE, PROBABLY 1,2	4.5	335.5	384.4	313.8	11.2	147	94	14040
DICHLOROBENZENE, PROBABLY 1,3	15.1	393.8	443.3	367.7	33.7	381	277	13713
DICHLOROBENZENE, PROBABLY 1,4	9.6	386.7	435.4	357.8	5.7	68	51	11974
1,2,4-TRICHLOROBENZENE	249.0	688.3	728.2	527.3	76.7	1987	2063	46986
NITROBENZENE	3.1	415.1	460.0	383.0	25.8	0	0	182
1,3-DINITROBENZENE	0.0	244.7	316.0	58.4	8.2	1214	1387	1287
2,6-DINITROTOLUENE	0.0	375.0		276.2	140.9	0	0	0
P-CRESOL	31.0	485.1	531.3	565.0	227.7	0	0	1837
4-CHLOROANILINE	7.9	191.5	197.3	222.0	116.5	42	40	493
HEXACHLOROETHANE	0.0	373.9		219.3	6.2	0	0	205
HEXACHLOROBUTADIENE	5.6	364.1	399.2	222.0	8.3	1813	1826	45308
DIMETHYL PHTHALATE	4.3	466.6	484.5	481.6	7.8	0	0	420
DIETHYL PHTHALATE	11.2	499.0	525.7	533.0	11.4	62	0	1252
DIBUTYL PHTHALATE	31.7	392.6	418.8	255.2	9.9	594	932	31584
BUTYL BENZYL PHTHALATE	26.4	359.8	365.2	209.0	5.7	324	863	34843
BIS(2-ETHYLHEXYL)PHTHALATE	7003.4	1675.1	1096.6	955.2	378.5	60475	46800	81647
NAPHTHALENE	22.3	344.7	382.7	314.8	5.3	77	74	11462
LINDANE	9.6	403.5	432.0	339.6	12.6	148	366	18066
DIELDRIN	21.2	354.6		207.4	107.0	5471	9756	15963

MASSSES OF CERCLA ORGANICS IN WASTEWATER AND SLUDGE
STREAMS - ACCLIMATED SYSTEM DATA SET 8

COMPOUNDS	MASS OF TOXICS						
	PRI	PRI	PRI	SEC	SEC	SEC	PRI
	INF	INF	EFF	EFF	WAS	WAS	WAS
		(DUP)				(DUP)	
	GMS	GMS	GMS	GMS	GMS	GMS	GMS
DICHLOROBENZENE, PROBABLY 1,2	64.0	73.3	59.9	2.1	0.3	0.2	16.3
DICHLOROBENZENE, PROBABLY 1,3	75.1	84.6	70.2	6.4	0.8	0.6	15.9
DICHLOROBENZENE, PROBABLY 1,4	73.8	83.1	68.3	1.1	0.1	0.1	13.9
1,2,4-TRICHLOROBENZENE	131.3	138.9	100.6	14.6	4.1	4.2	54.4
NITROBENZENE	79.2	87.8	73.1	4.9	0.0	0.0	0.2
1,3-DINITROBENZENE	46.7	60.3	11.1	1.6	2.5	2.8	1.5
2,6-DINITROTOLUENE	71.5		52.7	26.9	0.0	0.0	0.0
P-CRESOL	92.5	101.4	107.8	43.4	0.0	0.0	2.1
4-CHLOROANILINE	36.5	37.6	42.3	22.2	0.1	0.1	0.6
HEXACHLOROETHANE	71.3		41.8	1.2	0.0	0.0	0.2
HEXACHLOROBUTADIENE	69.5	76.2	42.3	1.6	3.7	3.7	52.5
DIMETHYL PHTHALATE	89.0	92.4	91.9	1.5	0.0	0.0	0.5
DIETHYL PHTHALATE	95.2	100.3	101.7	2.2	0.1	0.0	1.4
DIBUTYL PHTHALATE	74.9	79.9	48.7	1.9	1.2	1.9	36.6
BUTYL BENZYL PHTHALATE	68.6	69.7	39.9	1.1	0.7	1.8	40.3
BIS(2-ETHYLHEXYL)PHTHALATE	319.6	209.2	182.2	72.2	123.6	95.7	94.5
NAPHTHALENE	65.8	73.0	60.0	1.0	0.2	0.2	13.3
LINDANE	77.0	82.4	64.8	2.4	0.3	0.7	20.9
DIELDRIN	67.6		39.6	20.4	11.2	19.9	18.5

REMOVAL AND PARTITIONING OF CERCLA ORGANICS DURING
TREATMENT - ACCLIMATED SYSTEM DATA SET 8

COMPOUNDS	%	%	%	%
	PRIMARY	TOTAL	ADSORBED	BIO+STRIP
	REMOVAL	REMOVAL		+CHE. TRAN
DICHLOROBENZENE, PROBABLY 1,2	12.8	96.9	24.0	72.9
DICHLOROBENZENE, PROBABLY 1,3	12.1	92.0	20.7	71.2
DICHLOROBENZENE, PROBABLY 1,4	13.0	98.6	17.8	80.8
1,2,4-TRICHLOROBENZENE	25.5	89.2	43.3	45.8
NITROBENZENE	12.5	94.1	0.3	93.9
1,3-DINITROBENZENE	79.2	97.1	*	*
2,6-DINITROTOLUENE	26.3	62.4	*	*
P-CRESOL	-11.2	55.2	2.2	53.0
4-CHLOROANILINE	-14.2	40.1	1.8	38.3
HEXACHLOROETHANE	41.3	98.4	*	*
HEXACHLOROBUTADIENE	41.8	97.8	*	*
DIMETHYL PHTHALATE	-1.3	98.4	0.5	97.8
DIETHYL PHTHALATE	-4.0	97.8	1.5	96.2
DIBUTYL PHTHALATE	37.1	97.6	49.3	48.3
BUTYL BENZYL PHTHALATE	42.3	98.4	60.1	38.3
BIS(2-ETHYLHEXYL)PHTHALATE	31.1	72.7	77.2	-4.5
NAPHTHALENE	13.5	98.5	19.4	79.2
LINDANE	18.7	97.0	26.9	70.1
DIELDRIN	41.5	69.8	50.3	19.5

* Partitioning not calculated because of inconsistent data

CONCENTRATIONS OF CERCLA ORGANICS IN WASTEWATER AND
SLUDGE SAMPLES - ACCLIMATED SYSTEM DATA SET 9

COMPOUNDS	CONCENTRATION OF TOXICS									
	RWW	RWW	PRI	PRI	PRI	SEC	SEC	PRI	PRI	
			INF	INF	EFF	EFF	WAS	WAS	WAS	
		(DUP)		(DUP)					(DUP)	
	UG/L	UG/L	UG/L	UG/L	UG/L	UG/L	UG/L	UG/L	UG/L	
DICHLOROBENZENE, PROBABLY 1,2	28.6	28.8	310.5	326.3	300.6	15.4	436	10470	12350	
DICHLOROBENZENE, PROBABLY 1,3	34.2	30.0	428.6	339.7	305.5	36.5	668	10854	12885	
DICHLOROBENZENE, PROBABLY 1,4	27.5	29.3	399.7	389.2	374.1	11.8	339	9661	11437	
1,2,4-TRICHLOROBENZENE	945.6	929.4	833.7	690.3	525.5	90.0	3730	35593	42202	
NITROBENZENE	39.9	25.0	508.3	486.2	541.1	25.3	50	161	236	
1,3-DINITROBENZENE										
2,6-DINITROTOLUENE										
P-CRESOL	26.4	46.2	498.2	484.4	548.1	196.9	71	1721	1874	
4-CHLOROANILINE										
HEXACHLOROETHANE	15.6	15.3	380.7	333.6	257.9	18.6	0	0	204	
HEXACHLOROBUTADIENE	93.0	92.3	426.8	412.9	291.3	13.1	3806	32523	39463	
DIMETHYL PHTHALATE	8.4	9.9	1604.8	1506.9	1574.5	53.9	44	537	649	
DIETHYL PHTHALATE	15.1	16.5	550.7	538.3	533.5	19.5	140	1115	1393	
DIBUTYL PHTHALATE	91.3	89.2	433.5	399.8	315.2	16.4	997	24084	28646	
BUTYL BENZYL PHTHALATE	97.9	93.8	423.6	402.1	291.6	13.5	1144	27174	32748	
BIS(2-ETHYLHEXYL)PHTHALATE										
NAPHTHALENE	46.9	52.0	396.1	383.9	365.5	11.5	274	9225	10929	
LINDANE	31.7	32.4	476.2	430.8	378.6	18.1	535	15499	17491	
DIELDRIN	471.0	203.08	387.3		234.72	57.26	4654	37408		

MASSES OF CERCLA ORGANICS IN WASTEWATER AND SLUDGE
STREAMS - ACCLIMATED SYSTEM DATA SET 9

COMPOUNDS	MASS OF TOXICS						
	PRI	PRI	PRI	SEC	SEC	PRI	PRI
	INF	INF	EFF	EFF	WAS	WAS	WAS
	(DUP)			(DUP)			
	GMS	GMS	GMS	GMS	GMS	GMS	GMS
DICHLOROBENZENE, PROBABLY 1,2	59.2	62.2	57.3	2.9	0.9	12.1	14.3
DICHLOROBENZENE, PROBABLY 1,3	81.8	64.8	58.3	7.0	1.4	12.6	14.9
DICHLOROBENZENE, PROBABLY 1,4	76.3	74.3	71.4	2.3	0.7	11.2	13.2
1,2,4-TRICHLOROBENZENE	159.0	131.7	100.2	17.2	7.6	41.2	48.9
NITROBENZENE	97.0	92.8	103.2	4.8	0.1	0.2	0.3
1,3-DINITROBENZENE							
2,6-DINITROTOLUENE							
P-CRESOL	95.0	92.4	104.6	37.6	0.1	2.0	2.2
4-CHLOROANILINE							
HEXACHLOROETHANE	72.6	63.6	49.2	3.5	0.0	0.0	0.2
HEXACHLOROBUTADIENE	81.4	78.8	55.6	2.5	7.8	37.7	45.7
DIMETHYL PHTHALATE	306.1	287.5	300.4	10.3	0.1	0.6	0.8
DIETHYL PHTHALATE	105.1	102.7	101.8	3.7	0.3	1.3	1.6
DIBUTYL PHTHALATE	82.7	76.3	60.1	3.1	2.0	27.9	33.2
BUTYL BENZYL PHTHALATE	80.8	76.7	55.6	2.6	2.3	31.5	37.9
BIS(2-ETHYLHEXYL)PHTHALATE							
NAPHTHALENE	75.6	73.2	69.7	2.2	0.6	10.7	12.7
LINDANE	90.8	82.2	72.2	3.5	1.1	17.9	20.3
DIELDRIN	73.9		44.8	10.9	9.5	43.3	

REMOVAL AND PARTITIONING OF CERCLA ORGANICS DURING
TREATMENT - ACCLIMATED SYSTEM DATA SET 9

COMPOUNDS	%	%	%	%
	PRIMARY REMOVAL	TOTAL REMOVAL	ADSORBED BIO+STRIP +CHE. TRAN	
DICHLOROBENZENE, PROBABLY 1,2	5.6	95.2	23.2	72.0
DICHLOROBENZENE, PROBABLY 1,3	20.5	90.5	20.6	69.9
DICHLOROBENZENE, PROBABLY 1,4	5.2	97.0	17.2	79.9
1,2,4-TRICHLOROBENZENE	31.0	88.2	36.2	52.0
NITROBENZENE	-8.8	94.9	0.3	94.6
1,3-DINITROBENZENE				
2,6-DINITROTOLUENE				
P-CRESOL	-11.6	59.9	2.4	57.5
4-CHLOROANILINE				
HEXACHLOROETHANE	27.8	94.8	*	*
HEXACHLOROBUTADIENE	30.6	96.9	61.8	35.1
DIMETHYL PHTHALATE	-1.2	96.5	0.3	96.3
DIETHYL PHTHALATE	2.0	96.4	1.7	94.8
DIBUTYL PHTHALATE	24.4	96.1	41.0	55.1
BUTYL BENZYL PHTHALATE	29.4	96.7	47.0	49.7
BIS(2-ETHYLHEXYL)PHTHALATE				
NAPHTHALENE	6.3	97.0	16.4	80.6
LINDANE	16.5	96.0	23.3	72.7
DIELDRIN	39.4	85.2	71.5	13.7

* Partitioning not calculated because of inconsistent data

CONCENTRATIONS OF CERCLA ORGANICS IN WASTEWATER AND
SLUDGE SAMPLES - ACCLIMATED SYSTEM DATA SET 10

COMPOUNDS	CONCENTRATION OF TOXICS							
	RWW	RWW	PRI	PRI	PRI	SEC	SEC	PRI
		(DUP)	INF	EFF	EFF	EFF	WAS	WAS
	UG/L	UG/L	UG/L	UG/L	UG/L	UG/L	UG/L	UG/L
DICHLOROBENZENE, PROBABLY 1,2	3.8	5.3	293.2	282.6	319.1	18.2	276	10898
DICHLOROBENZENE, PROBABLY 1,3	8.1	10.1	392.5	367.2	367.8	33.5	432	11145
DICHLOROBENZENE, PROBABLY 1,4	3.8	5.1	353.6	353.7	373.0	15.4	166	18547
1,2,4-TRICHLOROBENZENE	210.7	229.5	607.4	590.6	618.0	70.1	3297	48367
NITROBENZENE	26.3	9.0	339.8	330.0	326.2	36.4	469	0
1,3-DINITROBENZENE								
2,6-DINITROTOLUENE	0.0	0.0	453.0		556.9	67.0	437	0
P-CRESOL	27.1	3.5	457.1	417.4	425.0	28.7	0	1682
4-CHLOROANILINE								
HEXACHLOROETHANE	23.6	23.3	334.7	270.4	273.1	20.7	603	0
HEXACHLOROBUTADIENE	4.3	14.2	369.1	267.7	283.7	14.1	1821	61127
DIMETHYL PHTHALATE	5.1	0.3	516.9	484.1	489.4	23.5	246	464
DIETHYL PHTHALATE	21.8	21.8	540.6	522.3	571.3	29.6	506	977
DIBUTYL PHTHALATE	40.0	48.7	439.7	325.5	353.8	27.3	1026	34655
BUTYL BENZYL PHTHALATE	43.0	52.1	395.5	243.1	272.1	14.0	331	36779
BIS(2-ETHYLHEXYL)PHTHALATE	1861.1	1845.1	1368.6	769.4	431.0	635.4	32907	148862
NAPHTHALENE	13.8	15.1	349.7	337.3	352.3	15.6	170	0
LINDANE	7.4	7.6	285.9	259.0	271.4	15.0	183	15457
DIELDRIN	148.1	183.5	831.7	397.9	348.4	128.9	15842	19250

MASSSES OF CERCLA ORGANICS IN WASTEWATER AND SLUDGE
STREAMS - ACCLIMATED SYSTEM DATA SET 10

COMPOUNDS	MASS OF TOXICS					
	PRI	PRI	PRI	SEC	SEC	PRI
	INF	EFF	EFF	EFF	WAS	WAS
	(GMS)					
DICHLOROBENZENE, PROBABLY 1,2	55.9	53.9	60.9	3.5	0.6	12.6
DICHLOROBENZENE, PROBABLY 1,3	74.9	70.0	70.2	6.4	0.9	12.9
DICHLOROBENZENE, PROBABLY 1,4	67.5	67.5	71.2	2.9	0.3	21.5
1,2,4-TRICHLOROBENZENE	115.9	112.7	117.9	13.4	6.7	56.0
NITROBENZENE	64.8	63.0	62.2	6.9	1.0	0.0
1,3-DINITROBENZENE						
2,6-DINITROTOLUENE	86.4		106.2	12.8	0.9	0.0
P-CRESOL	87.2	79.6	81.1	5.5	0.0	1.9
4-CHLOROANILINE						
HEXACHLOROETHANE	63.9	51.6	52.1	3.9	1.2	0.0
HEXACHLOROBUTADIENE	70.4	51.1	54.1	2.7	3.7	70.8
DIMETHYL PHTHALATE	98.6	92.3	93.4	4.5	0.5	0.5
DIETHYL PHTHALATE	103.1	99.6	109.0	5.6	1.0	1.1
DIBUTYL PHTHALATE	83.9	62.1	67.5	5.2	2.1	40.1
BUTYL BENZYL PHTHALATE	75.4	46.4	51.9	2.7	0.7	42.6
BIS(2-ETHYLHEXYL)PHTHALATE	261.1	146.8	82.2	121.2	67.3	172.4
NAPHTHALENE	66.7	64.4	67.2	3.0	0.3	0.0
LINDANE	54.5	49.4	51.8	2.9	0.4	17.9
DIELDRIN	158.7	75.9	66.5	24.6	32.4	22.3

REMOVAL AND PARTITIONING OF CERCLA ORGANICS DURING
TREATMENT - ACCLIMATED SYSTEM DATA SET 10

COMPOUNDS	%	%	%	%
	PRIMARY REMOVAL	TOTAL REMOVAL	ADSORBED +CHE.TRAN	BIO+STRIP
DICHLOROBENZENE, PROBABLY 1,2	-2.6	93.8	23.6	70.2
DICHLOROBENZENE, PROBABLY 1,3	6.4	91.5	18.4	73.1
DICHLOROBENZENE, PROBABLY 1,4	-2.7	95.6	32.3	63.3
1,2,4-TRICHLOROBENZENE	0.5	88.5	54.2	34.3
NITROBENZENE	3.4	89.3	1.5	87.8
1,3-DINITROBENZENE				
2,6-DINITROTOLUENE	-23	85.2	1.0	84.2
P-CRESOL	7.8	93.7	2.2	91.5
4-CHLOROANILINE				
HEXACHLOROETHANE	18.8	93.8	*	*
HEXACHLOROBUTADIENE	25.3	96.2	*	*
DIMETHYL PHTHALATE	5.8	95.5	1.1	94.4
DIETHYL PHTHALATE	-1.1	94.5	2.1	92.4
DIBUTYL PHTHALATE	22.7	93.8	50.3	43.4
BUTYL BENZYL PHTHALATE	34.9	96.5	57.4	39.1
BIS(2-ETHYLHEXYL)PHTHALATE	56.1	53.6	91.8	-38.2
NAPHTHALENE	1.4	95.5	0.5	95.0
LINDANE	7.2	94.7	33.5	61.2
DIELDRIN	55.1	84.5	*	*

