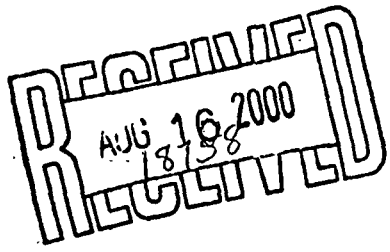
RISK ASSESSMENT



CEDAR CHEMICAL CORPORATION
WEST HELENA, ARKANSAS

EnSafe Project Number:
2162-012

Volume II — Appendices A-I

Prepared for:

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TABLE 84A
CALCULATION OF NON-CANCER HAZARDS
CENTRAL TENDENCY EXPOSURE
CEDAR CHEMICAL CORPORATION, WEST HELENA, ARKANSAS

Scenario Timeframe:	Current/Future
Medium:	Groundwater
Exposure Medium:	Groundwater
Exposure Point:	Perched Groundwater
Receptor Population:	Construction Worker
Receptor Age:	Adult

Exposure Route	Chemical of Potential Concern	Medium EPC Value	Medium EPC Units	Route EPC Value	Route EPC Units	EPC Selected for Hazard Calculation (1)	Intake (Non-Cancer)	Intake (Non-Cancer) Units	Reference Dose (2)	Reference Dose Units	Reference Concentration	Reference Concentration Units	Hazard Quotient
Ingestion	3,4-Dichloroaniline	11.661	mg/L	N/A	N/A	M	3.9E-04	L/kg-day	5.0E-04	mg/kg-day	N/A	N/A	9.13
	4-Chloroaniline	0.686	mg/L	N/A	N/A	M	3.9E-04	L/kg-day	5.0E-04	mg/kg-day	N/A	N/A	0.54
	1,2-Dichloroethane	3.67	mg/L	N/A	N/A	M	3.9E-04	L/kg-day	3.0E-03	mg/kg-day	N/A	N/A	0.48
	Methylene chloride	60	mg/L	N/A	N/A	M	3.9E-04	L/kg-day	6.0E-03	mg/kg-day	N/A	N/A	4
Dermal	3,4-Dichloroaniline	11.661	mg/L	N/A	N/A	M	4.4E-03	L/kg-day	2.5E-04	mg/kg-day	N/A	N/A	204
	4-Chloroaniline	0.686	mg/L	N/A	N/A	M	4.4E-03	L/kg-day	2.5E-04	mg/kg-day	N/A	N/A	12
	1,2-Dichloroethane	3.67	mg/L	N/A	N/A	M	7.5E-04	L/kg-day	2.4E-03	mg/kg-day	N/A	N/A	1
	Methylene chloride	60	mg/L	N/A	N/A	M	6.3E-04	L/kg-day	4.8E-03	mg/kg-day	N/A	N/A	8
												Total Hazard Index Across All Exposure Routes/Pathways	230

(1) Route-Specific (M) EPC selected for hazard calculation.
(2) Subchronic

3.49E-04

5.07E-05

See Table 42 for definitions and sources of equation variables for pathway-specific intake factor calculations.

mg/L = milligram per liter
L/kg-day = liter per kilogram day
N/A = not applicable

TABLE 84B
CALCULATION OF CANCER RISKS
CENTRAL TENDENCY EXPOSURE
CEDAR CHEMICAL CORPORATION, WEST HELENA, ARKANSAS

Scenario Timeframe:	Current/Future
Medium:	Groundwater
Exposure Medium:	Groundwater
Exposure Point:	Perched Groundwater
Receptor Population:	Construction Worker
Receptor Age:	Adult

Exposure Route	Chemical of Potential Concern	Medium EPC Value	Medium EPC Units	Route EPC Value	Route EPC Units	EPC Selected for Risk Calculation (1)	Intake (Cancer)	Intake (Cancer) Units	ancer Slop Factor	Cancer Slope Factor Units	Cancer Risk
Ingestion	3,4-Dichloroaniline	1.17E+01	mg/L	N/A	N/A	M	5.59E-06	L/kg-day	N/A	(mg/kg-day) $^{-1}$	N/A
	4-Chloroaniline	6.86E-01	mg/L	N/A	N/A	M	5.59E-06	L/kg-day	N/A	(mg/kg-day) $^{-1}$	N/A
	1,2-Dichloroethane	3.67E+00	mg/L	N/A	N/A	M	5.59E-06	L/kg-day	9.10E-02	(mg/kg-day) $^{-1}$	1.87E-06
	Methylene chloride	6.00E+01	mg/L	N/A	N/A	M	5.59E-06	L/kg-day	7.50E-03	(mg/kg-day) $^{-1}$	2.52E-06
Dermal	3,4-Dichloroaniline	1.17E+01	mg/L	N/A	N/A	M	6.24E-05	L/kg-day	N/A	(mg/kg-day) $^{-1}$	N/A
	4-Chloroaniline	6.86E-01	mg/L	N/A	N/A	M	6.24E-05	L/kg-day	N/A	(mg/kg-day) $^{-1}$	N/A
	1,2-Dichloroethane	3.67E+00	mg/L	N/A	N/A	M	1.07E-05	L/kg-day	7.28E-02	(mg/kg-day) $^{-1}$	2.85E-06
	Methylene chloride	6.00E+01	mg/L	N/A	N/A	M	9.06E-06	L/kg-day	6.00E-03	(mg/kg-day) $^{-1}$	3.26E-06
										otal Risk Across All Exposure Routes/Pathways	1.0E-05

(1) Route-Specific (M) EPC selected for hazard calculation.
(2) Subchronic

See Table 42 for definitions and sources of equation variables for pathway-specific intake factor calculations.

mg/L = milligram per liter
L/kg-day = liter per kilogram day
N/A = not applicable

TABLE 84C
SUMMARY OF RECEPTOR RISKS AND HAZARDS FOR COPCs
CENTRAL TENDENCY EXPOSURE
CEDAR CHEMICAL CORPORATION, WEST HELENA, ARKANSAS

Scenario Timeframe: Future
Receptor Population: Construction Worker
Receptor Age: Adult

Medium	Exposure Medium	Exposure Point	Chemical	Carcinogenic Risk				Chemical	Non-Carcinogenic Hazard Quotient			
				Ingestion	Inhalatio	Dermal	Exposure Routes Total		Ingestion	Inhalation	Dermal	Exposure Routes Total
Groundwater	Perched Groundwater	Site 1 & 2	3,4-Dichloroaniline	N/A	N/A	N/A	N/A	3,4-Dichloroaniline	9.1	N/A	204	213
			4-Chloroaniline	N/A	N/A	N/A	N/A	4-Chloroaniline	0.5	N/A	12	13
			1,2-Dichloroethane	2E-06	N/A	3E-06	5E-06	1,2-Dichloroethane	0.5	N/A	1.14	1.62
			Methylene chloride	3E-06	N/A	3E-06	6E-06	Methylene chloride	4	N/A	7.93	12
							Total Risk Across[Groundwater]					Total Hazard Index Across All Media and All Exposure Routes
							1E-05					239
							Total Risk Across All Media and All Exposure Routes					
							1E-05					

TABLE 85A
CALCULATION OF NON-CANCER HAZARDS
CENTRAL TENDENCY EXPOSURE
CEDAR CHEMICAL CORPORATION, WEST HELENA, ARKANSAS

Scenario Timeframe:	Future
Medium:	Soil
Exposure Medium:	Subsurface Soil
Exposure Point:	Site 3 Subsurface Soil
Receptor Population:	Construction Worker
Receptor Age:	Adult

Exposure Route	Chemical of Potential Concern	Medium EPC Value	Medium EPC Units	Route EPC Value	Route EPC Units	EPC Selected for Hazard Calculation	Intake (Non-Cancer)	Intake (Non-Cancer) Units	Reference Dose	Reference Dose Units	Reference Concentration	Reference Concentration Units	Hazard Quotient
Ingestion	Dinoseb	2,784	mg/kg	N/A	N/A	M	3.91E-08	kg/kg-day	1.00E-03	mg/kg-day	N/A	N/A	0.11
Inhalation	Dinoseb	2,784	mg/kg	N/A	N/A	M	9.01E-12	kg/kg-day	N/A	mg/kg-day	N/A	N/A	N/A
Dermal	Dinoseb	2,784	mg/kg	N/A	N/A	M	1.03E-08	kg/kg-day	5.00E-04	mg/kg-day	N/A	N/A	0.057
												Total Hazard Index Across All Exposure Routes/Pathways	<1

See Table 35 for definitions and sources of equation variables for pathway-specific intake factor calculations.