* Partitioning not calculated because of inconsistent data

CONCENTRATIONS OF CERCLA ORGANICS IN WASTEWATER AND
SLUDGE SAMPLES - ACCLIMATED SYSTEM DATA SET 11

COMPOUNDS	CONCENTRATION OF TOXICS									
	RWW	RWW	PRI	PRI	PRI	SEC	SEC	SEC	PRI	PRI
			INF	INF	EFF	EFF	EFF	WAS	WAS	WAS
	(DUP)	(DUP)	(DUP)	(DUP)	(DUP)	(DUP)	(DUP)	(DUP)	(DUP)	(DUP)
	UG/L	UG/L	UG/L	UG/L	UG/L	UG/L	UG/L	UG/L	UG/L	UG/L
DICHLOROBENZENE, PROBABLY 1,2	2.0	10.3	329.0	329.7	305.6	10.2	11.0	545	19548	19564
DICHLOROBENZENE, PROBABLY 1,3	4.2	13.3	383.7	375.5	365.2	29.7	33.2	743	19556	20573
DICHLOROBENZENE, PROBABLY 1,4	3.1	13.4	381.4	386.9	357.1	2.4	3.1	401	17144	17123
1,2,4-TRICHLOROBENZENE	875.1	1017.7	1235.4	1065.8	537.9	62.8	69.8	2888	57977	60656
NITROBENZENE	0.0	12.3	447.4	420.2	348.8	15.0	13.0	21	615	111
1,3-DINITROBENZENE	50.0	74.2	258.3	232.1	43.2	0.0	0.0	1124	525	2120
2,6-DINITROTOLUENE	0.0	0.0	438.2	415.8	322.4	65.0	67.4	0	1062	0
P-CRESOL	40.1	54.7	531.2	524.0	585.9	1.9	5.1	78	3079	2682
4-CHLOROANILINE	3.0	12.2	361.8	335.0	347.4	9.3	8.1	84	1080	675
HEXACHLOROETHANE	0.0	0.0	389.1	412.5	273.0	3.7	4.6	0	441	0
HEXACHLOROBUTADIENE	2.7	20.0	462.3	470.8	323.8	6.3	8.6	4560	67210	70940
DIMETHYL PHTHALATE	0.0	22.0	505.6	507.5	468.7	0.7	2.9	0	1205	597
DIETHYL PHTHALATE	15.1	49.8	566.0	537.0	544.5	1.5	5.0	92	2177	1482
DIBUTYL PHTHALATE	26.1	62.9	453.8	428.4	327.2	6.2	10.0	1403	38279	40274
BUTYL BENZYL PHTHALATE	19.4	52.7	431.0	369.0	281.4	4.8	9.6	1665	42946	49645
BIS(2-ETHYLHEXYL)PHTHALATE										
NAPHTHALENE	9.4	20.3	415.3	368.8	372.9	1.9	2.6	348	16557	17266
LINDANE	0.0	27.6	423.3	409.1	364.1	13.5	15.5	648	20011	22629
DIELDRIIN	31.6	118.2	775.0		526.0	341.2	139.8	15813	44698	62436

MASSSES OF CERCLA ORGANICS IN WASTEWATER AND SLUDGE
 - - - STREAMS - ACCLIMATED SYSTEM DATA SET 11

COMPOUNDS	MASS OF TOXICS								
	PRI	PRI	PRI	SEC	SEC	SEC	PRI	PRI	
	INF	INF	EFF	EFF	EFF	WAS	WAS	WAS	
	(DUP)			(DUP)			(DUP)		
	GMS	GMS	GMS	GMS	GMS	GMS	GMS	GMS	
DICHLOROBENZENE, PROBABLY 1,2	62.8	62.9	58.3	1.9	2.1	1.1	22.6	22.7	
DICHLOROBENZENE, PROBABLY 1,3	73.2	71.6	69.7	5.7	6.3	1.5	22.6	23.8	
DICHLOROBENZENE, PROBABLY 1,4	72.7	73.8	68.1	0.5	0.6	0.8	19.9	19.8	
1,2,4-TRICHLOROBENZENE	235.7	203.3	102.6	12.0	13.3	5.9	67.1	70.2	
NITROBENZENE	85.4	80.2	66.5	2.9	2.5	0.0	0.7	0.1	
1,3-DINITROBENZENE	49.3	44.3	8.2	0.0	0.0	2.3	0.6	2.5	
2,6-DINITROTOLUENE	83.6	79.3	61.5	12.4	12.9	0.0	1.2	0.0	
P-CRESOL	101.3	100.0	111.8	0.4	1.0	0.2	3.6	3.1	
4-CHLOROANILINE	69.0	63.9	66.3	1.8	1.6	0.2	1.3	0.8	
HEXACHLOROETHANE	74.2	78.7	52.1	0.7	0.9	0.0	0.5	0.0	
HEXACHLOROBUTADIENE	88.2	89.8	61.8	1.2	1.6	9.3	77.8	82.1	
DIMETHYL PHTHALATE	96.4	96.8	89.4	0.1	0.6	0.0	1.4	0.7	
DIETHYL PHTHALATE	108.0	102.4	103.9	0.3	1.0	0.2	2.5	1.7	
DIBUTYL PHTHALATE	86.6	81.7	62.4	1.2	1.9	2.9	44.3	46.6	
BUTYL BENZYL PHTHALATE	82.2	70.4	53.7	0.9	1.8	3.4	49.7	57.5	
BIS(2-ETHYLHEXYL)PHTHALATE									
NAPHTHALENE	79.2	70.3	71.1	0.4	0.5	0.7	19.2	20.0	
LINDANE	80.8	78.0	69.5	2.6	3.0	1.3	23.2	26.2	
DIELDRIN	147.8		100.3	65.1	26.7	32.3	51.8	72.3	

REMOVAL AND PARTITIONING OF CERCLA ORGANICS DURING
TREATMENT - ACCLIMATED SYSTEM DATA SET 11

COMPOUNDS	%	%	%	%
	PRIMARY REMOVAL	TOTAL REMOVAL	ADSORBED BIO+STRIP +CHE. TRAN	
DICHLOROBENZENE, PROBABLY 1,2	7.2	96.8	*	*
DICHLOROBENZENE, PROBABLY 1,3	3.8	91.7	*	*
DICHLOROBENZENE, PROBABLY 1,4	7.0	99.3	*	*
1,2,4-TRICHLOROBENZENE	53.3	94.2	34.0	60.3
NITROBENZENE	19.6	96.8	*	*
1,3-DINITROBENZENE	82.4	100.0	*	*
2,6-DINITROTOLUENE	24.5	84.5	*	*
P-CRESOL	11.1	99.3	3.5	95.9
4-CHLOROANILINE	0.3	97.5	1.8	95.7
HEXACHLOROETHANE	31.9	99.0	*	*
HEXACHLOROBUTADIENE	30.6	98.4	*	*
DIMETHYL PHTHALATE	7.5	99.6	1.1	98.6
DIETHYL PHTHALATE	1.3	99.4	2.2	97.2
DIBUTYL PHTHALATE	25.8	98.2	*	*
BUTYL BENZYL PHTHALATE	29.6	98.2	*	*
BIS(2-ETHYLHEXYL)PHTHALATE				
NAPHTHALENE	4.9	99.4	*	*
LINDANE	12.5	96.5	32.8	63.7
DIELDRIN	32.1	69.0	*	*

* Partitioning not calculated because of inconsistent data

CONCENTRATIONS OF CERCLA ORGANICS IN WASTEWATER AND
SLUDGE SAMPLES - UNACCLIMATED SYSTEM DATA SET 1

Compounds	CONCENTRATION OF TOXICS								
	RWW	RWW	PRI	PRI	PRI	SEC	MIXED	SEC	PRI
		(DUP)	INF	EFF	EFF	EFF	LIQUOR	WAS	WAS
	UG/L	UG/L	UG/L	UG/L	(DUP) UG/L	UG/L	(48hr) UG/L	UG/L	UG/L
DICHLOROBENZENE, PROBABLY 1,2	0.0	0.0	225.1	233.0	170.4	38.3	0.0	219	2611
DICHLOROBENZENE, PROBABLY 1,3	0.0	0.0	252.5	257.7	190.5	40.6	11.5	267	2593
DICHLOROBENZENE, PROBABLY 1,4	0.0	3.4	237.7	229.1	184.0	41.1	5.8	244	2356
1,2,4-TRICHLOROBENZENE	141.8	352.9	320.5	326.8	277.7	64.9	301.3	1241	5498
NITROBENZENE	0.0	2.9	303.2	260.3	255.8	160.2	0.0	72	51
1,3-DINITROBENZENE	6.6	0.0	157.1	17.4	14.3	41.6	53.0	105	166
2,6-DINITROTOLUENE	0.0	0.0	275.2	193.4	176.0	38.5	0.0	0	0
P-CRESOL	72.3	75.1	505.5			40.9	0.0	0	3855
4-CHLOROANILINE									
HEXACHLOROETHANE	0.0	0.0	100.0	73.2	47.6	0.0	0.0	0	0
HEXACHLOROBUTADIENE	0.3	0.0	116.3	88.5	74.8	4.0	68.1	420	5040
DIMETHYL PHTHALATE	5.3	5.5	117.9	157.7	101.1	7.9	0.0	0	208
DIETHYL PHTHALATE	60.3	77.1	379.6	296.9	291.5	12.8	0.0	0	467
DIBUTYL PHTHALATE	18.5	32.3	268.6	179.2	168.2	10.9	0.0	50	3380
BUTYL BENZYL PHTHALATE	0.0	0.0	136.8	84.3	80.1	4.7	0.0	0	4081
BIS(2-ETHYLHEXYL)PHTHALATE									
NAPHTHALENE	7.6	28.7	303.1		265.4	35.6	6.4	174	2743
LINDANE	13.1	0.0	164.2		131.7	80.6	210.6	719	3653
DIELDRIN	35.1	14.5	290.6	124.6	114.3	13.7	600.7	1229	0

MASSES OF CERCLA ORGANICS IN WASTEWATER AND SLUDGE
STREAMS - UNACCLIMATED SYSTEM DATA SET 1

Compounds	MASS OF TOXICS IN GRAMS						
	PRI	PRI	PRI	SEC	MIXED	SEC	PRI
	INF	EFF	EFF	EFF	LIQUOR	WAS	WAS
			(DUP)		(48hr)		
	GMS	GMS	GMS	GMS	GMS	GMS	GMS
DICHLOROBENZENE, PROBABLY 1,2	85.9	88.9	65.0	14.6	0.0	0.9	6.0
DICHLOROBENZENE, PROBABLY 1,3	96.3	98.3	72.7	15.5	0.7	1.1	6.0
DICHLOROBENZENE, PROBABLY 1,4	90.7	87.4	70.2	15.7	0.3	1.0	5.5
1,2,4-TRICHLOROBENZENE	122.3	124.7	105.9	24.8	17.6	5.1	12.7
NITROBENZENE	115.7	99.3	97.6	61.1	0.0	0.3	0.1
1,3-DINITROBENZENE	59.9	6.6	5.5	15.9	3.1	0.4	0.4
2,6-DINITROTOLUENE	105.0	73.8	67.1	14.7	0.0	0.0	0.0
P-CRESOL	192.9			15.6	0.0	0.0	8.9
4-CHLOROANILINE							
HEXACHLOROETHANE	38.1	27.9	18.2	0.0	0.0	0.0	0.0
HEXACHLOROBUTADIENE	44.4	33.8	28.5	1.5	4.0	1.7	11.7
DIMETHYL PHTHALATE	45.0	60.2	38.6	3.0	0.0	0.0	0.5
DIETHYL PHTHALATE	144.8	113.3	111.2	4.9	0.0	0.0	1.1
DIBUTYL PHTHALATE	102.5	68.4	64.2	4.2	0.0	0.2	7.8
BUTYL BENZYL PHTHALATE	52.2	32.2	30.5	1.8	0.0	0.0	9.5
BIS(2-ETHYLHEXYL)PHTHALATE							
NAPHTHALENE	115.6		101.3	13.6	0.4	0.7	6.4
LINDANE	62.6		50.3	30.8	12.3	2.9	8.5
DIELDRIN	110.9	47.5	43.6	5.2	35.0	5.0	0.0

REMOVAL AND PARTITIONING OF CERCLA ORGANICS DURING
TREATMENT - UNACCLIMATED SYSTEM DATA SET 1

Compounds	%	%	%	%
	PRIMARY REMOVAL	TOTAL REMOVAL	ADSORBED	BIO+STRIP +CHE. TRAN
DICHLOROBENZENE, PROBABLY 1,2	10.4	83.0	8.1	74.9
DICHLOROBENZENE, PROBABLY 1,3	11.2	83.9	7.4	76.5
DICHLOROBENZENE, PROBABLY 1,4	13.1	82.7	7.1	75.6
1,2,4-TRICHLOROBENZENE	5.7	79.7	14.6	65.2
NITROBENZENE	14.9	47.2	0.4	46.8
1,3-DINITROBENZENE	89.9	73.5	*	*
2,6-DINITROTOLUENE	32.9	86.0	*	*
P-CRESOL		91.9	*	*
4-CHLOROANILINE				
HEXACHLOROETHANE	39.6	100.0	*	*
HEXACHLOROBUTADIENE	29.8	96.6	30.2	66.4
DIMETHYL PHTHALATE	-9.7	93.3	1.1	92.3
DIETHYL PHTHALATE	22.5	96.6	*	*
DIBUTYL PHTHALATE	35.3	95.9	*	*
BUTYL BENZYL PHTHALATE	39.9	96.6	18.1	78.5
BIS(2-ETHYLHEXYL)PHTHALATE				
NAPHTHALENE	12.4	88.3	*	*
LINDANE	19.8	50.9	18.2	32.7
DIELDRIN	58.9	95.3	*	*

* Partitioning not calculated because of inconsistent data

CONCENTRATIONS OF CERCLA ORGANICS IN WASTEWATER AND
SLUDGE SAMPLES - UNACCLIMATED SYSTEM DATA SET 2

Compounds	CONCENTRATION OF TOXICS										
	RW	RW	PRI	PRI	SEC	MIXED	MIXED	MIXED	SEC	SEC	PRI
	(DUP)	(DUP)	INF	EFF	EFF	LIQUOR	LIQUOR	LIQUOR	WAS	WAS	WAS
	UG/L	UG/L	UG/L	UG/L	UG/L	UG/L	(0 hr) UG/L	(48hr) UG/L	UG/L	(DUP) UG/L	UG/L
DICHLOROBENZENE, PROBABLY 1,2	0.0	0.0	345.3	243.6	35.2	27.3	2.9	101.4	1739	1400	9093
DICHLOROBENZENE, PROBABLY 1,3	0.0	0.0	410.5	296.1	35.6	41.8	3.6	210.5	2251	1393	9617
DICHLOROBENZENE, PROBABLY 1,4	0.0	3.4	352.6	260.0	29.5	27.9	2.7	39.9	1528	978	7357
1,2,4-TRICHLOROBENZENE	141.8	352.9	502.5	337.8	46.2	1233.4	121.9	3251.8	8841	5502	46002
NITROBENZENE	0.0	2.9	414.5	366.9	111.1	0.0	1.0	0.0	1281	1140	237
1,3-DINITROBENZENE	6.6	0.0	204.9	24.4	28.0	330.5	27.6	1019.9	1049	1022	885
2,6-DINITROTOLUENE	0.0	0.0	304.9	285.9	24.5	0.0	5.8	0.0	0	0	24339
P-CRESOL											
4-CHLOROANILINE											
HEXACHLOROETHANE	0.0	0.0	162.3	77.5	0.0	0.0	0.0	0.0	0	0	32319
HEXACHLOROBUTADIENE	0.3	0.0	280.2	138.5	4.4	0.0	0.0	1354.1	5349	3087	1221
DIMETHYL PHTHALATE	5.3	5.5	197.7	243.1	9.0	0.0	0.0	0.0	0	0	19542
DIETHYL PHTHALATE	60.3	77.1	381.6	399.1	10.7	0.0	3.5	0.0	62	56	19631
DIBUTYL PHTHALATE	18.5	32.3	331.2	302.8	12.7	186.6	18.7	327.8	329	331	39076
BUTYL BENZYL PHTHALATE	0.0	0.0	254.1	164.0	6.8	121.5	17.4	246.5	253	156	12248
BIS(2-ETHYLHEXYL)PHTHALATE											
NAPHTHALENE	7.6	28.7	430.6	387.2	12.2	28.8	4.3	45.1	296	198	0
LINDANE	13.1	0.0	288.8	217.2	81.0	167.7	4.2	3485.8	7878	4919	1422
DIELDRIN	35.1	14.5	795.1	641.3	11.7	161.8	13.2	8456.4	8454	4028	1469

MASSES OF CERCLA ORGANICS IN WASTEWATER AND SLUDGE
STREAMS - UNACCLIMATED SYSTEM DATA SET 2

Compounds	MASS OF TOXICS IN GRAMS								
	PRI	PRI	SEC	MIXED	MIXED	MIXED	SEC	SEC	PRI
	INF	EFF	EFF	LIQUOR	LIQUOR	LIQUOR	WAS	WAS	WAS
	GMS	GMS	GMS	GMS	(0 hr) GMS	(48hr) GMS	GMS	(DUP) GMS	GMS
DICHLOROBENZENE, PROBABLY 1,2	131.7	92.9	13.4	1.6	0.2	5.9	7.2	5.8	23.5
DICHLOROBENZENE, PROBABLY 1,3	156.6	113.0	13.6	2.4	0.2	12.3	9.4	5.8	24.9
DICHLOROBENZENE, PROBABLY 1,4	134.5	99.2	11.2	1.6	0.2	2.3	6.4	4.1	19.1
1,2,4-TRICHLOROBENZENE	191.7	128.9	17.6	71.9	7.1	189.6	36.7	22.9	119.1
NITROBENZENE	158.2	140.0	42.4	0.0	0.1	0.0	5.3	4.7	0.6
1,3-DINITROBENZENE	78.2	9.3	10.7	19.3	1.6	59.5	4.4	4.2	2.3
2,6-DINITROTOLUENE	116.3	109.1	9.4	0.0	0.3	0.0	0.0	0.0	63.0
P-CRESOL									
4-CHLOROANILINE									
HEXACHLOROETHANE	61.9	29.6	0.0	0.0	0.0	0.0	0.0	0.0	83.7
HEXACHLOROBUTADIENE	106.9	52.8	1.7	0.0	0.0	78.9	22.2	12.8	3.2
DIMETHYL PHTHALATE	75.4	92.7	3.4	0.0	0.0	0.0	0.0	0.0	50.6
DIETHYL PHTHALATE	145.6	152.3	4.1	0.0	0.2	0.0	0.3	0.2	50.8
DIBUTYL PHTHALATE	126.4	115.5	4.8	10.9	1.1	19.1	1.4	1.4	101.2
BUTYL BENZYL PHTHALATE	96.9	62.6	2.6	7.1	1.0	14.4	1.1	0.6	31.7
BIS(2-ETHYLHEXYL)PHTHALATE									
NAPHTHALENE	164.3	147.7	4.7	1.7	0.2	2.6	1.2	0.8	0.0
LINDANE	110.2	82.9	30.9	9.8	0.2	203.2	32.7	20.4	3.7
DIELDRIN	303.4	244.7	4.5	9.4	0.8	493.0	35.1	16.7	3.8