EPC = Exposure point concentration
mg/kg = milligram per kilogram
N/A = Not applicable
M = Media-specific concentration
mg/cu. M = milligram per cubic meter

TABLE 85B
CALCULATION OF CANCER RISKS
CENTRAL TENDENCY EXPOSURE
CEDAR CHEMICAL CORPORATION, WEST HELENA, ARKANSAS

Scenario Timeframe:	Future
Medium:	Soil
Exposure Medium:	Subsurface Soil
Exposure Point:	Site 3 Subsurface Soil
Receptor Population:	Construction Worker
Receptor Age:	Adult

Exposure Route	Chemical of Potential Concern	Medium EPC Value	Medium EPC Units	Route EPC Value	Route EPC Units	EPC Selected for Risk Calculation (1)	Intake (Cancer)	Intake (Cancer) Units	Cancer Slope Factor	Cancer Slope Factor Units	Cancer Risk
Ingestion	Dinoseb	2784	mg/kg	N/A	N/A	M	5.59E-10	kg/kg-day	N/A	$(mg/kg\text{-}day)^{-1}$	N/A
Inhalation	Dinoseb	2784	mg/kg	N/A	N/A	M	1.29E-13	kg/kg-day	N/A	$(mg/kg\text{-}day)^{-1}$	N/A
Dermal	Dinoseb	2784	mg/kg	N/A	N/A	M	1.48E-10	kg/kg-day	N/A	$(mg/kg\text{-}day)^{-1}$	N/A
										Total Risk Across All Exposure Routes/Pathways	N/A

See Table 35 for definitions and sources of equation variables for pathway-specific intake factor calculations.

EPC = Exposure point concentration
mg/kg = milligram per kilogram
N/A = Not applicable
M = Medium-specific concentration

TABLE 85C
SUMMARY OF RECEPTOR RISKS AND HAZARDS FOR COPCs
CENTRAL TENDENCY EXPOSURE
CEDAR CHEMICAL CORPORATION, WEST HELENA, ARKANSAS

Scenario Timeframe: Future
Receptor Population: Construction Worker
Receptor Age: Adult

Medium	Exposure Medium	Exposure Point	Chemical	Carcinogenic Risk				Chemical	Non-Carcinogenic Hazard Quotient			
				Ingestion	Inhalation	Dermal	Exposure Routes Total		Ingestion	Inhalation	Dermal	Exposure Routes Total
Soil	Subsurface Soil	Site 3	Dinoseb	N/A	N/A	N/A	N/A	Dinoseb	0.1	N/A	0.057	0.17
						Total Risk Across[Soil]	N/A	Total Hazard Index Across All Media and All Exposure Routes				<1
						Total Risk Across[Groundwater]	N/A					
						s All Media and All Exposure Routes	N/A					

N/A = Not Applicable

TABLE 86A
CALCULATION OF NON-CANCER HAZARDS
CENTRAL TENDENCY EXPOSURE
CEDAR CHEMICAL CORPORATION, WEST HELENA, ARKANSAS

Scenario Timeframe:	Future
Medium:	Soil
Exposure Medium:	Subsurface Soil
Exposure Point:	Site 4 Subsurface Soil
Receptor Population:	Construction Worker
Receptor Age:	Adult

Exposure Route	Chemical of Potential Concern	Medium EPC Value	Medium EPC Units	Route EPC Value	Route EPC Units	EPC Selected for Hazard Calculation	Intake (Non-Cancer)	Intake (Non-Cancer) Units	Reference Dose	Reference Dose Units	Reference Concentration	Reference Concentration Units	Hazard Quotient
Ingestion	3,4- Dichloroaniline	1667	mg/kg	N/A	N/A	M	3.91E-08	kg/kg-day	4.00E-03	mg/kg-day	N/A	N/A	3.4
	Dinoseb	244	mg/kg	N/A	N/A	M	3.91E-08	kg/kg-day	1.00E-03	mg/kg-day	N/A	N/A	1 2
Inhalation	3,4- Dichloroaniline	12000	mg/kg	N/A	N/A	M	9.01E-12	kg/kg-day	N/A	mg/kg-day	N/A	N/A	N/A
	Dinoseb	244	mg/kg	N/A	N/A	M	9.01E-12	kg/kg-day	N/A	mg/kg-day	N/A	N/A	N/A
Dermal	3,4- Dichloroaniline	12000	mg/kg	N/A	N/A	M	1.03E-08	kg/kg-day	2.00E-03	mg/kg-day	N/A	N/A	5.8
	Dinoseb	244	mg/kg	N/A	N/A	M	1.03E-08	kg/kg-day	5.00E-04	mg/kg-day	N/A	N/A	2.1
												Total Hazard Index Across All Exposure Routes/Pathways	13

See Table 35 for definitions and sources of equation variables for pathway-specific intake factor calculations.

EPC = Exposure point concentration
mg/kg = milligram per kilogram
N/A = Not applicable
M = Media-specific concentration
mg/cu. M = milligram per cubic meter

TABLE 86B
CALCULATION OF CANCER RISKS
CENTRAL TENDENCY EXPOSURE
CEDAR CHEMICAL CORPORATION, WEST HELENA, ARKANSAS

Scenario Timeframe:	Future
Medium:	Soil
Exposure Medium:	Subsurface Soil
Exposure Point:	Site 4 Subsurface Soil
Receptor Population:	Construction Worker
Receptor Age:	Adult

Exposure Route	Chemical of Potential Concern	Medium EPC Value	Medium EPC Units	Route EPC Value	Route EPC Units	EPC Selected for Risk Calculation (1)	Intake (Cancer)	Intake (Cancer) Units	Cancer Slope Factor	Cancer Slope Factor Units	Cancer Risk
Ingestion	3,4-Dichloroethane	1667	mg/kg	N/A	N/A	M	5.59E-10	kg/kg-day	N/A	$(mg/kg\text{-}day)^{-1}$	N/A
	Dinoseb	244	mg/kg	N/A	N/A	M	5.59E-10	kg/kg-day	N/A	$(mg/kg\text{-}day)^{-1}$	N/A
Inhalation	3,4-Dichloroethane	1667	mg/kg	N/A	N/A	M	1.29E-13	kg/kg-day	N/A	$(mg/kg\text{-}day)^{-1}$	N/A
	Dinoseb	244	mg/kg	N/A	N/A	M	1.29E-13	kg/kg-day	N/A	$(mg/kg\text{-}day)^{-1}$	N/A
Dermal	3,4-Dichloroethane	1667	mg/kg	N/A	N/A	M	1.48E-10	kg/kg-day	N/A	$(mg/kg\text{-}day)^{-1}$	N/A
	Dinoseb	244	mg/kg	N/A	N/A	M	1.48E-10	kg/kg-day	N/A	$(mg/kg\text{-}day)^{-1}$	N/A
										Total Risk Across All Exposure Routes/Pathways	

See Table 35 for definitions and sources of equation variables for pathway-specific intake factor calculations.