REMOVAL AND PARTITIONING OF CERCLA ORGANICS DURING
TREATMENT - UNACCLIMATED SYSTEM DATA SET 2

Compounds	%	%	%	%
	PRIMARY REMOVAL	TOTAL REMOVAL	ADSORBED +CHE. TRAN	BIO+STRIP
DICHLOROBENZENE, PROBABLY 1,2	29	90	23	67
DICHLOROBENZENE, PROBABLY 1,3	28	91	21	71
DICHLOROBENZENE, PROBABLY 1,4	26	92	18	74
1,2,4-TRICHLOROBENZENE	33	91	*	*
NITROBENZENE	11	73	4	70
1,3-DINITROBENZENE	88	86	*	*
2,6-DINITROTOLUENE	6	92	*	*
P-CRESOL				
4-CHLOROANILINE				
HEXACHLOROETHANE	52	100	*	*
HEXACHLOROBUTADIENE	51	98	*	*
DIMETHYL PHTHALATE	-23	95	*	*
DIETHYL PHTHALATE	-5	97	*	*
DIBUTYL PHTHALATE	9	96	*	*
BUTYL BENZYL PHTHALATE	35	97	34	64
BIS(2-ETHYLHEXYL)PHTHALATE				
NAPHTHALENE	10	97	1	97
LINDANE	25	72	27	44
DIELDRIN	19	99	10	89

* Partitioning not calculated because of inconsistent data

CONCENTRATIONS OF CERCLA ORGANICS IN WASTEWATER AND
SLUDGE SAMPLES - UNACCLIMATED SYSTEM DATA SET 3

Compounds	CONCENTRATION OF TOXICS												
	RW	RW	PRI	PRI	PRI	SEC	SEC	MIXED	MIXED	SEC	SEC	PRI	PRI
		(DUP)	INF	EFF	EFF	EFF	(DUP)	LIQUOR	LIQUOR	WAS	WAS	WAS	WAS
	UG/L	UG/L	UG/L	UG/L	UG/L	UG/L	UG/L	(0hr)	(48hr)	UG/L	(DUP)	UG/L	(DUP)
DICHLOROBENZENE, PROBABLY 1,2	4.9	3.2	196.2	159.2	158.0	17.3	16.4	28.8	68.4	233	150	1825	1999
DICHLOROBENZENE, PROBABLY 1,3	9.3	7.2	232.6	201.1	201.8	26.7	25.7	39.6	77.7	219	156	1947	2148
DICHLOROBENZENE, PROBABLY 1,4	8.2	7.2	222.2	190.7	183.6	18.7	18.2	34.4	63.3	0	0	1865	2130
1,2,4-TRICHLOROBENZENE	296.2	283.8	469.6	341.6	331.8	46.8	47.8	314.6	182.9	1125	1094	13840	14105
NITROBENZENE	6.1	8.8	265.7	207.1	199.0	60.1	58.3	77.8	0.0	0	0	90	148
1,3-DINITROBENZENE	92.5	68.9	172.7	31.2	20.3	26.7	9.3	390.8	450.8	702	409	348	413
2,6-DINITROTOLUENE	0.0	0.0	234.4	107.2		18.4	17.3	0.0	0.0	0	0	13	0
P-CRESOL	71.3	66.2	385.1	429.3	417.6	0.0	0.0	0.0	0.0	0	0	3053	3417
4-CHLOROANILINE													
HEXACHLOROETHANE	0.0	0.0	182.1	103.4	120.6	0.0	0.0	0.0	0.0	0	0	632	0
HEXACHLOROBUTADIENE	2.1	0.0	198.5	97.1	99.0	3.9	3.0	15.1	148.3	403	365	0	0
DIMETHYL PHTHALATE	0.0	0.0	204.9	179.3		4.5	0.0	0.0	0.0	0	0	5727	6539
DIETHYL PHTHALATE	14.7	13.6	252.5	260.6	241.4	9.2	8.1	0.0	0.0	103	0	199	216
DIBUTYL PHTHALATE	27.9	25.5	243.3	148.5	135.9	6.0	5.0	142.9	249.6	266	0	405	357
BUTYL BENZYL PHTHALATE	22.7	23.0	224.8	136.4	124.7	4.5	3.5	127.7	258.0	312	251	4292	5102
BIS(2-ETHYLHEXYL)PHTHALATE													
NAPHTHALENE	18.1	19.8	251.4	213.7	205.5	5.3	4.9	38.1	58.8	78	52	12510	14892
LINDANE	23.4	24.5	258.7	194.3	191.0	79.4	78.3	119.4	378.0	827	825	2153	2453
DIELDRIN	10.9	10.1	143.1	131.6	112.2	6.8	10.0	343.7	569.6	962	1034	4223	4573

MASSES OF CERCLA ORGANICS IN WASTEWATER AND SLUDGE
STREAMS - UNACCLIMATED SYSTEM DATA SET 3

Compounds	MASS OF TOXICS										
	PRI	PRI	PRI	SEC	SEC	MIXED	MIXED	SEC	SEC	PRI	PRI
	INF	EFF	EFF	EFF	EFF	LIQUOR	LIQUOR	WAS	WAS	WAS	WAS
			(DUP)		(DUP)	(0hr)	(48hr)		(DUP)		(DUP)
	GMS	GMS	GMS	GMS	GMS	GMS	GMS	GMS	GMS	GMS	GMS
DICHLOROBENZENE, PROBABLY 1,2	74.9	60.7	60.3	6.6	6.3	1.7	4.0	1.0	0.6	4.7	5.2
DICHLOROBENZENE, PROBABLY 1,3	88.7	76.7	77.0	10.2	9.8	2.3	4.5	0.9	0.6	5.0	5.6
DICHLOROBENZENE, PROBABLY 1,4	84.8	72.8	70.0	7.1	6.9	2.0	3.7	0.0	0.0	4.8	5.5
1,2,4-TRICHLOROBENZENE	179.2	130.3	126.6	17.9	18.3	18.3	10.7	4.7	4.5	35.8	36.5
NITROBENZENE	101.4	79.0	75.9	22.9	22.3	4.5	0.0	0.0	0.0	0.2	0.4
1,3-DINITROBENZENE	65.9	11.9	7.8	10.2	3.5	22.8	26.3	2.9	1.7	0.9	1.1
2,6-DINITROTOLUENE	89.4	40.9		7.0	6.6	0.0	0.0	0.0	0.0	0.0	0.0
P-CRESOL	146.9	163.8	159.3	0.0	0.0	0.0	0.0	0.0	0.0	7.9	8.8
4-CHLOROANILINE											
HEXACHLOROETHANE	69.5	39.4	46.0	0.0	0.0	0.0	0.0	0.0	0.0	1.6	0.0
HEXACHLOROBUTADIENE	75.7	37.0	37.8	1.5	1.1	0.9	8.6	1.7	1.5	0.0	0.0
DIMETHYL PHTHALATE	78.2	68.4		1.7	0.0	0.0	0.0	0.0	0.0	14.8	16.9
DIETHYL PHTHALATE	96.3	99.4	92.1	3.5	3.1	0.0	0.0	0.4	0.0	0.5	0.6
DIBUTYL PHTHALATE	92.8	56.6	51.8	2.3	1.9	8.3	14.6	1.1	0.0	1.0	0.9
BUTYL BENZYL PHTHALATE	85.8	52.1	47.6	1.7	1.3	7.4	15.0	1.3	1.0	11.1	13.2
BIS(2-ETHYLHEXYL)PHTHALATE											
NAPHTHALENE	95.9	81.6	78.4	2.0	1.9	2.2	3.4	0.3	0.2	32.4	38.5
LINDANE	98.7	74.1	72.9	30.3	29.9	7.0	22.0	3.4	3.4	5.6	6.3
DIELDRIN	54.6	50.2	42.8	2.6	3.8	20.0	33.2	4.0	4.3	10.9	11.8

REMOVAL AND PARTITIONING OF CERCLA ORGANICS DURING
TREATMENT - UNACCLIMATED SYSTEM DATA SET 3

Compounds	%	%	%	%
	PRIMARY REMOVAL	TOTAL REMOVAL	ADSORBED +CHE. TRAN	BIO+STRIP
DICHLOROBENZENE, PROBABLY 1,2	19	91	8	84
DICHLOROBENZENE, PROBABLY 1,3	13	89	7	82
DICHLOROBENZENE, PROBABLY 1,4	16	92	6	85
1,2,4-TRICHLOROBENZENE	28	90	23	67
NITROBENZENE	24	77	*	*
1,3-DINITROBENZENE	85	85	*	*
2,6-DINITROTOLUENE	54	92	*	*
P-CRESOL	-10	100	6	94
4-CHLOROANILINE				
HEXACHLOROETHANE	38	100	*	*
HEXACHLOROBUTADIENE	51	98	*	*
DIMETHYL PHTHALATE	12	98	20	78
DIETHYL PHTHALATE	1	96	1	96
DIBUTYL PHTHALATE	42	98	*	*
BUTYL BENZYL PHTHALATE	42	98	*	*
BIS(2-ETHYLHEXYL)PHTHALATE				
NAPHTHALENE	17	98	37	61
LINDANE	26	69	*	*
DIELDRIN	15	95	28	67

* Partitioning not calculated because of inconsistent data

CONCENTRATIONS OF CERCLA ORGANICS IN WASTEWATER AND
SLUDGE SAMPLES - UNACCLIMATED SYSTEM DATA SET 4

Compounds	CONCENTRATION OF TOXICS									
	RWW	PRI	PRI	PRI	SEC	MIXED	MIXED	SEC	PRI	PRI
		INF	INF	EFF	EFF	LIQUOR	LIQUOR	WAS	WAS	WAS
	UG/L	UG/L	(DUP) UG/L	UG/L	UG/L	(0hrs) UG/L	(48hrs) UG/L	UG/L	UG/L	(DUP) UG/L
DICHLOROBENZENE, PROBABLY 1,2	10.2	219.7	196.5		54.3	0.0	0.0	107	195	2680
DICHLOROBENZENE, PROBABLY 1,3	11.5	214.9	192.2	171.4	52.3	0.0	0.0	142	305	396
DICHLOROBENZENE, PROBABLY 1,4	10.0	211.1	189.4	172.1	28.7	0.0	0.0	74	380	1072
1,2,4-TRICHLOROBENZENE										
NITROBENZENE	3.9	190.5	218.8		132.2	0.0	0.0	27	0	1242
1,3-DINITROBENZENE	2.8	109.8	114.5		0.0	0.0	0.0	340	0	0
2,6-DINITROTOLUENE	0.0	183.4	200.3		52.3	0.0	0.0	0	0	0
P-CRESOL	71.5	309.3	307.2	151.7	4.4	0.0	0.0	13	494	0
4-CHLOROANILINE										
HEXACHLOROETHANE										
HEXACHLOROBUTADIENE	19.8	222.4	174.6	59.4	5.6	0.0	0.0	467	0	5100
DIMETHYL PHTHALATE	5.9	230.9	243.1	96.1	3.8	0.0	0.0	21	55	96
DIETHYL PHTHALATE	18.9	229.6	234.3	233.7	5.8	0.0	0.0	31	74	177
DIBUTYL PHTHALATE	37.6	261.2	206.9	223.9	10.8	211.1	130.4	248	1081	3034
BUTYL BENZYL PHTHALATE	41.0	245.0	212.2	138.0	5.9	0.0	0.0	110	1380	3985
BIS(2-ETHYLHEXYL)PHTHALATE										
NAPHTHALENE	29.3	281.3	279.1		11.1	0.0	0.0	43	0	0
LINDANE	20.5	226.1	192.8	223.6	176.0	0.0	0.0	875	624	1594
DIELDRIN	66.7	888.8	625.4	162.0	71.9	0.0	0.0	1388	0	563

MASSES OF CERCLA ORGANICS IN WASTEWATER AND SLUDGE
STREAMS - UNACCLIMATED SYSTEM DATA SET 4

Compounds	MASS OF TOXICS								
	PRI	PRI	PRI	SEC	MIXED	MIXED	SEC	PRI	PRI
	INF	INF	EFF	EFF	LIQUOR	LIQUOR	WAS	WAS	WAS
		(DUP)			(0hrs)	(48hrs)			(DUP)
	GMS	GMS	GMS	GMS	GMS	GMS	GMS	GMS	
DICHLOROBENZENE, PROBABLY 1,2	83.8	75.0		20.7	0.0	0.0	0.4	0.5	6.9
DICHLOROBENZENE, PROBABLY 1,3	82.0	73.3	65.4	20.0	0.0	0.0	0.6	0.8	1.0
DICHLOROBENZENE, PROBABLY 1,4	80.5	72.3	65.7	10.9	0.0	0.0	0.3	1.0	2.8
1,2,4-TRICHLOROBENZENE									
NITROBENZENE	72.7	83.5		50.5	0.0	0.0	0.1	0.0	3.2
1,3-DINITROBENZENE	41.9	43.7		0.0	0.0	0.0	1.4	0.0	0.0
2,6-DINITROTOLUENE	70.0	76.4		19.9	0.0	0.0	0.0	0.0	0.0
P-CRESOL	118.0	117.2	57.9	1.7	0.0	0.0	0.1	1.3	0.0
4-CHOLOROANILINE									
HEXACHLOROETHANE									
HEXACHLOROBUTADIENE	84.9	66.6	22.6	2.1	0.0	0.0	1.9	0.0	13.2
DIMETHYL PHTHALATE	88.1	92.7	36.7	1.4	0.0	0.0	0.1	0.1	0.2
DIETHYL PHTHALATE	87.6	89.4	89.2	2.2	0.0	0.0	0.1	0.2	0.5
DIBUTYL PHTHALATE	99.7	78.9	85.4	4.1	12.3	7.6	1.0	2.8	7.9
BUTYL BENZYL PHTHALATE	93.5	81.0	52.7	2.3	0.0	0.0	0.5	3.6	10.3
BIS(2-ETHYLHEXYL)PHTHALATE									
NAPHTHALENE	107.3	106.5		4.3	0.0	0.0	0.2	0.0	0.0
LINDANE	86.2	73.5	85.3	67.1	0.0	0.0	3.6	1.6	4.1
DIELDRIN	339.1	238.6	61.8	27.4	0.0	0.0	5.8	0.0	1.5

REMOVAL AND PARTITIONING OF CERCLA ORGANICS DURING
TREATMENT - UNACCLIMATED SYSTEM DATA SET 4

Compounds	%	%	%	%
	PRIMARY REMOVAL	TOTAL REMOVAL	ADSORBED +CHE. TRAN	BIO+STRIP
DICHLOROBENZENE, PROBABLY 1,2		74	5	69
DICHLOROBENZENE, PROBABLY 1,3	16	74	2	72
DICHLOROBENZENE, PROBABLY 1,4	14	86	3	83
1,2,4-TRICHLOROBENZENE				
NITROBENZENE		35	2	33
1,3-DINITROBENZENE		100	*	*
2,6-DINITROTOLUENE		73	*	*
P-CRESOL	51	99	*	*
4-CHLOROANILINE				
HEXACHLOROETHANE				
HEXACHLOROBUTADIENE	70	97	*	*
DIMETHYL PHTHALATE	59	98	*	*
DIETHYL PHTHALATE	-1	98	1	97
DIBUTYL PHTHALATE	4	95	7	88
BUTYL BENZYL PHTHALATE	40	97	*	*
BIS(2-ETHYLHEXYL)PHTHALATE				
NAPHTHALENE		96	*	*
LINDANE	-7	16	8	8
DIELDRIN	79	90	*	*

* Partitioning not calculated because of inconsistent data

APPENDIX 3. CONVENTIONAL POLLUTANT DATA

RCRA PILOT STUDY

TOTAL SUSPENDED SOLIDS (mg/L) - ACCLIMATED SYSTEM

DATE (DD-MM)	*						% Remov
	PRI INF	PRI EFF	SEC EFF	MIX LIQ	SEC WAS	PRI SLU	
01-Feb	252	204	0	3250	10170		100
02-Feb	128	96	3	2030	9500		98
03-Feb							
04-Feb	188	104	4	1920	7590		98
05-Feb							
06-Feb							
07-Feb	216	210	7	1730	7330	1.5	97
08-Feb	260	172	7	1810	6750	3.5	97
09-Feb							
10-Feb	256	164	1	1940	8280	2.7	100
11-Feb	220	112	6	2100	6140		97
12-Feb	252	32	6	1920	7350		98
13-Feb	252	148	3	2120	8210	4.6	99
14-Feb							
15-Feb							
16-Feb	124	72	1	2030	6210		99
17-Feb	192	124	3	1990	6240	2.9	98
18-Feb	324	176	11	2250	6380	3.3	97
19-Feb	348	180	7	2010	5420	0.7	98
20-Feb	188	164	5	3700	6860	2.0	97
21-Feb							
22-Feb	224	108	8	2470	5950	2.8	96
23-Feb	176	100	4	2010	7370	1.1	98
24-Feb	172	48	21	2250	7350	3.8	88
25-Feb	220	152	6	2310	7590	0.7	97
26-Feb							
27-Feb	220	112	13	2280	7710	1.9	94
28-Feb	172	32	2	2090	8360	2.1	99
29-Feb							

* Percent Total Solids

TOTAL SUSPENDED SOLIDS (mg/L) - ACCLIMATED SYSTEM

DATE (DD-MM)	PRI INF	PRI EFF	SEC EFF	MIX LIQ	SEC WAS	* PRI % SLU Remov	
01-Mar							
02-Mar	292	152	11	2370	8600	1.5	96
03-Mar							
04-Mar	164	108	4	2260	7600	1.3	98
05-Mar	52	84	0	2490	9140	1.3	100
06-Mar	144	80	2	2140	7560	1.4	99
07-Mar	124	80	0	2520	9000	0.8	100
08-Mar	204	76	4	2670	9260		98
09-Mar							
10-Mar	248	156	9	2390	8390	0.9	96
11-Mar	224	160	7	1260	10340	0.8	97
12-Mar	148	72	1		2750	2.1	99
13-Mar	176	120	4	2710	7940	0.7	98
14-Mar	212	196	50	2320	7160	1.1	76
15-Mar	208	104	6	2200	7800	1.6	97
16-Mar	224	228	5	2180	7980	1.9	98
17-Mar	228	80	29	1900	7510	3.0	87
18-Mar	232	184	14	1900	7240		94
19-Mar	260	200	2	2210	7660	2.2	99
20-Mar	240	76	11	1840	7120	0.9	95
21-Mar	252	132	4	1530	7350	0.7	98
22-Mar	308	124	4	2130	7690	0.8	99
23-Mar	224	120	1	2120	6860		100
24-Mar	228	88	11	1870	6910	0.7	95
25-Mar	204	136	0	1800	7840	0.8	100
26-Mar	156	80	5	1910	6970	0.5	97
27-Mar	112	52	1	2300	7950	0.5	99
28-Mar	240	116	8	2100	7410	0.7	97
29-Mar	128	100	4	1900	7440		97
30-Mar	580	410	7	2230	7780		99
31-Mar	228	104	16	1670	5480		93

AVERAGE AND ST. DEVIATION FOR THE SPIKE PERIOD

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AVERAGE	217	128	7	2152	7489	1.7	97
DEVIATION	77	63	8	394	1244	1.0	4