EPC = Exposure point concentration
mg/kg = milligram per kilogram
N/A = Not applicable
M = Medium-specific concentration

TABLE 86C
SUMMARY OF RECEPTOR RISKS AND HAZARDS FOR COPCs
CENTRAL TENDENCY EXPOSURE
CEDAR CHEMICAL CORPORATION, WEST HELENA, ARKANSAS

Scenario Timeframe: Future
Receptor Population: Construction Worker
Receptor Age: Adult

Medium	Exposure Medium	Exposure Point	Chemical	Carcinogenic Risk				Chemical	Non-Carcinogenic Hazard Quotient			
				Ingestion	Inhalation	Dermal	Exposure Routes Total		Ingestion	Inhalation	Dermal	Exposure Routes Total
Soil	Surface and Subsurface Soil	Site 4	3,4-Dichloroethane	N/A	N/A	N/A	N/A	3,4-Dichloroethane	3.4	N/A	5.8	9
			Dinoseb	N/A	N/A	N/A	N/A	Dinoseb	1.2	N/A	2.1	3
						Total Risk Across[Soil]	N/A	al Hazard Index Across All Media and All Exposure Routes				13

TABLE 87A
CALCULATION OF NON-CANCER HAZARDS
CENTRAL TENDENCY EXPOSURE
CEDAR CHEMICAL CORPORATION, WEST HELENA, ARKANSAS

Scenario Timeframe:	Future
Medium:	Soil
Exposure Medium:	Surface and Subsurface Soil
Exposure Point:	Site 9 Subsurface Soil
Receptor Population:	Construction Worker
Receptor Age:	Adult

Exposure Route	Chemical of Potential Concern	Medium EPC Value	Medium EPC Units	Route EPC Value	Route EPC Units	EPC Selected for Hazard Calculation	Intake (Non-Cancer)	Intake (Non-Cancer) Units	Reference Dose	Reference Dose Units	Reference Concentration	Reference Concentration Units	Hazard Quotient
Ingestion	3,4-Dichloroaniline	450	mg/kg	N/A	N/A	M	3.91E-08	kg/kg-day	4.00E-03	mg/kg-day	N/A	N/A	0.130
	Dinoseb	5380	mg/kg	N/A	N/A	M	3.91E-08	kg/kg-day	1.00E-03	mg/kg-day	N/A	N/A	0.21
	Propanil	445	mg/kg	N/A	N/A	M	3.91E-08	kg/kg-day	5.00E-03	mg/kg-day	N/A	N/A	0.003
Inhalation	3,4-Dichloroaniline	450	mg/kg	N/A	N/A	M	9.01E-12	kg/kg-day	N/A	mg/kg-day	N/A	N/A	N/A
	Dinoseb	5380	mg/kg	N/A	N/A	M	9.01E-12	kg/kg-day	N/A	mg/kg-day	N/A	N/A	N/A
	Propanil	445	mg/kg	N/A	N/A	M	9.01E-12	kg/kg-day	N/A	mg/kg-day	N/A	N/A	N/A
Dermal	3,4-Dichloroaniline	450	mg/kg	N/A	N/A	M	1.03E-08	kg/kg-day	2.00E-03	mg/kg-day	N/A	N/A	0.22
	Dinoseb	5380	mg/kg	N/A	N/A	M	1.03E-08	kg/kg-day	5.00E-04	mg/kg-day	N/A	N/A	0.11
	Propanil	445	mg/kg	N/A	N/A	M	1.03E-08	kg/kg-day	2.50E-03	mg/kg-day	N/A	N/A	0.002
												Total Hazard Index Across All Exposure Routes/Pathways	<1

See Table 35 for definitions and sources of equation variables for pathway-specific intake factor calculations.

EPC = Exposure point concentration
mg/kg = milligram per kilogram
N/A = Not applicable
M = Media-specific concentration

TABLE 87B
CALCULATION OF CANCER RISKS
CENTRAL TENDENCY EXPOSURE
CEDAR CHEMICAL CORPORATION, WEST HELENA, ARKANSAS

Scenario Timeframe:	Future
Medium:	Soil
Exposure Medium:	Surface and Subsurface Soil
Exposure Point:	Site 9 Subsurface Soil
Receptor Population:	Construction Worker
Receptor Age:	Adult

Exposure Route	Chemical of Potential Concern	Medium EPC Value	Medium EPC Units	Route EPC Value	Route EPC Units	EPC Selected for Risk Calculation (1)	Intake (Cancer)	Intake (Cancer) Units	Cancer Slope Factor	Cancer Slope Factor Units	Cancer Risk
Ingestion	3,4-Dichloroaniline	450	mg/kg	N/A	N/A	M	5.59E-10	kg/kg-day	N/A	$(mg/kg\text{-}day)^{-1}$	N/A
	Dinoseb	5380	mg/kg	N/A	N/A	M	5.59E-10	kg/kg-day	N/A	$(mg/kg\text{-}day)^{-1}$	N/A
	Propanil	445	mg/kg	N/A	N/A	M	5.59E-10	kg/kg-day	N/A	$(mg/kg\text{-}day)^{-1}$	N/A
Inhalation	3,4-Dichloroaniline	450	mg/kg	N/A	N/A	M	1.29E-13	kg/kg-day	N/A	$(mg/kg\text{-}day)^{-1}$	N/A
	Dinoseb	5380	mg/kg	N/A	N/A	M	1.29E-13	kg/kg-day	N/A	$(mg/kg\text{-}day)^{-1}$	N/A
	Propanil	445	mg/kg	N/A	N/A	M	1.29E-13	kg/kg-day	N/A	$(mg/kg\text{-}day)^{-1}$	N/A
Dermal	3,4-Dichloroaniline	450	mg/kg	N/A	N/A	M	1.48E-10	kg/kg-day	N/A	$(mg/kg\text{-}day)^{-1}$	N/A
	Dinoseb	5380	mg/kg	N/A	N/A	M	1.48E-10	kg/kg-day	N/A	$(mg/kg\text{-}day)^{-1}$	N/A
	Propanil	445	mg/kg	N/A	N/A	M	1.48E-10	kg/kg-day	N/A	$(mg/kg\text{-}day)^{-1}$	N/A
										Total Risk Across All Exposure Routes/Pathways	

See Table 35 for definitions and sources of equation variables for pathway-specific intake factor calculations.