* Percent Total Solids

COD/SCOD DATA - ACCLIMATED SYSTEM

Date	TOTAL COD				SOLUBLE COD			
	PRI	PRI	SEC	%	PRI	PRI	SEC	%
	INF	EFF	EFF	Remov	INF	EFF	EFF	Remov
	mg/L	mg/L	mg/L		mg/L	mg/L	mg/L	
01-Feb	249	230	46	82	46	88	38	17
02-Feb								
03-Feb	243	276	45	81	71	66	24	66
04-Feb								
05-Feb	596	234	55	91	207	99	31	85
06-Feb								
07-Feb								
08-Feb	418	368	58	86	193	198	53	73
09-Feb								
10-Feb								
11-Feb								
12-Feb	897	488	134	85	309	274	190	39
13-Feb								
14-Feb								
15-Feb	370	329	85	77	61	54	0	100
16-Feb								
17-Feb	513	555	131	74	297	156	117	61
18-Feb								
19-Feb	393	349	95	76	370	150	70	81
20-Feb								
21-Feb								
22-Feb	516	413	54	90	229	216		100
23-Feb								
24-Feb	571	483	109	81				
25-Feb								
26-Feb	714	278			211	97	124	41
27-Feb								
28-Feb								
29-Feb	625	761	136	78				

COD/SCOD DATA - ACCLIMATED SYSTEM

Date	TOTAL COD				SOLUBLE COD			
	PRI	PRI	SEC	%	PRI	PRI	SEC	%
	INF	EFF	EFF	Remov	INF	EFF	EFF	Remov
	mg/L	mg/L	mg/L		mg/L	mg/L	mg/L	
01-Mar								
02-Mar	455	446	95	79	144	172	77	47
03-Mar								
04-Mar	259	228	62	76	80	82	46	43
05-Mar								
06-Mar								
07-Mar								
08-Mar								
09-Mar	460	423	96	79	174	204	68	61
10-Mar								
11-Mar	562	482	166	70	193	186	42	78
12-Mar								
13-Mar								
14-Mar					125	135	0	100
15-Mar								
16-Mar	577	546	0	100	461	350	0	100
17-Mar								
18-Mar								
19-Mar								
20-Mar								
21-Mar	586	529	91	84	203	177	73	64
22-Mar								
23-Mar					194	201	58	70
24-Mar								
25-Mar	387	359	55	86	114	142	57	50
26-Mar								
27-Mar								
28-Mar								
29-Mar								
30-Mar	553	510	57	90				
31-Mar								

AVERAGE AND ST. DEVIATION FOR THE SPIKE PERIOD

AVERAGE	497	414	83	82	194	160	59	67
DEVIATION	157	132	40	7	105	72	46	23

NITROGEN DATA : ACCLIMATED SYSTEM

Date (DD-MM)	AMMONIA-N				NITRATE-N		
	PRI	PRI	SEC	%	PRI	PRI	SEC
	INF	EFF	EFF	Remov	INF	EFF	EFF
	mg/L	mg/L	mg/L		mg/L	mg/L	mg/L
01-Feb	4.6	5.1	0.4	91	7.76	7.93	7.8
02-Feb							
03-Feb	12.6	12.4	5.6	55	1.72	0.71	5.5
04-Feb							
05-Feb	9.4	9.5	3.7	60	0.92	0.32	8.2
06-Feb							
07-Feb							
08-Feb	23.7	24.0	12.6	47	0.53	0.21	5.6
09-Feb							
10-Feb	26.4	25.6	14.7	44	0.26	0.20	5.2
11-Feb							
12-Feb	17.7	18.5	9.6	46	0.26		8.6
13-Feb							
14-Feb							
15-Feb	14.4	12.6	2.7	81	0.07	0.05	8.0
16-Feb							
17-Feb	23.1	24.6	5.3	77	0.25	0.23	8.1
18-Feb							
19-Feb	16.6	20.8	6.1	63	0.17	0.13	16.8
20-Feb							
21-Feb							
22-Feb	24.6	23.8	0.0	100	0.44	0.11	
23-Feb							
24-Feb	24.4	22.6	0.6	98	0.24	0.15	14.9
25-Feb							
26-Feb	19.7	4.0	0.0	100	0.22		11.50
27-Feb							
28-Feb							
29-Feb	31.4	21.3	3.6	89	0.24	0.21	7.9

NITROGEN DATA : ACCLIMATED SYSTEM

Date (DD-MM)	AMMONIA-N				NITRATE-N		
	PRI	PRI	SEC	%	PRI	PRI	SEC
	INF	EFF	EFF	Remov	INF	EFF	EFF
	mg/L	mg/L	mg/L		mg/L	mg/L	mg/L
01-Mar							
02-Mar	17.1	20.0	1.0	94	0.20	0.15	14.4
03-Mar							
04-Mar	7.7	6.8	0.4	95	1.32	0.90	6.9
05-Mar							
06-Mar							
07-Mar							
08-Mar							
09-Mar	22.6	20.4	0.9	96	0.19	0.14	10.2
10-Mar							
11-Mar	21.5	21.2	2.4	89	0.20	0.15	12.6
12-Mar							
13-Mar							
14-Mar							
15-Mar							
16-Mar	23.8	24.2	4.4	81	0.28	0.22	9.4
17-Mar							
18-Mar							
19-Mar							
20-Mar							
21-Mar	32.8	33.8	14.8	55	0.20	0.11	7.7
22-Mar							
23-Mar					0.00	0.00	2.9
24-Mar							
25-Mar	12.3	13.7	4.7	61	0.10	1.41	8.8
26-Mar							
27-Mar							
28-Mar							
29-Mar							
30-Mar	27.5	26.6	6.4	77	0.17	0.00	
31-Mar							

AVERAGE AND ST.DEVIATION FOR THE SPIKE PERIOD

AVERAGE	19.7	18.6	4.8	76	0.71	0.67	9.1
DEVIATION	7.4	7.6	4.5	19	1.59	1.70	3.4

TOTAL SUSPENDED SOLIDS (mg/L) - UNACCLIMATED SYSTEM

DATE (DD-MM)	PRI INF	PRI EFF	SEC EFF	MIX LIQ	SEC WAS	★	
						PRI SLU	% Remov
01-Feb	276	144	23	3100	7950		92
02-Feb							
03-Feb							
04-Feb	156	84	5	1800	5210		97
05-Feb	232	96	8	1700	5100	0.6	97
06-Feb							
07-Feb	228	104	12	1590	5720	0.3	95
08-Feb	188	188	6	1710	5760	0.7	97
09-Feb							
10-Feb	248	260	5	1920	6810		98
11-Feb	184	116	6	1820	5830	0.9	97
12-Feb	192	104	0	1960	6440	0.9	100
13-Feb	276	136	3	2010	6740	0.6	99
14-Feb							
15-Feb							
16-Feb	176	136	1	2770	6690	1.8	99
17-Feb	264	124	7	1940	4270	0.7	97
18-Feb	348	128	6	2110	6400	1.4	98
19-Feb	292	200	5	1840	5840	0.8	98
20-Feb	148	120	26	920	6480	1.8	82
21-Feb							
22-Feb	248	264	5	1890	5980	1.8	98
23-Feb	244	72	1	1760	6290	1.4	100
24-Feb	216	108	0	1860	6290	2.5	100
25-Feb	216	212	8	2200	6210	4.0	96
26-Feb	230	290	7	1960	4610	3.7	97
27-Feb	204	136	2	1890	6230	1.5	99
28-Feb	180	124	5	2170	6530	0.8	97
29-Feb	236	140	8	1870	9800	0.5	97

* Percent Total Solids

TOTAL SUSPENDED SOLIDS (mg/L) - UNACCLIMATED SYSTEM

DATE (DD-MM)	PRI INF	PRI EFF	SEC EFF	MIX LIQ	SEC WAS	* PRI % SLU Remov	
01-Mar							
02-Mar	292	112	5	1820	5650	0.5	98
03-Mar	504	276	11	1950	5630	0.3	98
04-Mar	132	104	4	1820	5950	0.4	97
05-Mar	80	76	2	1810	6460	0.3	97
06-Mar	140	108	7	2300	5440		95
07-Mar	148	112	3	2030	6120	0.3	98
08-Mar	212	144	5	2000	6410	0.5	98
09-Mar	220	132	8	2020	8770	0.5	96
10-Mar	236	192	6	1980	5900	0.4	97
11-Mar							
12-Mar	160	24	2	2040	6460	0.6	99
13-Mar	180	128	6	1930	6430		97
14-Mar	52	20	1	1810	4970	1.2	98
15-Mar	208	256	7	1870	5060	2.5	97
16-Mar	272	148	22	2110	5230		92
17-Mar	212	236	5	1860	6000	1.1	98
18-Mar	240	184	16	1690	6250	0.2	93
19-Mar	428	188	19	1920	7810	0.9	96
20-Mar	240	100	4	1780	6100	5.1	98
21-Mar	252	176	5	1870	6030		98
22-Mar	268	124	0	2120	7310	1.3	100
23-Mar	224	224	3	2710	5450	0.4	99
24-Mar	208	108	3	2370	5280	0.4	99
25-Mar							
26-Mar	156	180	3	1670	7770	1.0	98
27-Mar	160	64	5	1830	7090		97
28-Mar	280	132	5	2130	7750		98
29-Mar							
30-Mar	192	176	8	1960	7140		96
31-Mar	240	142	4	2270	7930		98

AVERAGE AND ST. DEVIATION FOR THE SPIKE PERIOD

AVERAGE	223	146	6	1969	6318	1.2	97
DEVIATION	74	61	6	317	1035	1.1	3

* Percent Total Solids

COD/SCOD DATA - UNACCLIMATED SYSTEM

Date (DD-MM)	TOTAL COD				SOLUBLE COD			
	PRI	PRI	SEC	%	PRI	PRI	SEC	%
	INF	EFF	EFF	Remov	INF	EFF	EFF	Remov
	mg/L	mg/L	mg/L		mg/L	mg/L	mg/L	
01-Feb	247	245	51	79	62	67	34	46
02-Feb								
03-Feb	247	236	36	86	67	68	43	36
04-Feb								
05-Feb	636	176	46	93	89	185	43	52
06-Feb								
07-Feb								
08-Feb	221		49	78	206	208	50	76
09-Feb								
10-Feb	1180	553	76	94	452	238	43	90
11-Feb								
12-Feb	874	563	181	79	308	331	176	43
13-Feb								
14-Feb								
15-Feb	360	327	93	74	80	65	35	56
16-Feb								
17-Feb	587	499	108	82	405	198	174	57
18-Feb								
19-Feb	524	339	100	81	189	136	47	75
20-Feb								
21-Feb								
22-Feb	532	554	71	87	228	217	48	79
23-Feb								
24-Feb	610	504	108	82				
25-Feb								
26-Feb	710	683	142	80	268	247	63	76
27-Feb								
28-Feb								
29-Feb	659	495	128	81				

COD/SCOD DATA - UNACCLIMATED SYSTEM

Date (DD-MM)	TOTAL COD				SOLUBLE COD			
	PRI	PRI	SEC	%	PRI	PRI	SEC	%
	INF	EFF	EFF	Remov	INF	EFF	EFF	Remov
	mg/L	mg/L	mg/L		mg/L	mg/L	mg/L	
01-Mar								
02-Mar	507	464	169	67	149	167	78	48
03-Mar								
04-Mar	252	239	53	79	86	86	0	100
05-Mar								
06-Mar								
07-Mar								
08-Mar								
09-Mar	419	444	39	91	290	300	0	100
10-Mar								
11-Mar	615	589	126	80	201	289	55	73
12-Mar								
13-Mar								
14-Mar					81	103	0	100
15-Mar								
16-Mar		525	0		513	416	0	100
17-Mar								
18-Mar								
19-Mar								
20-Mar								
21-Mar	662	586	84	87	215	188	92	57
22-Mar								
23-Mar	587	579	98	83	219	191	60	73
24-Mar								
25-Mar	218	562	89	59	121	139	68	44
26-Mar								
27-Mar								
28-Mar								
29-Mar								
30-Mar	572	577	107	81				
31-Mar								

AVERAGE AND ST. DEVIATION FOR THE SPIKE PERIOD

AVERAGE	534	464	89	81	211	192	55	69
DEVIATION	230	141	44	8	128	92	47	21

NITROGEN DATA : UNACCLIMATED SYSTEM

Date (DD-MM)	AMMONIA-N				NITRATE-N		
	PRI	PRI	SEC	%	PRI	PRI	SEC
	INF	EFF	EFF	Remov	INF	EFF	EFF
	mg/L	mg/L	mg/L		mg/L	mg/L	mg/L
01-Feb	4.8	5.4	0.2	97	1.81	7.49	9.6
02-Feb							
03-Feb	12.4	12.8	1.2	90	1.64	0.80	10.1
04-Feb							
05-Feb	9.5	9.4	0.2	98	0.98	0.67	8.1
06-Feb							
07-Feb							
08-Feb	23.1	7.1			0.21	7.96	
09-Feb							
10-Feb	26.1	25.3	12.1	54	0.25	0.20	5.8
11-Feb							
12-Feb	15.7	18.2	5.7	64	2.87	0.12	8.7
13-Feb							
14-Feb							
15-Feb	14.6	13.2	0.4	98	0.05	0.05	10.3
16-Feb							
17-Feb	23.6	24.8	4.7	80	0.24	0.17	7.6
18-Feb							
19-Feb	16.9	20.1	6.0	64	0.33	0.16	12.8
20-Feb							
21-Feb							
22-Feb	23.8	23.8	4.7	80	0.14	0.04	17.0
23-Feb							
24-Feb	25.9	24.4	2.5	90	0.52	0.26	11.2
25-Feb							
26-Feb	20.1	17.9	0.8	96	0.15	0.02	13.6
27-Feb							
28-Feb							
29-Feb	31.2	21.9	3.6	88	0.21	0.41	9.1

NITROGEN DATA : UNACCLIMATED SYSTEM

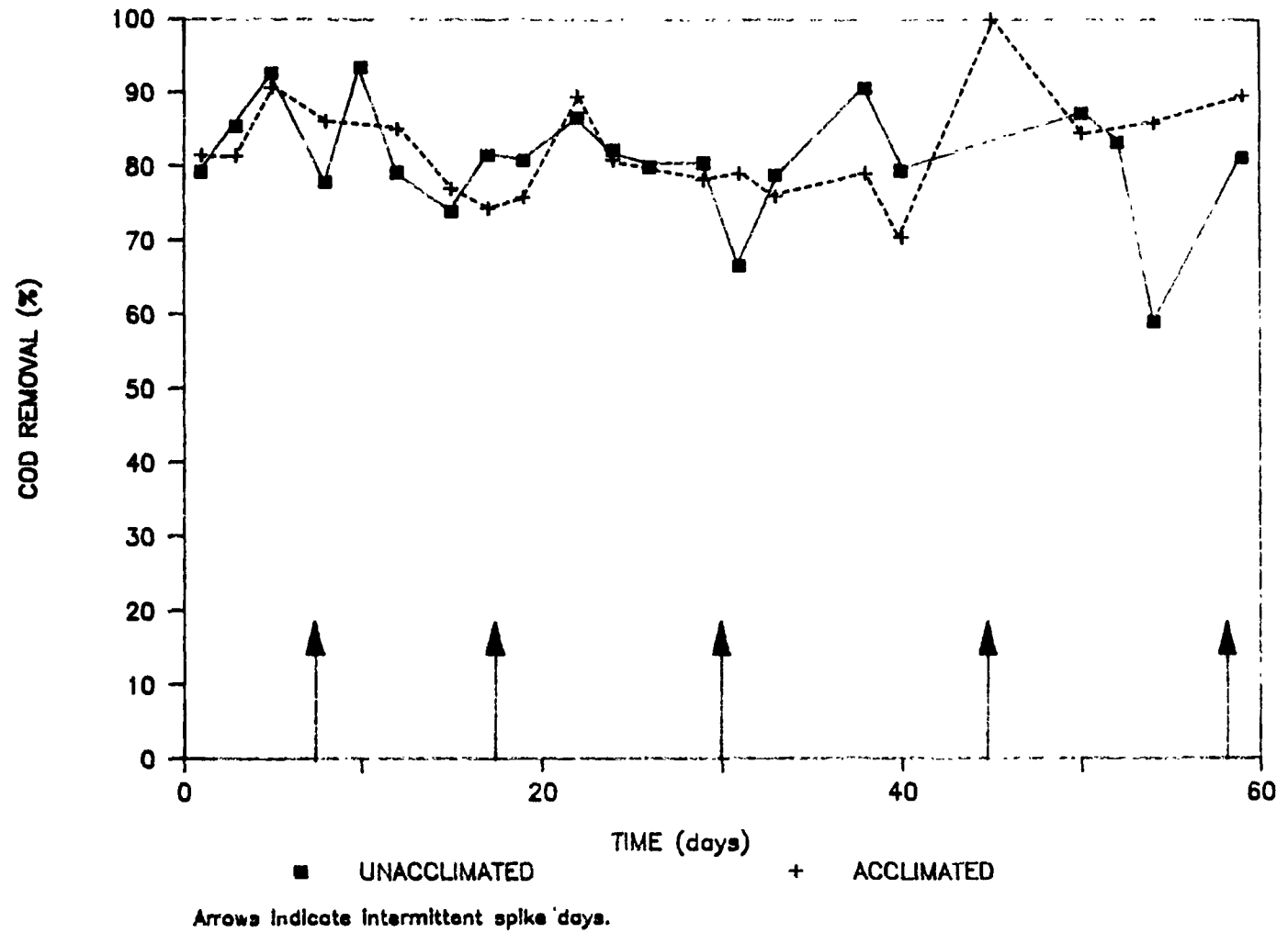
Date (DD-MM)	AMMONIA-N				NITRATE-N		
	PRI	PRI	SEC	%	PRI	PRI	SEC
	INF	EFF	EFF	Remov	INF	EFF	EFF
	mg/L	mg/L	mg/L		mg/L	mg/L	mg/L
01-Mar							
02-Mar	18.1	19.3	5.0	73	0.26	0.19	9.3
03-Mar							
04-Mar	8.3	7.1	0.2	98	1.30	0.62	6.8
05-Mar							
06-Mar							
07-Mar							
08-Mar							
09-Mar	22.4	20.2	0.9	96	0.13	0.13	10.3
10-Mar							
11-Mar	22.4	21.2	1.1	95	0.18	0.16	13.9
12-Mar							
13-Mar							
14-Mar							
15-Mar							
16-Mar	23.0	26.4	1.5	93	0.22	0.22	12.5
17-Mar							
18-Mar							
19-Mar							
20-Mar							
21-Mar	32.1	36.8	6.5	80	0.16	0.14	13.7
22-Mar							
23-Mar	28.4	32.4	16.8	41	0.09	0.10	4.9
24-Mar							
25-Mar	9.4	14.3	5.0	47	0.00	0.00	7.6
26-Mar							
27-Mar							
28-Mar							
29-Mar							
30-Mar							
31-Mar							