EPC = Exposure point concentration
mg/kg = milligram per kilogram
N/A = Not applicable
M = Medium-specific concentration

TABLE 87C

SUMMARY OF RECEPTOR RISKS AND HAZARDS FOR COPCs

CENTRAL TENDENCY EXPOSURE

CEDAR CHEMICAL CORPORATION, WEST HELENA, ARKANSAS

Scenario Timeframe: Future
Receptor Population: Construction Worker
Receptor Age: Adult

Medium	Exposure Medium	Exposure Point	Chemical	Carcinogenic Risk				Chemical	Non-Carcinogenic Hazard Quotient			
				Ingestion	Inhalation	Dermal	Exposure Routes Total		Ingestion	Inhalation	Dermal	Exposure Routes Total
Soil	Surface and Subsurface Soil	Site 9	3,4-Dichloroaniline	N/A	N/A	N/A	N/A	3,4-Dichloroaniline	0.13	N/A	0.22	0.35
			Dinoseb	N/A	N/A	N/A	N/A	Dinoseb	0.21	N/A	0.11	0.32
			Propanil	N/A	N/A	N/A	N/A	Propanil	0.003	N/A	0.002	0.01
						Total Risk Across[Soil]	N/A	*Total Hazard Index Across All Media and All Exposure Routes*				<1

TABLE 88A
CALCULATION OF NON-CANCER HAZARDS
CENTRAL TENDENCY EXPOSURE
CEDAR CHEMICAL CORPORATION, WEST HELENA, ARKANSAS

Scenario Timeframe:	Current/Future
Medium:	Soil
Exposure Medium:	Surface Soil
Exposure Point:	Site 9 Surface Soil
Receptor Population:	Adult Worker
Receptor Age:	Adult

Exposure Route	Chemical of Potential Concern	Medium EPC Value	Medium EPC Units	Route EPC Value	Route EPC Units	EPC Selected for Hazard Calculation (1)	Intake (Non-Cancer)	Intake (Non-Cancer) Units	Reference Dose (2)	Reference Dose Units	Reference Concentration	Reference Concentration Units	Hazard Quotient
Ingestion	Dinoseb	7593	mg/kg	N/A	N/A	M	4.89E-08	kg/kg-day	1.00E-03	mg/kg-day	N/A	N/A	0.4
	Propanil	3796	mg/kg	N/A	N/A	M	4.89E-08	kg/kg-day	5.00E-03	mg/kg-day	N/A	N/A	0.037
Inhalation	Dinoseb	7593	mg/kg	N/A	N/A	M	8.38E-11	kg/kg-day	N/A	mg/kg-day	N/A	N/A	N/A
	Propanil	3796	mg/kg	N/A	N/A	M	8.38E-11	kg/kg-day	N/A	mg/kg-day	N/A	N/A	N/A
Dermal	Dinoseb	7593	mg/kg	N/A	N/A	M	1.29E-07	kg/kg-day	5.00E-04	mg/kg-day	N/A	N/A	2
	Propanil	3796	mg/kg	N/A	N/A	M	1.29E-07	kg/kg-day	2.50E-03	mg/kg-day	N/A	N/A	0.2
										Total Hazard Index Across All Exposure Routes/Pathways			2

See Table 45 for definitions and sources of equation variables for pathway-specific intake factor calculations.

EPC = Exposure point concentration
mg/kg = milligram per kilogram
N/A = Not applicable
M = Media-specific concentration
mg/cu. M = milligram per cubic meter

TABLE 88B
CALCULATION OF CANCER RISKS
CENTRAL TENDENCY EXPOSURE
CEDAR CHEMICAL CORPORATION, WEST HELENA, ARKANSAS

Scenario Timeframe:	Future
Medium:	Soil
Exposure Medium:	Surface Soil
Exposure Point:	Site 9 Surface Soil
Receptor Population:	Adult Worker
Receptor Age:	Adult

Exposure Route	Chemical of Potential Concern	Medium EPC Value	Medium EPC Units	Route EPC Value	Route EPC Units	EPC Selected for Risk Calculation (1)	Intake (Cancer)	Intake (Cancer) Units	Cancer Slope Factor	Cancer Slope Factor Units	Cancer Risk
Ingestion	Dinoseb	7593	mg/kg	N/A	N/A	M	4.61E-09	kg/kg-day	N/A	(mg/kg-day) $^{-1}$	N/A
	Propanil	3796	mg/kg	N/A	N/A	M	4.61E-09	kg/kg-day	N/A	(mg/kg-day) $^{-1}$	N/A
Inhalation	Dinoseb	7593	mg/kg	N/A	N/A	M	7.90E-12	kg/kg-day	N/A	(mg/kg-day) $^{-1}$	N/A
	Propanil	3796	mg/kg	N/A	N/A	M	7.90E-12	kg/kg-day	ND	(mg/kg-day) $^{-1}$	N/A
Dermal	Dinoseb	7593	mg/kg	N/A	N/A	M	1.22E-08	kg/kg-day	N/A	(mg/kg-day) $^{-1}$	N/A
	Propanil	3796	mg/kg	N/A	N/A	M	1.22E-08	kg/kg-day	N/A	(mg/kg-day) $^{-1}$	N/A
										Total Risk Across All Exposure Routes/Pathways	N/A

See Table 45 for definitions and sources of equation variables for pathway-specific intake factor calculations.

EPC = Exposure point concentration
mg/kg = milligram per kilogram
N/A = Not applicable
M = Medium-specific concentration
ND = No data available

TABLE 88C

RISK ASSESSMENT SUMMARY

CENTRAL TENDENCY EXPOSURE

CEDAR CHEMICAL CORPORATION, WEST HELENA, ARKANSAS

Scenario Timeframe: Future
Receptor Population: Site Worker
Receptor Age: Adult

Medium	Exposure Medium	Exposure Point	Chemical	Carcinogenic Risk				Chemical	Non-Carcinogenic Hazard Quotient			
				Ingestion	Inhalation	Dermal	Exposure Routes Total		Ingestion	Inhalation	Dermal	Exposure Routes Total
Soil	Surface Soil	Site 9	Dinoseb	N/A	N/A	N/A	N/A	Dinoseb	0.37	N/A	2	2.33
			Propanil	N/A	N/A	N/A	N/A	Propanil	0.04	N/A	0.20	0.23
							Total Risk Across[Soil]	N/A	Total Hazard Index Across All Media and All Exposure Routes			3
							Total Risk Across All Media and All Exposure Routes	N/A				

TABLE 89A
CALCULATION OF NON-CANCER HAZARDS
CENTRAL TENDENCY EXPOSURE
CEDAR CHEMICAL CORPORATION, WEST HELENA, ARKANSAS

Scenario Timeframe:	Future
Medium:	Groundwater
Exposure Medium:	Alluvial Groundwater
Exposure Point:	Alluvial Groundwater
Receptor Population:	Offsite Agricultural Workers
Receptor Age:	Adult

Incorrect
Dichlor 1.6E-03 mg/kg-day
MC 4.2E-04 mg/kg-day
TOL 0.026 mg/kg-day

Exposure Route	Chemical of Potential Concern	Medium EPC Value	Medium EPC Units	Route EPC Value	Route EPC Units	EPC Selected for Hazard Calculation	Intake (Non-Cancer)	Intake (Non-Cancer) Units	Reference Dose (2)	Reference Dose Units	Reference Concentratio	Reference Concentration Units	Hazard Quotient
							1.64E-03						
Inhalation	1,2-Dichloroethane 87 mg/L	8.29E+00	µg/L	2.72E-01	mg/m³	M	5.8E-03	mg/kg-day	2.86E-03	mg/kg-day	N/A	N/A	0.55
	Methylene Chloride	1.47E+00	mg/L	7.30E-02	mg/m³	M	5.8E-03	mg/kg-day	8.57E-01	mg/kg-day	N/A	N/A	0.0005
	Toluene 140 mg/L	3.14E+01	mg/L	4.56E+00	mg/m³	M	5.8E-03	mg/kg-day	1.14E-01	mg/kg-day	N/A	N/A	0.23
												Total Hazard Index Across All Exposure Routes/Pathways	<1

1.7
.4
2.1

See Table 55 for diefinitions and sources of equation variables for pathway-specific intake factor calculations.