AVERAGE AND ST. DEVIATION FOR THE SPIKE PERIOD

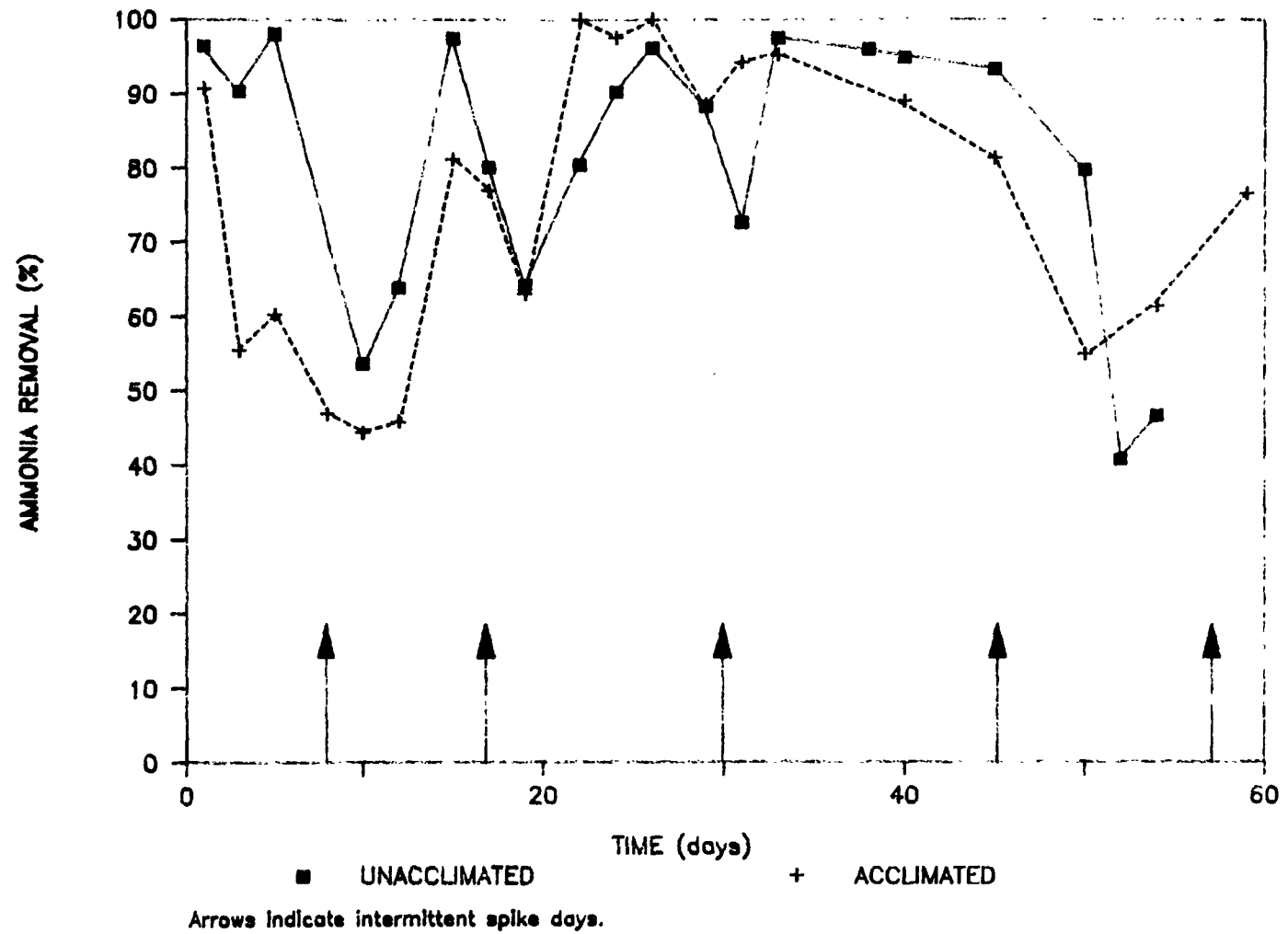
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AVERAGE	20	19	3.9	81	0.56	0.95	10
DEVIATION	7	8	4.2	18	0.73	2.21	3

EFFECT OF RCRA TOXICS ON COD REMOVAL



EFFECT OF RCRA TOXICS ON NITRIFICATION



CERCLA PILOT STUDY

TOTAL SUSPENDED SOLIDS (mg/L) - ACCLIMATED SYSTEM

DATE (DD-MM)	PRI INF	PRI EFF	SEC EFF	MIX LIQ	SEC WAS	PRI* SLU	% Remov
01-Jun	272	80	1	4130	10450	2.6	100
02-Jun	352	68	15	3390	13040	2.7	96
03-Jun	352	68	15	3390	13040	2.7	96
04-Jun	278	106	4	3180	6250	2.0	99
05-Jun	312	80	9	2980	11340	1.3	97
06-Jun	364	124	8	2840	11670	2.2	98
07-Jun	200	44	4		5500	1.2	98
08-Jun	336	100	6	5380			98
09-Jun	408	112	8	3010	11270	1.5	98
10-Jun							
11-Jun							
12-Jun							
13-Jun	287	95	12	2099	11199	3.5	96
14-Jun	483	243	8	3463	11483	2.7	98
15-Jun	166	74	7	2012	12162	2.9	96
16-Jun	390	220	18	3580	11160		95
17-Jun	452	140	12	3328	10950	4.0	97
18-Jun	312	108	4	2900	11480	2.8	99
19-Jun							
20-Jun	420	108	8	3510	11650	2.2	98
21-Jun	443	95	8	2803	11733	3.6	98
22-Jun	322	68	6	3132	10972	3.7	98
23-Jun	427	107	10	3325	11265	3.6	98
24-Jun	352	140	11	3030	8810	2.8	97
25-Jun	338	94	12	3122	8122	3.3	96
26-Jun	341	61	12	1531	10601	2.2	96
27-Jun	312	100	16	2040	11220	2.5	95
28-Jun							
29-Jun	285	89	15	2945	10565	3.3	95
30-Jun	382	58	8	1722	10252	3.7	98

* Percent Total Solids

TOTAL SUSPENDED SOLIDS (mg/L) - ACCLIMATED SYSTEM

DATE (DD-MM)	PRI INF	PRI EFF	SEC EFF	MIX LIQ	SEC WAS	* PRI SLU	% Remov
01-Jul	255	107	8	3059	9899		97
02-Jul	287	99	12	2873	9823	3.1	96
03-Jul	355	75	6	2689	9409		98
04-Jul	216	84	7	2770	9160	2.7	97
05-Jul	268	84	13	2700	8580	3.0	95
06-Jul	326	74	7	2392	8952	0.9	98
07-Jul	360	90	10	3520	9760	2.0	97
08-Jul	438	94	8	2742	10742	3.0	98
09-Jul	263	91	10	3053	11463	1.4	96
10-Jul	296	104	10	2830	10160	2.3	97
11-Jul	278	62	4	2838	14178	1.7	99
12-Jul	285	113	11	3281	10701	2.8	96
13-Jul	452	152	16	1734	5764	6.0	96
14-Jul	116	112	20	2230	10670	2.5	83
15-Jul	183	75	8	3123	10073	1.3	96
16-Jul	236	108	11	2960	9520	3.2	95
17-Jul	207	81	14	3221	9981	3.3	93
18-Jul	273	101	12		11481		96
19-Jul	352	108	14	3120	7080		96
20-Jul	304	124	11	2780	9540		96
21-Jul	216	76	9	2880	10020	3.1	96
22-Jul	247	139	9	2779	9979	2.5	96
23-Jul	236	100	16	3344	9664	2.6	93
24-Jul	348	104	17	2960	9200	2.4	95
25-Jul	318	114	4	3462		3.3	99
26-Jul	487	127	14	4339	10999	2.2	97
27-Jul	241	125	32	2751	11121		87
28-Jul	226	130	17	3742	11882	3.2	92
29-Jul	303	127	13	2129	9589	1.2	96
30-Jul	217	181	10	2821	9761	2.3	95
31-Jul	195	147	12	2875	9695	1.7	94

* Percent Total Solids

TOTAL SUSPENDED SOLIDS (mg/L) - ACCLIMATED SYSTEM

DATE (DD-MM)	PRI INF	PRI EFF	SEC EFF	MIX LIQ	SEC WAS	PRI [*] SLU	% Remov
01-Aug	195	147	12	2875	9695	2.7	94
02-Aug	212	88	13	2380	8880	0.8	94
03-Aug	340	108	13	2780	9440	1.5	96
04-Aug	290	126	11	3418	9298	2.6	96
05-Aug	292	128	14	3530	9850	2.9	95
06-Aug	262	78	15	2962	9322	0.5	94
07-Aug	325	125	16	2881	9161	2.6	95
08-Aug	266	162	10	2772	8502	2.9	96
09-Aug	260	92	11	2880	10640	1.8	96
10-Aug	209	165	12	2571	9361	2.9	94
11-Aug	226	98	12	3458	9098	2.2	95
12-Aug	252	132	18	2490	8180	6.1	93
13-Aug	140	96	7	2880	10570	6.6	95
14-Aug	192	104	15	2764	9924	3.2	92
15-Aug	268	156	14	4340	12660	1.7	95
16-Aug	184	100	35	2820	11560	3.2	81
17-Aug	176	92	13	3960	11660	2.9	93
18-Aug	208	124	11	3630	11060	2.9	95
19-Aug	212	104	10	3430	10090	1.7	95
20-Aug	160	80	12	2510	8720	2.1	92
21-Aug	212	112	15	2720	8950	2.3	93
22-Aug	228	120	21	2900	11100	2.6	91
23-Aug	308	124	20	2550	9170	0.7	94
24-Aug	212	104	13	3030	12940	1.3	94
25-Aug	228	168	17	2400	9910	1.0	93
26-Aug	228	108	12	2720		1.6	95
27-Aug	308	128	15	3160	11720		95
28-Aug	184	76	10	2550	11320		95
29-Aug	256	152	6	2510	9080		98
30-Aug							
31-Aug							
AVERAGE	285	109	12	2972	10152	2.6	95
DEVIATION	81	33	5	585	1584	1.1	3

* Percent Total Solids

COD/SCOD DATA - ACCLIMATED SYSTEM

Date (MM-DD)	TOTAL COD				SOLUBLE COD			
	PRI	PRI	SEC	%	PRI	PRI	SEC	%
	INF	EFF	EFF	Remov	INF	EFF	EFF	Remov
	mg/L	mg/L	mg/L		mg/L	mg/L	mg/L	
01-Jun								
02-Jun								
03-Jun	394	535	121	69	326	327	113	65
04-Jun								
05-Jun								
06-Jun	742	537	114	85	307	290	54	82
07-Jun								
08-Jun	802	584			326	343		
09-Jun								
10-Jun	782	647	134	83	337	369	76	77
11-Jun								
12-Jun								
13-Jun	905	536	75	92	198	211	44	78
14-Jun								
15-Jun	745	547	80	89	322	217	69	79
16-Jun								
17-Jun	594	645	100	83	270	259	72	73
18-Jun								
19-Jun								
20-Jun	677	461	88	87	326	303	65	80
21-Jun								
22-Jun	711	386	73	90	300	284	78	74
23-Jun								
24-Jun	765	375	80	90	386	390	106	73
25-Jun								
26-Jun								
27-Jun	461	605	89	81	253	233	70	72
28-Jun								
29-Jun	696	492	85	88	273	291	76	72
30-Jun								

COD/SCOD DATA - ACCLIMATED SYSTEM

Date (MM-DD)	TOTAL COD				SOLUBLE COD			
	PRI	PRI	SEC	%	PRI	PRI	SEC	%
	INF	EFF	EFF	Remov	INF	EFF	EFF	Remov
	mg/L	mg/L	mg/L		mg/L	mg/L	mg/L	
01-Jul	702	469	90	87	266	274	76	71
02-Jul								
03-Jul								
04-Jul	486	346	70	86	133	81	47	65
05-Jul								
06-Jul	770	596	96	88	320	337	75	77
07-Jul								
08-Jul	769	634	87	89	308	314	76	75
09-Jul								
10-Jul								
11-Jul	471	364	50	89	173	177	43	75
12-Jul								
13-Jul	659	385	58	91	327	379	61	81
14-Jul								
15-Jul	547	480	52	91	327	317	78	76
16-Jul								
17-Jul								
18-Jul	692	361	89	87	231	180	73	68
19-Jul								
20-Jul	350	210	55	84	121	129	51	58
21-Jul								
22-Jul	774	543	72	91	276	270	51	82
23-Jul								
24-Jul								
25-Jul	805	462	94	88	335	314	72	79
26-Jul								
27-Jul	814	532	90	89	264	283	68	74
28-Jul								
29-Jul	585	402	61	90	283	276	64	77
30-Jul								
31-Jul								

COD/SCOD DATA - ACCLIMATED SYSTEM

Date (MM-DD)	TOTAL COD				SOLUBLE COD			
	PRI	PRI	SEC	%	PRI	PRI	SEC	%
	INF	EFF	EFF	Remov	INF	EFF	EFF	Remov
	mg/L	mg/L	mg/L		mg/L	mg/L	mg/L	
01-Aug	576	404	74	87	273	225	40	85
02-Aug								
03-Aug	907	463	62	93	312	283	60	81
04-Aug								
05-Aug	506	525	67	87	255	285	51	80
06-Aug								
07-Aug								
08-Aug	695	756	66	91	299	311	47	84
09-Aug								
10-Aug	742	579	77	90	329	289	68	79
11-Aug								
12-Aug	575	424	69	88	285	305	56	80
13-Aug								
14-Aug								
15-Aug	600	478	68	89	278	284	52	81
16-Aug								
17-Aug	557	438	60	89	300	286	60	80
18-Aug								
19-Aug	569		85	85	269	251	63	77
20-Aug								
21-Aug								
22-Aug	591	410	72	88				
23-Aug								
24-Aug	975	454	84	91	276	368	69	75
25-Aug								
26-Aug	836	509	92	89	465	379	72	85
27-Aug								
28-Aug								
29-Aug	999	742	78	92	202	165	46	77
30-Aug								
31-Aug	720	493	69	90	315	283	65	79
AVERAGE	681	495	80	88	285	278	65	76
DEVIATION	149	110	18	4	62	68	15	6

NITROGEN DATA (mg/L) - ACCLIMATED SYSTEM

Date (DD-MM)	AMMONIA-N				NITRATE-N		
	PRI	PRI	SEC	%	PRI	PRI	SEC
	INF	EFF	EFF	Remov	INF	EFF	EFF
	mg/L	mg/L	mg/L		mg/L	mg/L	mg/L
01-Jun							
02-Jun							
03-Jun	25	30	0.6	98	0.00	0.00	22
04-Jun							
05-Jun							
06-Jun	32	29	3.6	89	0.29	0.61	11
07-Jun							
08-Jun							
09-Jun							
10-Jun	21	22	0.5	97	0.21	0.23	6
11-Jun							
12-Jun							
13-Jun	27	28	4.4	84	0.24	0.19	6
14-Jun							
15-Jun	33	32	11.9	64	0.12	0.09	5
16-Jun							
17-Jun	23	24	0.6	98	0.00	0.00	10
18-Jun							
19-Jun							
20-Jun	25	30	14.3	42	0.00	0.00	8
21-Jun							
22-Jun	40	35	6.8	83	0.22	0.17	12
23-Jun							
24-Jun	36	36	5.1	86	0.18	0.17	16
25-Jun							
26-Jun							
27-Jun	31	30	1.9	94	0.23	0.24	20
28-Jun							
29-Jun	31	24	0.7	98	0.28	0.24	17
30-Jun							

NITROGEN DATA (mg/L) - ACCLIMATED SYSTEM

Date (DD-MM)	AMMONIA-N				NITRATE-N		
	PRI	PRI	SEC	%	PRI	PRI	SEC
	INF	EFF	EFF	Remov	INF	EFF	EFF
	mg/L	mg/L	mg/L		mg/L	mg/L	mg/L
01-Jul	18	21	0.5	97	0.21	0.14	12
02-Jul							
03-Jul							
04-Jul	13	14	1.9	85	0.10	0.96	14
05-Jul							
06-Jul	30	27	5.8	81	0.22	0.23	6
07-Jul							
08-Jul	22	22	9.7	55	0.21	0.22	4
09-Jul							
10-Jul							
11-Jul	32	31	9.5	70	0.11	0.11	11
12-Jul							
13-Jul	40	38	11.3	72	0.21	0.18	9
14-Jul							
15-Jul	25	26	1.3	95	0.10	0.09	11
16-Jul							
17-Jul							
18-Jul	23	19	0.7	97	0.10	0.00	15
19-Jul							
20-Jul	9	9	0.3	96	0.00	0.00	10
21-Jul							
22-Jul	27	28	6.0	78	0.00	0.11	5
23-Jul							
24-Jul							
25-Jul	40	41	10.0	75	0.10	0.10	22
26-Jul							
27-Jul	48	40	11.2	76	0.09	0.00	9
28-Jul							
29-Jul	28	27	0.4	98	0.00	0.00	11
30-Jul							
31-Jul							

NITROGEN DATA (mg/L) - ACCLIMATED SYSTEM

Date (DD-MM)	AMMONIA-N				NITRATE-N		
	PRI	PRI	SEC	%	PRI	PRI	SEC
	INF	EFF	EFF	Remov	INF	EFF	EFF
	mg/L	mg/L	mg/L		mg/L	mg/L	mg/L
01-Aug	28	29	1.6	94	0.09	0.00	23
02-Aug							
03-Aug	35	33	1.4	96	0.11	0.00	19
04-Aug							
05-Aug	24	25	1.1	95	0.00	0.00	15
06-Aug							
07-Aug							
08-Aug	25	33	0.6	98	0.10	0.10	22
09-Aug							
10-Aug	33	30	0.6	98	0.11	0.00	15
11-Aug							
12-Aug	25	25	1.5	94	0.10	0.00	12
13-Aug							
14-Aug							
15-Aug	23	24	0.6	98	0.00	0.11	20
16-Aug							
17-Aug	26	27	0.5	98	0.11	0.00	17
18-Aug							
19-Aug	30		0.6	98	0.00		15
20-Aug							
21-Aug							
22-Aug	28	28	1.8	93			
23-Aug							
24-Aug	26	28	1.1	96	0.10	0.30	17
25-Aug							
26-Aug							
27-Aug							
28-Aug							
29-Aug							
30-Aug							
31-Aug							
AVERAGE	28	28	3.7	88	0.12	0.14	13
DEVIATION	8	7	4.1	14	0.09	0.19	5

TOTAL SUSPENDED SOLIDS (mg/L) - UNACCLIMATED SYSTEM

DATE (MM-DD)	PRI INF	PRI EFF	SEC EFF	MIX LIQ	SEC WAS	PRI* SLU	% Remov
01-Jun	196	108	19	3900	10020	2.4	90
02-Jun	344	72	4	5520	10710	2.0	99
03-Jun							
04-Jun	316	96	8	3830	9290	1.6	97
05-Jun	276	52	9	3740	10820	2.2	97
06-Jun	428	68	6	2820	11590	2.2	99
07-Jun	260	52	5		9920	1.5	98
08-Jun	316	112	7	4030	13790		98
09-Jun	272	116	12	4240	10860	1.9	96
10-Jun							
11-Jun							
12-Jun	642	86	12	4182	11062	2.6	98
13-Jun	223	79	11	3429	11229	2.6	95
14-Jun	440	120	9	4240	9900	2.1	98
15-Jun	241	105	15	4849	12589	2.4	94
16-Jun	530	60	13	5660	11620		98
17-Jun	336	188	24	5070	11080	3.0	93
18-Jun	269	53	22	3471	10881		92
19-Jun							
20-Jun	437	109	17	4221	10881	2.3	96
21-Jun	392	80	13	4394	10514	2.8	97
22-Jun	286	64	12	4082	11102	2.0	96
23-Jun	662	118	9	4012	10712	2.6	99
24-Jun	371	131	12	3599	11449	2.5	97
25-Jun							
26-Jun	414	50	8		10082	2.6	98
27-Jun	347	177	9	3417	9237	2.7	97
28-Jun	401	121	11	1985	10365	2.9	97
29-Jun	279	83	10	1959	10279	3.6	96
30-Jun	334	94	4	1012	11632	1.9	99

* Percent Total Solids

TOTAL SUSPENDED SOLIDS (mg/L) - UNACCLIMATED SYSTEM

DATE (MM-DD)	PRI INF	PRI EFF	SEC EFF	MIX LIQ	SEC WAS	PRI* SLU	% Remov
01-Jul	329	109	4	3621	11571		99
02-Jul	263	71	6	3483	12053	4.3	98
03-Jul	392	132	7	3600	11520		98
04-Jul	234	78	7	3362	11762	6.0	97
05-Jul	272	164	9	3540	14040	8.1	97
06-Jul	224	112	6	3730	11980	0.7	97
07-Jul	243	143	12	2537	6647	5.3	95
08-Jul	322	110	8	4032	13392	7.8	98
09-Jul	295	103	3	3899	13979	3.2	99
10-Jul	325	93			11577	8.6	
11-Jul	300	140	13	3940	9640	6.7	96
12-Jul	293	113	10	3941	11341	3.6	97
13-Jul	332	144	12	3460	10480	2.5	96
14-Jul	258	126	21	3258	7788	5.2	92
15-Jul	197	91	11	2933	12563	0.8	94
16-Jul	288	112	9	3530	12520	4.4	97
17-Jul	193	49	6	4081	11501	3.1	97
18-Jul	199	107	10	4263	9783		95
19-Jul	305	93	10	3501	11301		97
20-Jul	256	92	8	3680	11760		97
21-Jul	132	80	5	3740	11940	4.7	96
22-Jul	254	130	9	3472	11942	4.9	96
23-Jul	248	68	10	3200	11780	3.2	96
24-Jul	253	61	17	4921	9361	4.0	93
25-Jul	338	106	21	3182		3.5	94
26-Jul	294	118		3098	6798	7.7	
27-Jul	224	100	65	4100	9080		71
28-Jul	259	91	102	2919		3.6	61
29-Jul	296	104	60	3350	10480	1.5	80
30-Jul	310	210	12	3538	11398	2.7	96
31-Jul	223	119	10	3305	9975	2.8	96

* Percent Total Solids

TOTAL SUSPENDED SOLIDS (mg/L) - UNACCLIMATED SYSTEM

DATE (MM-DD)	PRI INF	PRI EFF	SEC EFF	MIX LIQ	SEC WAS	PRI* SLU	% Remov
01-Aug	252	112	11	5660		2.3	96
02-Aug	253	105	8	4211		3.3	97
03-Aug	292	132	10	4040	13940	1.5	97
04-Aug	276	128	32	4670	9080	3.1	88
05-Aug	262	142	38	3468	8858	3.5	85
06-Aug	323	75	7	3183	10103	3.0	98
07-Aug	307	167	8	3219	9819	3.1	97
08-Aug	271	227	11	3363	9963	3.5	96
09-Aug	242	134	10	3422	12802	1.7	96
10-Aug	205	133	8	4171	11621	4.0	96
11-Aug	254	86	6	5418	11238	2.1	98
12-Aug	272	140	14	2360	12230	6.2	95
13-Aug	184	72	6	3820	11940	8.8	97
14-Aug	76	68	15	4034	12964	8.7	80
15-Aug	182	122	12	4742	15682	6.8	93
16-Aug	216	76	7	3550	13680	5.8	97
17-Aug	184	84	13	3650	9300	6.9	93
18-Aug	296	124	11	5410	17280	3.9	96
19-Aug	76	64	12	5090	15510	3.7	84
20-Aug							
21-Aug	236	88	20	4580	12760	3.7	92
22-Aug	268	100	19	4660	13900	2.4	93
23-Aug	292	104	6	3670	12040	1.0	98
24-Aug	228	108	13	6150	16440	3.0	94
25-Aug	240	96	59	5720	20930	0.4	75
26-Aug	236	100	10	5290	13040	3.5	96
27-Aug	252	104	13	5670	14040		95
28-Aug	200	76	9	6230	16220		95
29-Aug							
30-Aug							
31-Aug							
AVERAGE	286	105	14	3891	11607	3.6	94
DEVIATION	93	34	15	992	2226	2.0	6

* Percent Total Solids

COD/SCOD DATA - UNACCLIMATED SYSTEM

Date (MM-DD)	TOTAL COD				SOLUBLE COD			
	PRI	PRI	SEC	%	PRI	PRI	SEC	%
	INF	EFF	EFF	Remov	INF	EFF	EFF	Remov
	mg/L	mg/L	mg/L		mg/L	mg/L	mg/L	
01-Jun								
02-Jun								
03-Jun	381	495	107	72	309	302	114	63
04-Jun								
05-Jun								
06-Jun	767	456	97	87	307	245	71	77
07-Jun								
08-Jun	780	548	83	89	351	286	51	85
09-Jun								
10-Jun	950	799	79	92	319	325	61	81
11-Jun								
12-Jun								
13-Jun	859	424	57	93	304	165	96	68
14-Jun								
15-Jun	730	532	86	88				
16-Jun								
17-Jun	415	452	291	30	149	260	104	30
18-Jun								
19-Jun								
20-Jun	751	462	73	90	323	296	56	83
21-Jun								
22-Jun	641	358	64	90	241	268	68	72
23-Jun								
24-Jun	741	395	83	89	401	327	87	78
25-Jun								
26-Jun								
27-Jun	566	395	72	87	290	215	60	79
28-Jun								
29-Jun	629	449	80	87	268	263	66	75
30-Jun								

COD/SCOD DATA - UNACCLIMATED SYSTEM

Date (MM-DD)	TOTAL COD				SOLUBLE COD			
	PRI	PRI	SEC	%	PRI	PRI	SEC	%
	INF	EFF	EFF	Remov	INF	EFF	EFF	Remov
	mg/L	mg/L	mg/L		mg/L	mg/L	mg/L	
01-Jul	679	482	79	88	230	261	61	73
02-Jul								
03-Jul								
04-Jul	766	295	46	94	123	84	31	75
05-Jul								
06-Jul	824	601	68	92	292	340	67	77
07-Jul								
08-Jul	675	551	71	89	216	259	52	76
09-Jul								
10-Jul								
11-Jul	520	370	37	93	124	166	35	72
12-Jul								
13-Jul	442	384	47	89	330	363	52	84
14-Jul								
15-Jul	579	480	45	92	309	303	65	79
16-Jul								
17-Jul								
18-Jul	526	419	55	90	180	176	48	73
19-Jul								
20-Jul	310	258	55	82	118	119	37	69
21-Jul								
22-Jul	680	536	60	91	240	267	85	65
23-Jul								
24-Jul								
25-Jul	769	462	70	91	294	271	56	81
26-Jul								
27-Jul	728	502	180	75	303	260	50	83
28-Jul								
29-Jul	532	415	95	82	253	250	49	81
30-Jul								
31-Jul								

COD/SCOD DATA - UNACCLIMATED SYSTEM

Date (MM-DD)	TOTAL COD				SOLUBLE COD			
	PRI	PRI	SEC	%	PRI	PRI	SEC	%
	INF	EFF	EFF	Remov	INF	EFF	EFF	Remov
	mg/L	mg/L	mg/L		mg/L	mg/L	mg/L	
01-Aug	533	381	63	88	237	218	43	82
02-Aug								
03-Aug	620	444	56	91	247	242	46	81
04-Aug								
05-Aug	646	482	77	88	329	264	51	84
06-Aug								
07-Aug								
08-Aug	804	585	56	93	255	274	39	85
09-Aug								
10-Aug	662	556	59	91	299	268	57	81
11-Aug								
12-Aug	509	416	62	88	226	238	69	69
13-Aug								
14-Aug								
15-Aug	551	462	51	91	272	264	45	83
16-Aug								
17-Aug	498	448	67	87	250	285	53	79
18-Aug								
19-Aug	446	384	59	87	227	225	53	77
20-Aug								
21-Aug								
22-Aug	589	408	86	85				
23-Aug								
24-Aug	679	493	83	88	234	261	62	74
25-Aug								
26-Aug	702	492	59	92	369	397	70	81
27-Aug								
28-Aug								
29-Aug	517	384	72	86	182	160	37	80
30-Aug								
31-Aug	896	692	80	91	246	252	93	62
AVERAGE	638	465	77	87	256	249	64	74
DEVIATION	144	98	42	10	78	71	21	11

NITROGEN DATA (mg/L) - UNACCLIMATED SYSTEM

Date (DD-MM)	AMMONIA-N				NITRATE-N		
	PRI	PRI	SEC	%	PRI	PRI	SEC
	INF	EFF	EFF	Remov	INF	EFF	EFF
	mg/L	mg/L	mg/L		mg/L	mg/L	mg/L
01-Jun							
02-Jun							
03-Jun	27	30	0.5	98	0.00	0.00	27
04-Jun							
05-Jun							
06-Jun	33	31	0.4	99	0.29	0.18	22
07-Jun							
08-Jun	37	34	1.4	96	0.30	0.27	20
09-Jun							
10-Jun	21	22	0.5	98	0.28	0.22	13
11-Jun							
12-Jun							
13-Jun	27	27	0.3	99	0.23	0.19	19
14-Jun							
15-Jun	32	32	0.3	99	0.12	0.00	19
16-Jun							
17-Jun					5.76	0.00	9
18-Jun							
19-Jun							
20-Jun	27	32	0.3	99	0.13	0.00	25
21-Jun							
22-Jun	37	34	0.4	99	0.21	0.17	31
23-Jun							
24-Jun	37	36	0.3	99	0.19	0.17	31
25-Jun							
26-Jun							
27-Jun	28	32	0.6	98	0.25	0.24	35
28-Jun							
29-Jun	32	23	0.3	99	0.29	0.23	17
30-Jun							

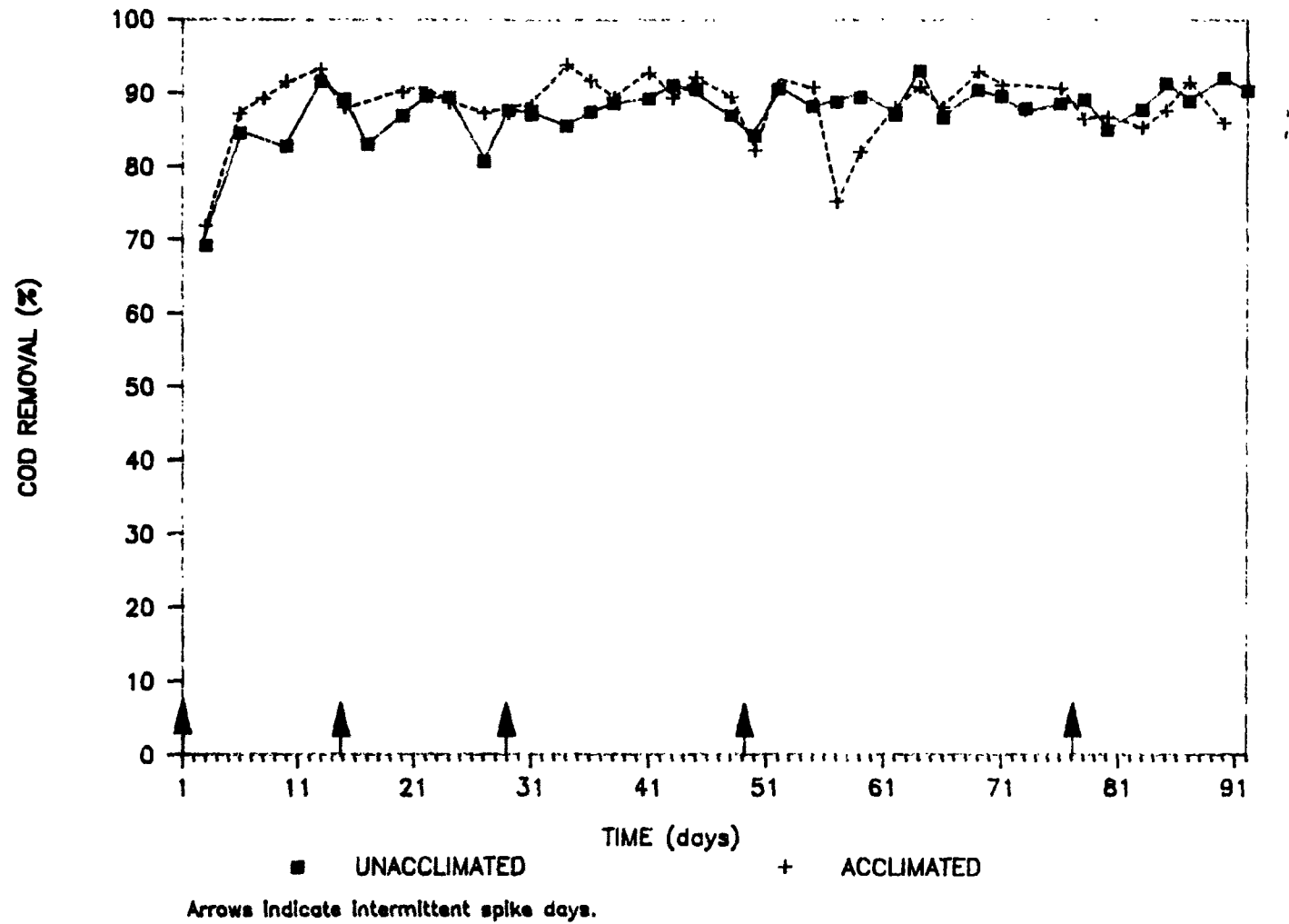
NITROGEN DATA (mg/L) - UNACCLIMATED SYSTEM

Date (DD-MM)	AMMONIA-N				NITRATE-N		
	PRI	PRI	SEC	%	PRI	PRI	SEC
	INF	EFF	EFF	Remov	INF	EFF	EFF
	mg/L	mg/L	mg/L		mg/L	mg/L	mg/L
01-Jul	19	20	0.2	99	0.16	0.14	14
02-Jul							
03-Jul							
04-Jul	14	12	0.5	97	0.16	0.09	17
05-Jul							
06-Jul	30	28	0.6	98	0.26	0.24	14
07-Jul							
08-Jul	21	22	0.5	97	0.21	0.19	13
09-Jul							
10-Jul							
11-Jul	29	32	0.4	99	0.16	0.12	22
12-Jul							
13-Jul	42	36	0.6	99	0.18	0.14	20
14-Jul							
15-Jul	25	25	0.3	99	0.16	0.11	16
16-Jul							
17-Jul							
18-Jul	25	23	0.3	99	0.00	0.00	16
19-Jul							
20-Jul	9	9	0.1	98	0.10	0.00	10
21-Jul							
22-Jul	28	28	4.9	82	0.10	0.00	6
23-Jul							
24-Jul							
25-Jul	40	39	0.8	98	0.15	0.00	27
26-Jul							
27-Jul	47	40	0.6	99	0.11	0.00	19
28-Jul							
29-Jul	27	27	0.4	99	0.09	0.10	11
30-Jul							
31-Jul							

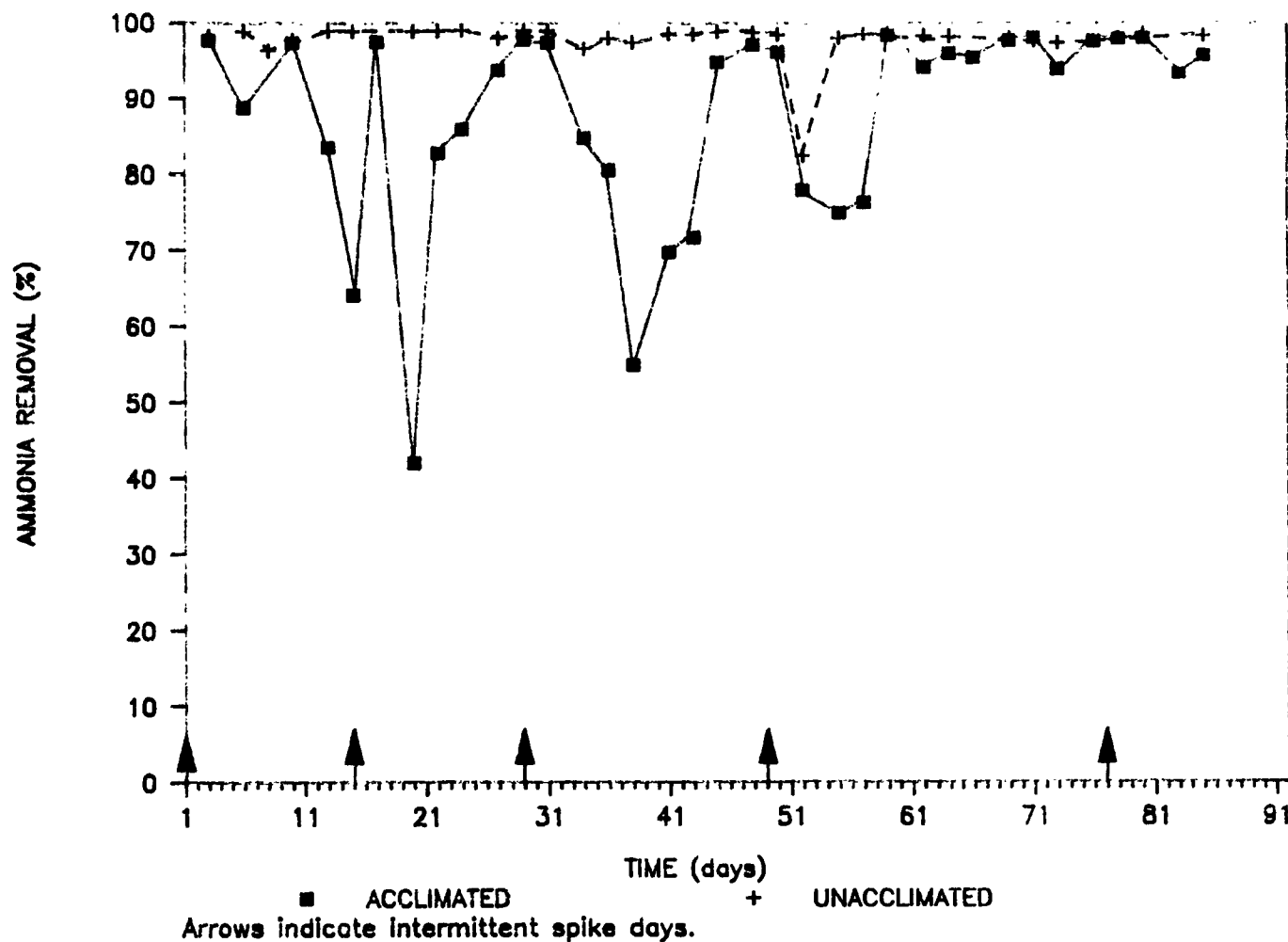
NITROGEN DATA (mg/L) - UNACCLIMATED SYSTEM