EPC = Exposure point concentration
mg/L = milligram per liter
N/A = Not applicable
R = Route-specific concentration
µg/m³ = micrograms per cubic meter
mg/kg-day = milligrams per kilogram day

1,2 Dichloro $(2.72E-01\ mg/m^3)(5.8E-03\ m^3/kg\text{-}day) = 1.6E-03\ mg/kg\text{-}day$

MC $(7.30E-02\ mg/m^3)(5.8E-03\ m^3/kg\text{-}day) = 4.2E-04\ mg/kg/day$

TOL $(4.56E+00)(5.8E-03\ m^3/kg\text{-}day) = .026\ mg/kg\text{-}day$

TABLE 89B
CALCULATION OF CANCER RISKS
CENTRAL TENDENCY EXPOSURE
CEDAR CHEMICAL CORPORATION, WEST HELENA, ARKANSAS

Scenario Timeframe:	Future
Medium:	groundwater
Exposure Medium:	alluvial groundwater
Exposure Point:	alluvial groundwater
Receptor Population:	offsite ag. worker
Receptor Age:	Adult

1,2 Di 5.6E-04
MC 1.5E-04
Tol 9.4E-03

Exposure Route	Chemical of Potential Concern	Medium EPC Value	Medium EPC Units	Route EPC Value	Route EPC Units	EPC Selected for Risk Calculation	Intake (Cancer) 5.8E-04	Intake (Cancer) Units	Cancer Slope Factor	Cancer Slope Factor Units	Cancer Risk
Inhalation	1,2-Dichloroethane	8.70E+01	mg/L	2.72E-01	$\mu g/m^3$	M	~~2.07E-03~~	mg/kg-day	9.10E-02	$(mg/kg\text{-}day)^{-1}$	5E-05
	Methylene chloride	5.00E+00	mg/L	7.30E-02	mg/m^3	M	~~2.07E-03~~	mg/kg-day	1.65E-03	$(mg/kg\text{-}day)^{-1}$	2E-07
	Toluene	1.40E+02	mg/L	4.56E+00	mg/m^3	M	~~2.07E-03~~	mg/kg-day	N/A	$(mg/kg\text{-}day)^{-1}$	N/A
										Total Risk Across All Exposure Routes/Pathways	5E-05

1.5E-04

See Table 55 for diefinitions and sources of equation variables for pathway-specific intake factor calculations.

EPC = Exposure point concentration
mg/L = milligram per liter
N/A = Not applicable
R = Route-specific concentration
$\mu g/m^3$ = micrograms per cubic meter
mg/kg-day = milligrams per kilogram day

	Conc of contaminant in air	units	Inhalation Intake Factor	units	Average Daily Intake	units
1,2 Dichloroethane	2.72E-01	mg/m^3	2.07E-03	$m^3/kg\text{-}day$	5.6E-04	mg/kg-day
Methylene chloride	7.30E-2	mg/m^3	2.07E-03	$m^3/kg\text{-}day$	1.5E-04	mg/kg-day
Toluene	4.56E+00	mg/m^3	2.07E-03	$m^3/kg\text{-}day$	9.4E-03	mg/kg-day

TABLE 89C
SUMMARY OF RECEPTOR RISKS AND HAZARDS FOR COPCs
CENTRAL TENDENCY EXPOSURE
CEDAR CHEMICAL CORPORATION, WEST HELENA, ARKANSAS

Scenario Timeframe: Future
Receptor Population: Offsite Agricultural Worker
Receptor Age: Adult

Medium	Exposure Medium	Exposure Point	Chemical	Carcinogenic Risk				Chemical	Non-Carcinogenic Hazard Quotient			
				Ingestion	Inhalation	Dermal	Exposure Routes Total		Ingestion	Inhalation	Dermal	Exposure Routes Total
Water	Alluvial Groundwater	Offsite Agricultural Wells	1,2-Dichloroethane	N/A	5E-05	N/A	5E-05	1,2-Dichloroethane	N/A	0.55	N/A	0.55
			Methylene chloride	N/A	2E-07	N/A	2E-07	Methylene chloride	N/A	0.0005	N/A	0.0005
			Toluene	N/A	N/A	N/A	N/A	Toluene	N/A	0.23	N/A	0.23
							Total Risk Across[Medium]	5E-05				Total Hazard Index Across All Media and All Exposure Routes	<1
							Total Risk Across All Media and All Exposure Routes	5E-05				

N/A = Not applicable

TABLE 90
REMEDIAL GOAL OPTIONS
SITE 1 SEDIMENT
CEDAR CHEMICAL CORPORATION, WEST HELENA, ARKANSAS

					Remedial Goal Options (mg/kg)					
					Carcinogenic Risk			Noncarcinogenic Risk		
Receptor	Parameter	EPC (1) (mg/kg)	Estimated Carcinogenic Risk	Estimated Noncarcinogenic Risk	1.00E-06	1.00E-05	1.00E-04	0.1	1	3
Construction Worker	Arsenic	123	4.10E-06	0.2	30	300	3000	N/A	N/A	N/A
Adult Worker (2)	N/A	N/A	N/A	N/A	N/A	N/A	NA	N/A	N/A	N/A
Trespasser	Arsenic	123	6.00E-05	0.3	2	20.5	205	N/A	N/A	N/A

EPC = Exposure point concentration
mg/kg = milligrams per kilogram
N/A = Not Applicable

(1) Because of the small sample size for this medium, the maximum concentration was selected as the EPC. Refer to Tables 18 and 23 for the EPC statistics for this site.
(2) Based on the definition of their respective exposure scenarios, adult workers are not exposed to sediment. RGOs were not calculated for this receptor f

TABLE 91
REMEDIAL GOAL OPTIONS
SITE 2 SURFACE AND SUBSURFACE SOIL
CEDAR CHEMICAL CORPORATION, WEST HELENA, ARKANSAS

					Remedial Goal Options (mg/kg)					
					Carcinogenic Risk			Noncarcinogenic Risk		
Receptor	Parameter	EPC (1) (mg/kg)	Estimated Carcinogenic Risk	Estimated Noncarcinogenic Risk	1.00E-06	1.00E-05	1.00E-04	0.1	1	3
Construction Worker	1,2-Dichloroethane	0.81	7E-07	1	N/A	N/A	NA	0.056	0.56	1.68
Adult Worker (2)	N/A	N/A	N/A	N/A	N/A	N/A	NA	N/A	N/A	N/A
Trespasser	N/A	N/A	N/A	N/A	N/A	N/A	NA	N/A	N/A	N/A

EPC = Exposure point concentration
mg/kg = milligrams per kilogram
N/A = Not Applicable

(1) Based on the definition of their respective exposure scenarios, adult workers and trespassers are not exposed to subsurface soil. RGOs were not calculated for these receptors for this medium.

TABLE 92
REMEDIAL GOAL OPTIONS
SITE 3 SUBSURFACE SOIL
CEDAR CHEMICAL CORPORATION, WEST HELENA, ARKANSAS

					Remedial Goal Options (mg/kg)					
					Carcinogenic Risk			Noncarcinogenic Risk		
Receptor	Parameter	EPC (1) (mg/kg)	Estimated Carcinogenic Risk	Estimated Noncarcinogenic Risk	1.00E-06	1.00E-05	1.00E-04	0.1	1	3
Construction Worker	Dinoseb (1)	13,000	N/A	40	N/A	N/A	NA	33	327	982
Adult Worker (2)	N/A	N/A	N/A	N/A	N/A	N/A	NA	N/A	N/A	N/A
Trespasser (2)	N/A	N/A	N/A	N/A	N/A	N/A	NA	N/A	N/A	N/A

EPC = Exposure point concentration
mg/kg = milligrams per kilogram
N/A = Not Applicable

(1) USEPA does not classify Dinoseb as a carcinogen; therefore, RGOs are calculated based on noncarcinogenic risk. statistics for this site.
(2) Based on the definition of their respective exposure scenarios, adult workers and trespassers are not exposed to subsurface soil. RGOs were not calculat for these receptors for this medium.