Date (DD-MM)	AMMONIA-N				NITRATE-N		
	PRI	PRI	SEC	%	PRI	PRI	SEC
	INF	EFF	EFF	Remov	INF	EFF	EFF
	mg/L	mg/L	mg/L		mg/L	mg/L	mg/L
01-Aug	28	29	0.5	98	0.17	0.10	24
02-Aug							
03-Aug	33	33	0.6	98	0.18	0.11	20
04-Aug							
05-Aug					0.00	0.00	17
06-Aug							
07-Aug							
08-Aug	29	31	0.5	98	0.13	0.12	26
09-Aug							
10-Aug	32	31	0.7	98	0.14	0.00	22
11-Aug							
12-Aug	24	23	0.6	97	0.00	0.00	20
13-Aug							
14-Aug							
15-Aug	22	25	0.5	98	0.10	0.10	26
16-Aug							
17-Aug	25	27	0.5	98	0.14	0.00	14
18-Aug							
19-Aug	29	30	0.4	99	0.10	0.00	19
20-Aug							
21-Aug							
22-Aug							
23-Aug							
24-Aug	25	28	0.4	98	0.11	0.00	20
25-Aug							
26-Aug							
27-Aug							
28-Aug							
29-Aug							
30-Aug							
31-Aug							
AVERAGE	28	28	0.6	98	0.31	0.09	19
DEVIATION	7	6	0.8	3	0.94	0.09	6

EFFECT OF CERCLA TOXICS ON COD REMOVAL



EFFECT OF CERCLA TOXICS ON NITRIFICATION



TOTAL SUSPENDED SOLIDS (mg/L) - UNACCLIMATED SYSTEM

DATE (MM-DD)	PRI INF	PRI EFF	SEC EFF	MIX LIQ	SEC WAS	PRI* SLU	% Remov
01-Jul	329	109	4	3621	11571		99
02-Jul	263	71	6	3483	12053	4.3	98
03-Jul	392	132	7	3600	11520		98
04-Jul	234	78	7	3362	11762	6.0	97
05-Jul	272	164	9	3540	14040	8.1	97
06-Jul	224	112	6	3730	11980	0.7	97
07-Jul	243	143	12	2537	6647	5.3	95
08-Jul	322	110	8	4032	13392	7.8	98
09-Jul	295	103	3	3899	13979	3.2	99
10-Jul	325	93			11577	8.6	
11-Jul	300	140	13	3940	9640	6.7	96
12-Jul	293	113	10	3941	11341	3.6	97
13-Jul	332	144	12	3460	10480	2.5	96
14-Jul	258	126	21	3258	7788	5.2	92
15-Jul	197	91	11	2933	12563	0.8	94
16-Jul	288	112	9	3530	12520	4.4	97
17-Jul	193	49	6	4081	11501	3.1	97
18-Jul	199	107	10	4263	9783		95
19-Jul	305	93	10	3501	11301		97
20-Jul	256	92	8	3680	11760		97
21-Jul	132	80	5	3740	11940	4.7	96
22-Jul	254	130	9	3472	11942	4.9	96
23-Jul	248	68	10	3200	11780	3.2	96
24-Jul	253	61	17	4921	9361	4.0	93
25-Jul	338	106	21	3182		3.5	94
26-Jul	294	118		3098	6798	7.7	
27-Jul	224	100	65	4100	80		71
28-Jul	259	91	102	2919		3.6	61
29-Jul	296	104	60	3350	10480	1.5	80
30-Jul	310	210	12	3538	11398	2.7	96
31-Jul	223	119	10	3305	9975	2.8	96

* Percent Total Solids

TOTAL SUSPENDED SOLIDS (mg/L) - UNACCLIMATED SYSTEM

DATE (MM-DD)	PRI INF	PRI EFF	SEC EFF	MIX LIQ	SEC WAS	PRI [*] SLU	% Remov
01-Aug	252	112	11	5660		2.3	96
02-Aug	253	105	8	4211		3.3	97
03-Aug	292	132	10	4040	13940	1.5	97
04-Aug	276	128	32	4670	9080	3.1	88
05-Aug	262	142	38	3468	8858	3.5	85
06-Aug	323	75	7	3183	10103	3.0	98
07-Aug	307	167	8	3219	9819	3.1	97
08-Aug	271	227	11	3363	9963	3.5	96
09-Aug	242	134	10	3422	12802	1.7	96
10-Aug	205	133	8	4171	11621	4.0	96
11-Aug	254	86	6	5418	11238	2.1	98
12-Aug	272	140	14	2360	12230	6.2	95
13-Aug	184	72	6	3820	11940	8.8	97
14-Aug	76	68	15	4034	12964	8.7	80
15-Aug	182	122	12	4742	15682	6.8	93
16-Aug	216	76	7	3550	13680	5.8	97
17-Aug	184	84	13	3650	9300	6.9	93
18-Aug	296	124	11	5410	17280	3.9	96
19-Aug	76	64	12	5090	15510	3.7	84
20-Aug							
21-Aug	236	88	20	4580	12760	3.7	92
22-Aug	268	100	19	4660	13900	2.4	93
23-Aug	292	104	6	3670	12040	1.0	98
24-Aug	228	108	13	6150	16440	3.0	94
25-Aug	240	96	59	5720	20930	0.4	75
26-Aug	236	100	10	5290	13040	3.5	96
27-Aug	252	104	13	5670	14040		95
28-Aug	200	76	9	6230	16220		95
29-Aug							
30-Aug							
31-Aug							
AVERAGE	286	105	14	3891	11607	3.6	94
DEVIATION	93	34	15	992	2226	2.0	6

* Percent Total Solids

COD/SCOD DATA - UNACCLIMATED SYSTEM

Date (MM-DD)	TOTAL COD				SOLUBLE COD			
	PRI	PRI	SEC	%	PRI	PRI	SEC	%
	INF	EFF	EFF	Remov	INF	EFF	EFF	Remov
	mg/L	mg/L	mg/L		mg/L	mg/L	mg/L	
01-Jun								
02-Jun								
03-Jun	381	495	107	72	309	302	114	63
04-Jun								
05-Jun								
06-Jun	767	456	97	87	307	245	71	77
07-Jun								
08-Jun	780	548	83	89	351	286	51	85
09-Jun								
10-Jun	950	799	79	92	319	325	61	81
11-Jun								
12-Jun								
13-Jun	859	424	57	93	304	165	96	68
14-Jun								
15-Jun	730	532	86	88				
16-Jun								
17-Jun	415	452	291	30	149	260	104	30
18-Jun								
19-Jun								
20-Jun	751	462	73	90	323	296	56	83
21-Jun								
22-Jun	641	358	64	90	241	268	68	72
23-Jun								
24-Jun	741	395	83	89	401	327	87	78
25-Jun								
26-Jun								
27-Jun	566	395	72	87	290	215	60	79
28-Jun								
29-Jun	629	449	80	87	268	263	66	75
30-Jun								

COD/SCOD DATA - UNACCLIMATED SYSTEM

Date (MM-DD)	TOTAL COD				SOLUBLE COD			
	PRI	PRI	SEC	%	PRI	PRI	SEC	%
	INF	EFF	EFF	Remov	INF	EFF	EFF	Remov
	mg/L	mg/L	mg/L		mg/L	mg/L	mg/L	
01-Jul	679	482	79	88	230	261	61	73
02-Jul								
03-Jul								
04-Jul	766	295	46	94	123	84	31	75
05-Jul								
06-Jul	824	601	68	92	292	340	67	77
07-Jul								
08-Jul	675	551	71	89	216	259	52	76
09-Jul								
10-Jul								
11-Jul	520	370	37	93	124	166	35	72
12-Jul								
13-Jul	442	384	47	89	330	363	52	84
14-Jul								
15-Jul	579	480	45	92	309	303	65	79
16-Jul								
17-Jul								
18-Jul	526	419	55	90	180	176	48	73
19-Jul								
20-Jul	310	258	55	82	118	119	37	69
21-Jul								
22-Jul	680	536	60	91	240	267	85	65
23-Jul								
24-Jul								
25-Jul	769	462	70	91	294	271	56	81
26-Jul								
27-Jul	728	502	180	75	303	260	50	83
28-Jul								
29-Jul	532	415	95	82	253	250	49	81
30-Jul								
31-Jul								

COD/SCOD DATA - UNACCLIMATED SYSTEM

Date (MM-DD)	TOTAL COD				SOLUBLE COD			
	PRI	PRI	SEC	%	PRI	PRI	SEC	%
	INF	EFF	EFF	Remov	INF	EFF	EFF	Remov
	mg/L	mg/L	mg/L		mg/L	mg/L	mg/L	
01-Aug	533	381	63	88	237	218	43	82
02-Aug								
03-Aug	620	444	56	91	247	242	46	81
04-Aug								
05-Aug	646	482	77	88	329	264	51	84
06-Aug								
07-Aug								
08-Aug	804	585	56	93	255	274	39	85
09-Aug								
10-Aug	662	556	59	91	299	268	57	81
11-Aug								
12-Aug	509	416	62	88	226	238	69	69
13-Aug								
14-Aug								
15-Aug	551	462	51	91	272	264	45	83
16-Aug								
17-Aug	498	448	67	87	250	285	53	79
18-Aug								
19-Aug	446	384	59	87	227	225	53	77
20-Aug								
21-Aug								
22-Aug	589	408	86	85				
23-Aug								
24-Aug	679	493	83	88	234	261	62	74
25-Aug								
26-Aug	702	492	59	92	369	397	70	81
27-Aug								
28-Aug								
29-Aug	517	384	72	86	182	160	37	80
30-Aug								
31-Aug	896	692	80	91	246	252	93	62
AVERAGE	638	465	77	87	256	249	64	74
DEVIATION	144	98	42	10	78	71	21	11

NITROGEN DATA (mg/L) - UNACCLIMATED SYSTEM

Date (DD-MM)	AMMONIA-N				NITRATE-N		
	PRI	PRI	SEC	%	PRI	PRI	SEC
	INF	EFF	EFF	Remov	INF	EFF	EFF
	mg/L	mg/L	mg/L		mg/L	mg/L	mg/L
01-Jun							
02-Jun							
03-Jun	27	30	0.5	98	0.00	0.00	27
04-Jun							
05-Jun							
06-Jun	33	31	0.4	99	0.29	0.18	22
07-Jun							
08-Jun	37	34	1.4	96	0.30	0.27	20
09-Jun							
10-Jun	21	22	0.5	98	0.28	0.22	13
11-Jun							
12-Jun							
13-Jun	27	27	0.3	99	0.23	0.19	19
14-Jun							
15-Jun	32	32	0.3	99	0.12	0.00	19
16-Jun							
17-Jun					5.76	0.00	9
18-Jun							
19-Jun							
20-Jun	27	32	0.3	99	0.13	0.00	25
21-Jun							
22-Jun	37	34	0.4	99	0.21	0.17	31
23-Jun							
24-Jun	37	36	0.3	99	0.19	0.17	31
25-Jun							
26-Jun							
27-Jun	28	32	0.6	98	0.25	0.24	35
28-Jun							
29-Jun	32	23	0.3	99	0.29	0.23	17
30-Jun							

NITROGEN DATA (mg/L) - UNACCLIMATED SYSTEM

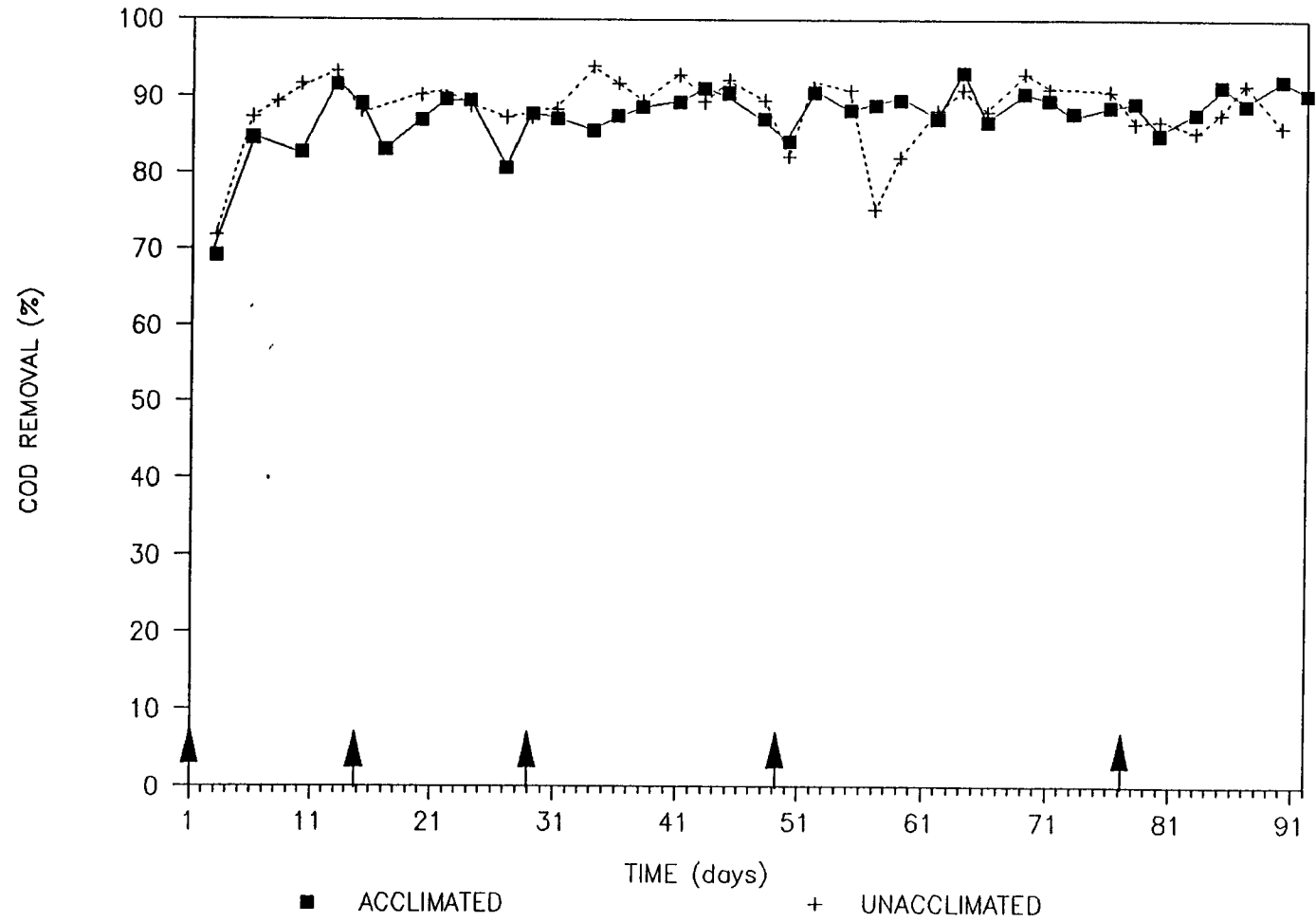
Date (DD-MM)	AMMONIA-N				NITRATE-N		
	PRI	PRI	SEC	%	PRI	PRI	SEC
	INF	EFF	EFF	Remov	INF	EFF	EFF
	mg/L	mg/L	mg/L		mg/L	mg/L	mg/L
01-Jul	19	20	0.2	99	0.16	0.14	14
02-Jul							
03-Jul							
04-Jul	14	12	0.5	97	0.16	0.09	17
05-Jul							
06-Jul	30	28	0.6	98	0.26	0.24	14
07-Jul							
08-Jul	21	22	0.5	97	0.21	0.19	13
09-Jul							
10-Jul							
11-Jul	29	32	0.4	99	0.16	0.12	22
12-Jul							
13-Jul	42	36	0.6	99	0.18	0.14	20
14-Jul							
15-Jul	25	25	0.3	99	0.16	0.11	16
16-Jul							
17-Jul							
18-Jul	25	23	0.3	99	0.00	0.00	16
19-Jul							
20-Jul	9	9	0.1	98	0.10	0.00	10
21-Jul							
22-Jul	28	28	4.9	82	0.10	0.00	6
23-Jul							
24-Jul							
25-Jul	40	39	0.8	98	0.15	0.00	27
26-Jul							
27-Jul	47	40	0.6	99	0.11	0.00	19
28-Jul							
29-Jul	27	27	0.4	99	0.09	0.10	11
30-Jul							
31-Jul							

NITROGEN DATA (mg/L) - UNACCLIMATED SYSTEM

Date (DD-MM)	AMMONIA-N				NITRATE-N		
	PRI	PRI	SEC	%	PRI	PRI	SEC
	INF	EFF	EFF	Remov	INF	EFF	EFF
	mg/L	mg/L	mg/L		mg/L	mg/L	mg/L
01-Aug	28	29	0.5	98	0.17	0.10	24
02-Aug							
03-Aug	33	33	0.6	98	0.18	0.11	20
04-Aug							
05-Aug					0.00	0.00	17
06-Aug							
07-Aug							
08-Aug	29	31	0.5	98	0.13	0.12	26
09-Aug							
10-Aug	32	31	0.7	98	0.14	0.00	22
11-Aug							
12-Aug	24	23	0.6	97	0.00	0.00	20
13-Aug							
14-Aug							
15-Aug	22	25	0.5	98	0.10	0.10	26
16-Aug							
17-Aug	25	27	0.5	98	0.14	0.00	14
18-Aug							
19-Aug	29	30	0.4	99	0.10	0.00	19
20-Aug							
21-Aug							
22-Aug							
23-Aug							
24-Aug	25	28	0.4	98	0.11	0.00	20
25-Aug							
26-Aug							
27-Aug							
28-Aug							
29-Aug							
30-Aug							
31-Aug							
AVERAGE	28	28	0.6	98	0.31	0.09	19
DEVIATION	7	6	0.8	3	0.94	0.09	6