TABLE 93
REMEDIAL GOAL OPTIONS
SITE 4 SURFACE AND SUBSURFACE SOIL
CEDAR CHEMICAL CORPORATION, WEST HELENA, ARKANSAS

					Remedial Goal Options (mg/kg)					
					Carcinogenic Risk			Noncarcinogenic Risk		
Receptor	Parameter	EPC (1) (mg/kg)	Estimated Carcinogenic Risk	Estimated Noncarcinogenic Risk	1.00E-06	1.00E-05	1.00E-04	0.1	1	3
Construction Worker	3,4-Dichloroaniline (1)	12,000	N/A	9	N/A	N/A	NA	130	1304	3913
	Dinoseb	1,100	N/A	3	N/A	N/A	NA	33	333	1000
Adult Worker (2)	N/A	N/A	N/A	N/A	N/A	N/A	NA	N/A	N/A	N/A
Trespasser (2)	N/A	N/A	N/A	N/A	N/A	N/A	NA	N/A	N/A	N/A

EPC = Exposure point concentration
mg/kg = milligrams per kilogram
N/A = Not Applicable

(1) USEPA does not classify 3,4-dichloroaniline and Dinoseb as carcinogens; therefore, RGOs are calculated based on noncarcinogenic risk. statistics for this site.
(2) Based on the definition of their respective exposure scenarios, adult workers and trespassers are not exposed to subsurface soil. RGOs were not calculated for these receptors for this medium.

TABLE 94
REMEDIAL GOAL OPTIONS
SITE 9 SURFACE AND SUBSURFACE SOIL
CEDAR CHEMICAL CORPORATION, WEST HELENA, ARKANSAS

Medium: **Surface Soil (1)**

					Remedial Goal Options (mg/kg)					
					Carcinogenic Risk			Noncarcinogenic Risk		
Receptor	Parameter	EPC (1) (mg/kg)	Estimated Carcinogenic Risk	Estimated Noncarcinogenic Risk	1.00E-06	1.00E-05	1.00E-04	0.1	1	3
Adult Worker	Dinoseb (2)	29,000	N/A	247	N/A	N/A	NA	12	117	352
	Propanil (2)	4,000	N/A	7	N/A	N/A	NA	59	587	1762
Trespasser	N/A	N/A	N/A	N/A	N/A	N/A	NA	N/A	N/A	N/A
	N/A	N/A	N/A	N/A	N/A	N/A	NA	N/A	N/A	N/A

Medium: **Surface and Subsurface Soil (1)**

					Remedial Goal Options (mg/kg)					
					Carcinogenic Risk			Noncarcinogenic Risk		
Receptor	Parameter	EPC (1) (mg/kg)	Estimated Carcinogenic Risk	Estimated Noncarcinogenic Risk	1.00E-06	1.00E-05	1.00E-04	0.1	1	3
Construction Worker	Dinoseb (2)	29,000	N/A	89	N/A	N/A	NA	33	327	982
	Propanil (2)	4,000	N/A	2	N/A	N/A	NA	164	1636	4908
Adult Worker (3)	N/A	N/A	N/A	N/A	N/A	N/A	NA	N/A	N/A	N/A
Trespasser (3)	N/A	N/A	N/A	N/A	N/A	N/A	NA	N/A	N/A	N/A

EPC = Exposure point concentration
mg/kg = milligrams per kilogram
N/A = Not Applicable

(1) Because of the small sample size for this site, the maximum concentration was selected asthe EPC for both the surface and subsurface soil and surface soil pathways.
(2) USEPA does not classify Dinoseb and Propanil as carcinogens; therefore, RGOs are calculated based on noncarcinogenic risk. statistics for this site.
(3) Based on the definition of their respective exposure scenarios, adult workers and trespassers are not exposed to subsurface soil. RGOs were not calculated for these receptors for this medium.

TABLE 95
REMEDIAL GOAL OPTIONS
PERCHED GROUNDWATER
CEDAR CHEMICAL CORPORATION, WEST HELENA, ARKANSAS

					Remedial Goal Options (mg/kg)					
					Carcinogenic Risk			Noncarcinogenic Risk		
Receptor	Parameter	EPC (1) (mg/kg)	Estimated Carcinogenic Risk	Estimated Noncarcinogenic Risk	1.00E-06	1.00E-05	1.00E-04	0.1	1	3
Construction Worker	3,4-Dichloroaniline	58	N/A	72	N/A	N/A	NA	0.08	0.8	2.4
	4-Chloroaniline	5.9	N/A	7	N/A	N/A	NA	0.08	0.8	2.4
	1,2-Dichloroethane	29	1.94E-05	7	1	15	150	0.41	4.1	12.3
	Methylene chloride	600	2.99E-05	6	20	200.6484	2006.484	9.7	97	290
Adult Worker (3)	N/A	N/A	N/A	N/A	N/A	N/A	NA	N/A	N/A	N/A
Trespasser (3)	N/A	N/A	N/A	N/A	N/A	N/A	NA	N/A	N/A	N/A

EPC = Exposure point concentration
mg/kg = milligrams per kilogram
N/A = Not Applicable

(1) Because of the small sample size for this site, the maximum concentration was selected asthe EPC for both the surface and subsurface soil and surface soil pathways.
(2) USEPA does not classify 3,4-dichloroaniline and 4-chloroaniline as carcinogens; therefore, RGOs are calculated based on noncarcinogenic risk. statistics for this site.
(3) Based on the definition of their respective exposure scenarios, adult workers and trespassers are not exposed to perched groundwater. RGOs were not calculated for these receptors for this medium.

TABLE 96
REMEDIAL GOAL OPTIONS
ALLUVIAL GROUNDWATER
CEDAR CHEMICAL CORPORATION, WEST HELENA, ARKANSAS

					Remedial Goal Options (mg/kg)					
					Carcinogenic Risk			Noncarcinogenic Risk		
Receptor	Parameter	EPC (1) (mg/kg)	Estimated Carcinogenic Risk	Estimated Noncarcinogenic Risk	1.00E-06	1.00E-05	1.00E-04	0.1	1	3
Offsite Agricultural Worker	1,2-Dichloroethane	2.9	5.38E-04	6	5E-03	5E-02	5E-01	0.05	0.5	1.5
	Benzene	0.22	1.30E-05	N/A	2E-02	2E-01	2E+00	N/A	N/A	N/A
	Chloroform	0.14	2.42E-05	0.00098	6E-03	6E-02	6E-01	14.8	148	443
	Methylene chloride	44.2	1.46E-04	0.29	3E-01	3E+00	3E+01	15	151	453
	Toluene	28	N/A	1.4	N/A	N/A	NA	2	20	59
Construction Worker	N/A	N/A	N/A	N/A	N/A	N/A	NA	N/A	N/A	N/A
Adult Worker (3)	N/A	N/A	N/A	N/A	N/A	N/A	NA	N/A	N/A	N/A
Trespasser (3)	N/A	N/A	N/A	N/A	N/A	N/A	NA	N/A	N/A	N/A

EPC = Exposure point concentration
mg/kg = milligrams per kilogram
N/A = Not Applicable

(1) USEPA does not classify 1,2-dichloropropane and chlorobenzene as carcinogens; therefore, RGOs are calculated based on noncarcinogenic risk.
(2) USEPA does not classify chloroform as a noncarcinogen; therefore, RGOs are calculated based on carcinogenic risk.
statistics for this site.
(3) Based on the definition of their respective exposure scenarios, adult workers and trespassers are not exposed to perched groundwater. RGOs were not calculated for these receptors for this medium.