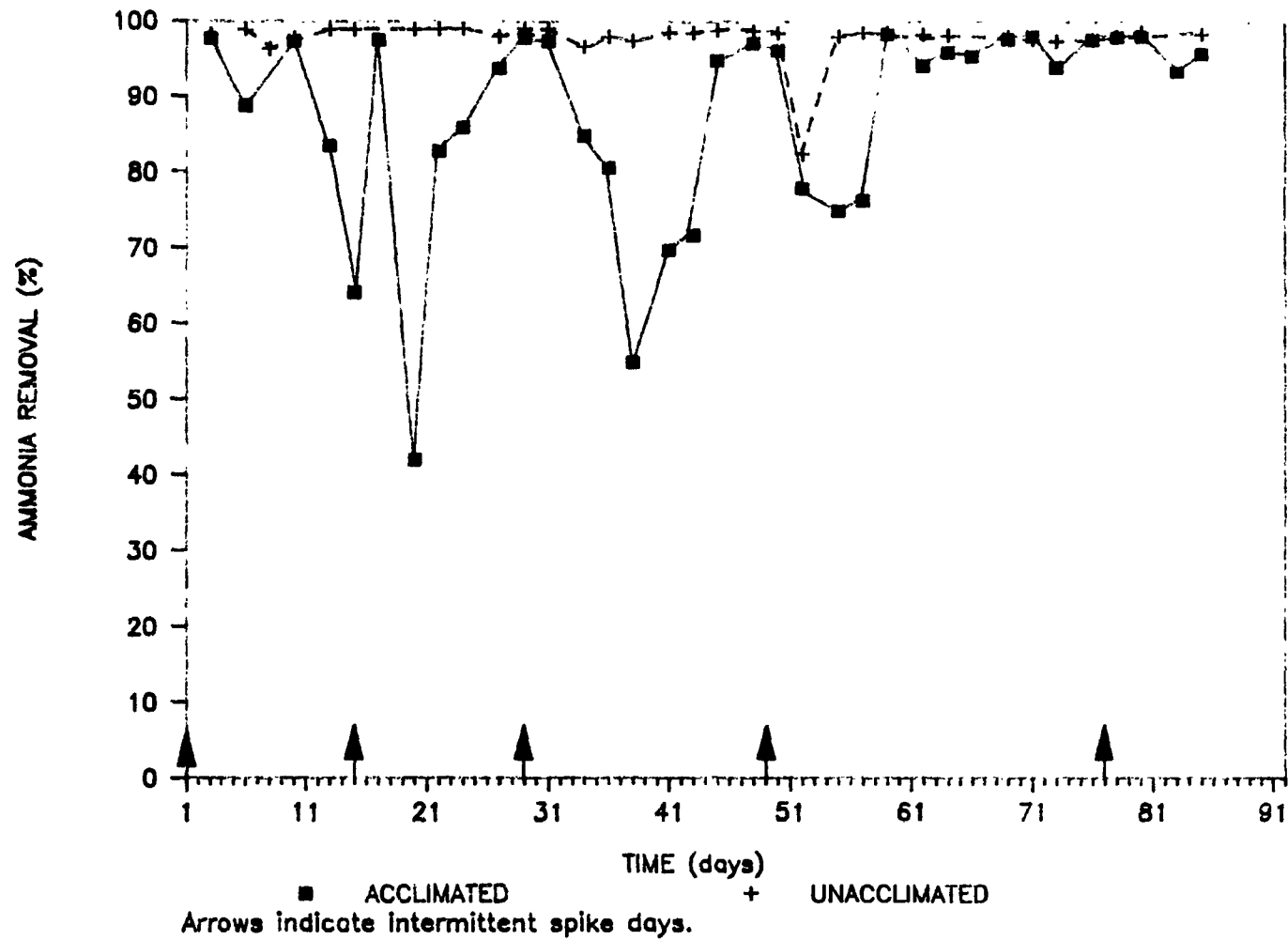
EFFECT OF CERCLA TOXICS ON COD REMOVAL

(Revised)



Arrows indicate intermittent spike days.

EFFECT OF CERCLA TOXICS ON NITRIFICATION



APPENDIX 4. QUALITY ASSURANCE SUMMARY

Appendix 4. QA/QC Overview

This report combines results from two projects "RCRA Pilot Scale Study of Toxics Removal" and "CERCLA Pilot Scale Study of Toxics Removal." Each project spiked municipal wastewater with mixtures containing multiple organic toxic chemicals having different physical, chemical and biological properties. These properties affected the overall removals and partitioning of the chemicals as well as the reliability of analytical results. Data for each chemical must be evaluated separately since broad generalizations do not apply.

Major changes were necessary in the planned QA for the RCRA project. Analytical work was transferred from in-house to a contractor where different methodology was used in the work assignment. Stable labeled isotopes were not used and measured concentrations could not be corrected for recoveries, although recoveries were measured for samples spiked in the laboratory with surrogate toxics.

Poor closure of material balances around the process units was observed and was caused at least partially by lack of recovery corrections. Fractions of volatile toxics in air emissions had to be based on actual toxics fed to the wastewater rather than on measured influent concentrations. If measured influent concentrations were used, analytical recoveries of essentially 100% from air coupled with the lower recoveries from liquid samples resulted in apparent fractions of some volatile compounds in air approaching 200%.

It was necessary to exclude by inspection some concentration values which did not "fit" the data set. For example, where concentrations of a single chemical in duplicate field samples were quite different, the concentration values were compared to concentrations from preceding and following sample points in the same sample event, to concentrations at the same sample point from other sample events and if necessary to calculated feed concentrations to decide which duplicate to exclude or if all data were highly variable to simply average the two duplicates. If concentrations of all organics in one sample were much higher or lower than in comparable samples, then a decision was made to exclude or retain an entire sample rather than just individual chemical concentrations. In effluent samples where concentrations were generally quite low, large relative differences between samples were generally not significant since the associated masses of chemicals represented only a small fraction of the total mass of chemical added. Therefore most effluent concentrations were retained despite high relative percent differences between duplicates.

Of 29 RCRA toxics in the spike, valid data were reported for only 25 compounds. Table 4-1 shows percent recoveries of laboratory-spiked surrogates and relative percent differences between laboratory-spiked duplicates. Table 4-2 shows the percent of RCRA sampling events providing usable data and Tables 4-3 and 4-4 show a summary of relative percent differences for duplicate field samples.

In the CERCLA project, data collection generally proceeded as planned using the in-house laboratory. Stable labeled isotopes of each spiked chemical were added to every sample and measured analytical values were corrected for recoveries obtained for the labeled compounds. Despite the improved analytical methodology, some chemicals still did not appear to be quantitatively measured in sludge samples, either because of poor separation from the sludge and wastewater matrix or because of degradation before analysis. Where sludge data showed major discrepancies with removal data based on the wastewater analyses, the sludge data were excluded from partitioning calculations.

Of 22 CERCLA toxics in the spike, valid data were reported for 19 compounds. Table 4-5 shows the percent of CERCLA sampling events providing usable data and Tables 4-6 and 4-7 show a summary of relative percent differences for duplicate field samples.

TABLE 4-1. SUMMARY OF RCRA RESULTS - PERCENT RECOVERIES OF LABORATORY - SPIKED SURROGATES AND RELATIVE PERCENT DIFFERENCES (RPD) BETWEEN LABORATORY SPIKED DUPLICATES.

<u>Event 3</u>		
	<u>Recoveries*</u>	<u>RPD Range</u>
Volatiles	19 out of 159: outside of QC limits	3 - 5
Semivolatiles	63 out of 216: outside of QC limits	0 - 39
<u>Event 4</u>		
	<u>Recoveries</u>	<u>RPD Range</u>
Volatiles	6 out of 165: outside of QC limits	0 - 18
Semivolatiles	34 out of 162: outside of QC limits	0 - 30
<u>Event 5</u>		
	<u>Recoveries</u>	<u>RPD Range</u>
Volatiles	1 out of 102: outside of QC limits	2 - 5
Semivolatiles	51 out of 192: outside of QC limits	0 - 9
<u>All 3 Events</u>		
	<u>Recoveries</u>	
Volatiles	26 out of 426: outside of QC limits (6%)	
Semivolatiles	148 out of 570: outside of QC limits (26%)	

*Range of acceptable recoveries was 61% - 145% for volatiles and 9% - 131% for semivolatiles.

TABLE 4-2. PERCENT OF SAMPLING EVENTS PROVIDING DATA USABLE FOR CALCULATION OF TOTAL REMOVAL AND PARTITIONING OF 25 RCRA TOXICS FROM THREE ACCLIMATED EVENTS AND THREE UNACCLIMATED EVENTS

RCRA Toxic	Acclimated		Unacclimated	
	Removal	Partitioning	Removal	Partitioning
Acetone	100	100	100	100
Cyclohexanone	0	0	33	33
2-butanone	67	67	67	67
4-methyl-2-pentanone	67	67	67	67
Tetrahydrofuran	100	100	67	67
Carbon tetrachloride	100	100	100	100
Chlorobenzene	100	100	100	100
Chloroform	100	100	100	100
1,2-dichloroethane	67	67	100	100
1,2-dichloropropane	100	100	100	100
Methylene chloride	100	*	100	*
Tetrachloroethylene	100	100	100	100
Trichloroethylene	100	100	100	100
1,1,1-trichloroethane	100	100	100	100
1,1,2-trichloroethane	100	100	100	100
Ethylbenzene	100	100	100	100
Toluene	100	100	100	100
Total xylenes	100	100	100	100
Bis (2-ethylhexyl) phthalate	100	100	100	100
Butyl benzyl phthalate	100	100	100	100
1,4-dichlorobenzene	100	100	67	67
Naphthalene	100	100	100	100
Nitrobenzene	100	100	100	100
4-nitrophenol	0	0	33	33
Phenol	100	100	100	100

*Methylene chloride used as preservative in sludge samples.

TABLE 4-3. SUMMARY OF RELATIVE PERCENT DIFFERENCES FOR RCRA DATA - ACCLIMATED SYSTEM

	Primary Influent		Primary Effluent	Secondary Effluent	Primary Sludge	Secondary Sludge	Primary Air
RCRA Toxic/Event	3	5	3	4	3	5	4
Acetone	31	54	63	54	93	75	0
Cyclohexanone							
Furfural							
2-butanone		25		0		0	50
4-methyl-2-pentanone		27		0		33	0
Tetrahydrofuran	25	10	10	0	29	157	100
Carbon tetrachloride		29	3	67	5	0	0
Chlorobenzene	2	9	0	0	0	0	0
Chloroform	6	6	4	47	3	0	0
1,2-dichloroethane	8		0	53	10		0
1,2-dichloropropane		12	4	43	4	0	0
Methylene chloride	27	14	1	52			0
Tetrachloroethylene	3	18	3	15	6	0	0
Trichloroethylene	3	14	2		3	0	0
1,1,1-trichloroethane		11	4	48	7	0	0
1,1,2-trichloroethane	10	13	5	122	5	6	0
Ethylbenzene	5	13	0	0	21	0	0
Toluene	1	12	5	22	2	0	0
Total Xylenes	8	11	0	22	17	0	0
Bis (2-ethylhexyl) phthalate	8	20	3	0	37	31	
Burylbenzylphthalate	24	70	31	0	79	0	
1,4-dichlorobenzene	0	17	0	0	14	15	
2,4-dimethylphenol							
2,4-dinitrophenol							
Naphthalene		0	0	0	31	0	
Nitrobenzene	6		13	0	82	113	
4-nitrophenol							
Phenol	6	63	6	0	0	0	

TABLE 4-4. SUMMARY OF RELATIVE PERCENT DIFFERENCES FOR RCRA DATA - UNACCLIMATED SYSTEM

RCRA Toxic/Event	Raw Waste- water	Primary Influent			Primary Effluent		Secondary Effluent	Primary Sludge	Secondary Sludge
	4	3	4	5	3	5	5	3	4
Acetone	0	11	7	6	28	3	123	14	0
Cyclohexanone			16						0
Furfural									
2-butanone	8		2	13		0	0		0
4-methyl-2-pentanone		17	7		0			24	0
Tetrahydrofuran		0			1	0	3	35	
Carbon tetrachloride		59	3	26	46	8	40	10	0
Chlorobenzene	0	38	10	17	15		22	6	0
Chloroform	0	5	22	6	9	0	0	0	34
1,2-dichloroethane		0	2	7	13	0	3	9	0
1,2-dichloropropane		13	4	7	13	0	5	8	6
Methylene chloride	51	3		16	41	4	11		
Tetrachloroethylene	15	0	4	9	8	8	0	0	40
Trichloroethylene		0	8	7	18	9	22	15	0
1,1,1-trichloroethane	0	0	0	16	0	0	29	26	0
1,1,2-trichloroethane		0	7	13	9	0	0	0	5
Ethylbenzene	10	0	9	8	0	6	67	0	29
Toluene	6	0	7	14	0	0	22	12	29
Total xylenes	57	0	6	7	10	10	46	165	0
Bis (2-ethylhexyl) phthalate	37	8	18		0	19	0	38	186
Butyl benzyl phthalate	0	9	8		0	35	0	15	0
1,4-dichlorobenzene	0	14	16		59			35	5
2,4-dimethylphenol									
2,4-dinitrophenol									
Naphthalene	0	0	9		0	5	0	31	0
Nitrobenzene	0	7	17		50	10	0	166	67
4-nitrophenol		0			0			0	
Phenol	10	8	31		0	0	0	92	0

TABLE 4-5. PERCENT OF SAMPLING EVENTS PROVIDING DATA USABLE FOR CALCULATION OF TOTAL REMOVAL AND PARTITIONING OF 19 CERCLA TOXICS FROM 11 ACCLIMATED EVENTS AND 4 UNACCLIMATED EVENTS

CERCLA Toxic	Acclimated		Unacclimated	
	Removal	Partitioning	Removal	Partitioning
Dichlorobenzene, probably 1,2	91	73	100	100
Dichlorobenzene, probably 1,3	100	73	100	100
Dichlorobenzene, probably 1,4	100	73	100	100
1,2,4-Trichlorobenzene	82	55	75	50
Nitrobenzene	91	73	100	75
1,3-Dinitrobenzene	55	0	100	0
2,6-Dinitrotoluene	91	18	100	0
p-cresol	91	82	75	25
4-Choloroaniline	73	45	0	0
Hexachloroethane	100	9	75	0
Hexachlorobutadiene	100	27	100	25
Dimethyl phthalate	91	91	100	50
Diethyl phthalate	100	100	100	50
Dibutyl phthalate	100	73	100	25
Butyl benzyl phthalate	100	64	100	50
Bis (2-ethylhexyl) phthalate	36	27	0	0
Naphthalene	100	73	100	50
Lindane	82	82	100	75
Dieldrin	91	36	100	50

TABLE 4-6. SUMMARY OF RELATIVE PERCENT DIFFERENCES FOR CERCLA DATA - ACCLIMATED SYSTEM

CERCLA Toxic/Event	Raw Wastewater			Primary Influent							Pri. Eff.	Secondary Effluent		
	9	10	11	1	2	5	6	8	9	11	10	1	6	11
Dichlorobenzene, probably 1,2	0	22	133	2		8	9	13	5	0	12	17	26	10
Dichlorobenzene, probably 1,3	13	22	106	3	13	8	12	12	23	2	0	4	13	10
Dichlorobenzene, probably 1,4	4	22	125	6	1	13	8	12	3	2	5	67	46	40
1,2,4-Trichlorobenzene	2	9	15			17	8	6	19	15	4		6	11
Nitrobenzene	46	97	200	5	23	6	5	10	4	6	1	10	18	14
1,3-Dinitrobenzene			39	4		5	4	25		11		40	15	0
2,6-Dinitrotoluene		0	0	1	27	1	1			5		5	3	3
p-cresol	56	148	32	5		2	7	9	3	1	2	79		57
4-Choloroaniline			120	6	6	9	4	3		8		0	36	12
Hexachloroethane	5	4	0	14	7	7	6		13	6	1	200	29	22
Hexachlorobutadiene	1	111	148	3	4	19	13	9	3	2	6	29	46	40
Dimethyl phthalate	22	200	200	3	6	2	2	4	6	0	1	150	156	100
Diethyl phthalate	13	0	108	3	5	9	3	5	2	5	9	150	108	86
Dibutyl phthalate	2	20	83	10	3	11	4	6	8	6	9	0	32	50
Butyl benzyl phthalate	4	19	94	1	8	23	12	1	5	16	11	29	25	67
Bis (2-ethylhexyl) phthalate		1			18			42			56			
Naphthalene	10	7	76	12	4	12	14	10	3	12	4	150	133	40
Lindane	0	0	200	13	20	13	7	7	10	3	5	0	5	13
Dieldrin	80	22	115	51		22	5				13	14	11	51

Continued next page

TABLE 4-6. (CON'T) SUMMARY OF RELATIVE PERCENT DIFFERENCES FOR CERCLA DATA -
ACCLIMATED SYSTEM

CERCLA Toxic/Event	Primary Sludge				Secondary Sludge				
	4	7	9	11	1	3	4	6	8
Dichlorobenzene, probably 1,2	15		16	0	3	9	15	83	31
Dichlorobenzene, probably 1,3	16	40	17	5	6	45	0	18	32
Dichlorobenzene, probably 1,4	15	19	17	0	16	13	86	75	29
1,2,4-Trichlorobenzene	5	3	17	5		14	2	4	4
Nitrobenzene	39		38	139	19	69	0	57	0
1,3-Dinitrobenzene	170			121	18		0	28	13
2,6-Dinitrotoluene	200	200		200	200	0	0	10	0
p-cresol	21		9	14	38	60	61	133	0
4-Choloroaniline	20			46	8	0	0	40	5
Hexachloroethane	0	200	200	200	0	200	200	200	0
Hexachlorobutadiene	12	11	19	5	3	24	29	4	1
Dimethyl phthalate	29		19	67	0	200	0	105	0
Diethyl phthalate	15	32	22	38	21	200	13	56	200
Dibutyl phthalate	20	16	17	5	1	81	10	19	27
Butyl benzyl phthalate	18	3	19	14	9	112	0	25	91
Bis (2-ethylhexyl) phthalate	10						4		25
Naphthalene	16	13	17	4	9	200	40	62	4
Lindane	19		12	12	5	25	7	3	85
Dieldrin	0	20		33	85	54	75	73	56

TABLE 4-7. SUMMARY OF RELATIVE PERCENT DIFFERENCES FOR CERCLA DATA - UNACCLIMATED SYSTEM

CERCLA Toxic/Event	Raw Wastewater			Pri. Inf.	Primary Effluent		Sec. Eff.	Primary Sludge		Secondary Sludge	
	1	2	3	4	1	3	3	3	4	2	3
Dichlorobenzene, probably 1,2	0	0	50	11	31	1	6	9	173	22	43
Dichlorobenzene, probably 1,3	0	0	25	11	30	0	4	10	26	47	34
Dichlorobenzene, probably 1,4	200	200	13	11	22	4	6	13	95	44	0
1,2,4-Trichlorobenzene	85	85	4		19	3	2	2		47	3
Nitrobenzene	200	200	40	14	2	4	3	49	200	12	0
1,3-Dinitrobenzene	200	200	30	4	19	43	100	17	0	3	53
2,6-Dinitrotoluene	0	0	0	9	9		6	200	0	0	0
p-cresol	4		7	1		3	0	11	200		0
4-Chloroaniline											
Hexachloroethane	0	0	0		41	16	0	200		0	0
Hexachlorobutadiene	0	0	200	24	17	2	29	0	200	54	10
Dimethyl phthalate	0	0	0	5	44		200	13	54	0	0
Diethyl phthalate	25	25	7	2	2	8	11	8	82	10	200
Dibutyl phthalate	51	52	7	23	16	9	17	13	95	1	200
Butyl benzyl phthalate	0	0	0	14	5	7	25	17	97	47	22
Bis (2-ethylhexyl) phthalate											
Naphthalene	114	114	11	1		4	0	12	0	40	40
Lindane	200	200	8	16		2	1	13	87	46	0
Dieldrin	80	80	10	35	9	16	35	8	200	71	7