Appendix A

Risk Assessment Tables

TABLE 1

SUMMARY OF MAXIMUM CONTAMINANT LEVELS AND TAPWATER MEDIUM-SPECIFIC SCREENING LEVELS

CEDAR CHEMICAL CORPORATION, WEST HELENA, ARKANSAS

	Chemical	MCL (µg/L)	Tap Water MSSL (µg/L)	Industrial Drinking Water RBC (µg/L)	Toxicity Basis	Cedar Residential Screening Value[a] (µg/L)	Cedar Industrial Screening Value[a]	Basis
Inorganics								
	Arsenic	100	0.045	0.09	C	0.045	0.09	MSSL
	Barium	2000	2555	5110	N	2000	2000	MCL
	Cadmium	5	18.3	36.5	N	5	5	MCL
	Chromium	100	183	365	N	100	100	MCL
	Iron	NA	10950	21900	N	10950	21900	MSSL
	Lead	15	15	30	NA	15	15	TTAL
	Mercury	2	10.95	21.9	N	2	2	MCL
	Selenium	50	183	365	N	50	50	MCL
	Silver	NA	183	365	N	183	365	MSSL
Pesticides								
	4,4'-DDT	NA	18.25	36.50	C	18.25	36.50	MSSL
	Endosulfan	NA	219	438	N	219	438	MSSL
	HCH (alpha)	NA	0.011	0.021	C	0.011	0.021	MSSL
	Methoxychlor	40	183	365	N	40	40	MCL
	Propanil	NA	183	365	N	183	365	MSSL
Semivolatile Organic Compounds								
	1,2,4-Trichlorobenzene	70	194	389	N	70	70	MCL
	2-Chloronaphthalene	NA	487	973	N	487	973	MSSL
	2-Methylnaphthalene	NA	6	12	N	6	12	MSSL
	2-Methylphenol (o-Cresol)	NA	1825	3650	N	1825	3650	MSSL
	3,4-Dichloroaniline	NA	146	292	N	146	292	MSSL
	4-Chloroaniline	NA	146	292	N	146	292	MSSL
	4-Nitrophenol	NA	2263	4526	N	2263	4526	MSSL
	Dimethylphthalate	NA	365000	730000	N	365000	730000	MSSL
	Di-n-butylphthalate	NA	3650	7300	N	3650	7300	MSSL
	Dinoseb	7	36.5	73	N	7	7	MCL
	Isophorone	NA	70.8	142	C	71	142	MSSL
	Naphthalene	NA	6	12	N	6	12	MSSL
	Phenol	NA	21900	43800	N	21900	43800	MSSL
	Propanil	NA	183	365	N	183	365	MSSL
	Pyrene	NA	183	365	N	183	365	MSSL
	bis(2-Ethylhexyl)phthalate	6	4.8	9.6	C	4.8	6	MSSL
Volatile Organic Compounds								
	1,1,2-Trichloroethane	5	0.2	0.8	C	0.2	0.8	MSSL
	1,1-Dichloroethene	7	0.046	0.18	C	0.046	0.18	MSSL
	1,2-Dichlorobenzene	NA	370	1481	N	370	1481	MSSL
	1,2-Dichloroethane	5	0.12	0.49	C	0.12	0.49	MSSL
	trans-1,2-Dichloroethene	100	122	487	C	100	100	MCL
	1,2-Dichloropropane	5	0.16	0.66	C	0.16	0.66	MSSL
	1,3-Dichlorobenzene	600	16.5	66.1	N	16.5	66.1	MSSL
	1,4-Dichlorobenzene	75	0.467	1.9	C	0.467	1.9	MSSL
	2-Butanone	NA	1904	7617	N	1904	7617	MSSL
	2,6-Dinitrotoluene	NA	36.5	146	N	36.5	146	MSSL
	4-Methyl-2-Pentanone (MIBK)	NA	158	631	N	158	631	MSSL
	Acetone	NA	608	2433	N	608	2433	MSSL
	Benzene	5	0.42	1.7	C	0.42	1.7	MSSL
	Bromodichloromethane	NA	0.18	0.72	C	0.18	0.72	MSSL
	Bromoform	100	9	34	C	9	34	MSSL
	Carbon disulfide	NA	1043	4171	N	1043	4171	MSSL
	Carbon tetrachloride	5	0.17	0.69	C	0.17	0.69	MSSL

TABLE 1

SUMMARY OF MAXIMUM CONTAMINANT LEVELS AND TAPWATER MEDIUM-SPECIFIC SCREENING LEVELS
CEDAR CHEMICAL CORPORATION, WEST HELENA, ARKANSAS

	Chemical	MCL (µg/L)	Tap Water MSSL (µg/L)	Industrial Drinking Water RBC (µg/L)	Toxicity Basis	Cedar Residential Screening Value[a] (µg/L)	Cedar Industrial Screening Value[a]	Basis
	Chlorobenzene	NA	39.5	158	N	39.5	158	MSSL
	Chloroethane	NA	8588	34353	N	8588	34353	MSSL
	Chloroform	NA	0.16	0.66	C	0.16	0.66	MSSL
Volatile Organic Compounds								
	Dibromochloromethane	NA	0.13	0.53	C	0.13	0.53	MSSL
	Ethylbenzene	700	1340	5359	N	700	700	MCL
	Methylene chloride	NA	4.3	17.1	C	4.3	17.1	MSSL
	Toluene	1000	723	2894	N	723	1000	MSSL
	Trichloroethene	5	1.6	6.6	C	1.6	5	MSSL
	Vinyl acetate	NA	412	1650	N	412	1650	MSSL
	bis(2-Chloroethyl)ether	NA	0.0098	0.039	C	0.0098	0.039	MSSL
	m-Xylene	NA	1431	5725	N	1431	5725	MSSL
	o-Xylene	NA	1431	5725	N	1431	5725	MSSL

Notes:

MCL = maximum contaminant level
MSSL = Region 6 Medium-specific Screening Level
RBC = risk-based concentration
µg/L = microgram per liter
N = noncarcinogen
C = carcinogen
NA = not applicable
TTAL = Value is the treatment technique action level presented in the Drinking Water Standards (USEPA, 1996).
(a) = The Cedar screening value is the more stringent value of the MCL and MSSL.
(b) = Industrial screening values are calculated using guidance provided by USEPA (1994).
where: VOC_{ind} = Tap Water MSSL × 0.25
$NON\text{-}VOC_{ind}$ = Tap Water MSSL × 0.5

TABLE 2
SITE-SPECIFIC SOIL SCREENING LEVELS – SOIL-WATER PARTITION EQUATION MODEL
CEDAR CHEMICAL CORPORATION, WEST HELENA, ARKANSAS

	EQUATION	SSL	=	C_w	× { (	K_d	+ [	θ_w	+ (	θ_a	×	H'	) +	ρ_b	] }
	UNITS	mg/kg		mg/L		L/kg		unitless		unitless		unitless		kg/L	
Inorganics	Arsenic	1.53E+03	=	5.25E+01	× { (	29	+ [	0.3	+ (	0.13	×	0	) +	1.5	] }
	Barium	8.65E+04	=	2.10E+03	× { (	41	+ [	0.3	+ (	0.13	×	0	) +	1.5	] }
	Cadmium	3.95E+02	=	5.25E+00	× { (	75	+ [	0.3	+ (	0.13	×	0	) +	1.5	] }
	Chromium	2.02E+03	=	1.05E+02	× { (	19	+ [	0.3	+ (	0.13	×	0	) +	1.5	] }
	Lead	1.89E+01	=	1.58E+01	× { (	1	+ [	0.3	+ (	0.13	×	0	) +	1.5	] }
	Mercury	1.10E+02	=	2.10E+00	× { (	52	+ [	0.3	+ (	0.13	×	0	) +	1.5	] }
	Selenium	2.73E+02	=	5.25E+01	× { (	5	+ [	0.3	+ (	0.13	×	0	) +	1.5	] }
	Silver	1.63E+03	=	1.92E+02	× { (	8.3	+ [	0.3	+ (	0.13	×	0	) +	1.5	] }

	EQUATION	SSL	=	C_w	× { (	K_{oc}[a]	×	f_{oc}	) + [	θ_w	+ (	θ_a	×	H'	) +	ρ_b	] }
	UNITS	mg/kg		mg/L		L/kg		kg/kg		unitless		unitless		unitless		kg/L	
Organics	4,4'-DDD	2.70E+01	=	2.94E-01	× { (	45800	×	0.002	) + [	0.3	+ (	0.13	×	0.000166	) +	1.5	] }
	4,4'-DDE	3.59E+01	=	2.08E-01	× { (	86405	×	0.002	) + [	0.3	+ (	0.13	×	0.000873	) +	1.5	] }
	4,4'-DDT	3.29E+02	=	2.08E-01	× { (	792158	×	0.002	) + [	0.3	+ (	0.13	×	0.00223	) +	1.5	] }
	Aldrin	4.05E-01	=	4.15E-03	× { (	48686	×	0.002	) + [	0.3	+ (	0.13	×	0.00707	) +	1.5	] }
	alpha-BHC	4.34E-02	=	1.12E-02	× { (	1835	×	0.002	) + [	0.3	+ (	0.13	×	0.000282	) +	1.5	] }
	beta-BHC	1.84E-01	=	3.92E-02	× { (	2241	×	0.002	) + [	0.3	+ (	0.13	×	0.0000144	) +	1.5	] }
	delta-BHC[HSDB]	1.18E+00	=	2.10E-01	× { (	2700	×	0.002	) + [	0.3	+ (	0.13	×	0.00001763	) +	1.5	] }
	Dieldrin	2.27E-01	=	4.41E-03	× { (	25604	×	0.002	) + [	0.3	+ (	0.13	×	0.000111	) +	1.5	] }
	Endosulfan I	9.84E+02	=	2.30E+02	× { (	2040	×	0.002	) + [	0.3	+ (	0.13	×	0.000466	) +	1.5	] }
	Endosulfan II	9.84E+02	=	2.30E+02	× { (	2040	×	0.002	) + [	0.3	+ (	0.13	×	0.000466	) +	1.5	] }
	Endosulfan sulfate	9.84E+02	=	2.30E+02	× { (	2040	×	0.002	) + [	0.3	+ (	0.13	×	0.000466	) +	1.5	] }
	Endrin	4.84E+01	=	2.10E+00	× { (	11422	×	0.002	) + [	0.3	+ (	0.13	×	0.0000495	) +	1.5	] }
	Endrin ketone	4.84E+01	=	2.10E+00	× { (	11422	×	0.002	) + [	0.3	+ (	0.13	×	0.0000495	) +	1.5	] }
	gamma-BHC	6.62E-01	=	2.10E-01	× { (	1477	×	0.002	) + [	0.3	+ (	0.13	×	0.000141	) +	1.5	] }
	gamma-Chlordane	2.18E+02	=	2.10E+00	× { (	51798	×	0.002	) + [	0.3	+ (	0.13	×	0.00202	) +	1.5	] }
	Heptachlor	2.14E+00	=	1.05E-01	× { (	10070	×	0.002	) + [	0.3	+ (	0.13	×	0.0244	) +	1.5	] }
	Methoxychlor	6.73E+03	=	4.20E+01	× { (	80000	×	0.002	) + [	0.3	+ (	0.13	×	0.000657	) +	1.5	] }
	Propanil	1.23E+02	=	1.92E+02	× { (	220	×	0.002	) + [	0.3	+ (	0.13	×	1.85E-07	) +	1.5	] }
	1,2,4-Trichlorobenzene	2.59E+02	=	7.35E+01	× { (	1659	×	0.002	) + [	0.3	+ (	0.13	×	0.05822	) +	1.5	] }
	1,4-Dichlorobenzene	1.13E+02	=	7.88E+01	× { (	616	×	0.002	) + [	0.3	+ (	0.13	×	0.09963	) +	1.5	] }
	2-Chloronaphthalene	1.69E+03	=	5.11E+02	× { (	1550	×	0.002	) + [	0.3	+ (	0.13	×	0.0127	) +	1.5	] }
	2-Methylphenol (o-Cresol)	7.58E+02	=	1.92E+03	× { (	98	×	0.002	) + [	0.3	+ (	0.13	×	0.0000665	) +	1.5	] }
	2-Nitrophenol	2.16E+03	=	2.38E+03	× { (	355	×	0.002	) + [	0.3	+ (	0.13	×	0.0000146	) +	1.5	] }
	2,4-Dinitrophenol[HSDB]	4.60E+01	=	7.67E+01	× { (	200	×	0.002	) + [	0.3	+ (	0.13	×	3.53E-06	) +	1.5	] }
	3,4-Dichloroaniline[SRC,HSDB]	9.05E+01	=	1.53E+02	× { (	195	×	0.002	) + [	0.3	+ (	0.13	×	9.27E-04	) +	1.5	] }
	4,6-Dinitro-2-methylphenol	1.06E+02	=	7.67E+01	× { (	590	×	0.002	) + [	0.3	+ (	0.13	×	1.75E-05	) +	1.5	] }
	4-Chloroaniline[SRC]	1.74E+02	=	1.53E+02	× { (	469	×	0.002	) + [	0.3	+ (	0.13	×	0.0004756	) +	1.5	] }
	4-Nitrophenol	2.55E+03	=	2.38E+03	× { (	437	×	0.002	) + [	0.3	+ (	0.13	×	7.32E-09	) +	1.5	] }
	Benzoic acid	4.05E+04	=	1.53E+05	× { (	32	×	0.002	) + [	0.3	+ (	0.13	×	0.0000139	) +	1.5	] }
	bis(2-Ethylhexyl)phthalate	1.44E+03	=	6.30E+00	× { (	114337	×	0.002	) + [	0.3	+ (	0.13	×	0.000457	) +	1.5	] }
	Dimethylphthalate	8.65E+03	=	3.07E+04	× { (	41	×	0.002	) + [	0.3	+ (	0.13	×	0.000024	) +	1.5	] }
	Di-n-butylphthalate	1.29E+04	=	3.83E+03	× { (	1580	×	0.002	) + [	0.3	+ (	0.13	×	0.0000594	) +	1.5	] }
	Di-n-octylphthalate	9.35E+05	=	7.67E+02	× { (	610000	×	0.002	) + [	0.3	+ (	0.13	×	1.85E-05	) +	1.5	] }
	Dinoseb[TNRCC]	1.92E+01	=	7.35E+00	× { (	1202	×	0.002	) + [	0.3	+ (	0.13	×	0.0208	) +	1.5	] }
	Fluoranthene	1.52E+05	=	1.53E+03	× { (	49433	×	0.002	) + [	0.3	+ (	0.13	×	0.000388	) +	1.5	] }
	Isophorone	1.94E+01	=	7.43E+01	× { (	30	×	0.002	) + [	0.3	+ (	0.13	×	0.000257	) +	1.5	] }
	Phenol	5.40E+03	=	2.30E+04	× { (	17	×	0.002	) + [	0.3	+ (	0.13	×	0.0000247	) +	1.5	] }
	Pyrene	2.72E+04	=	1.92E+02	× { (	70808	×	0.002	) + [	0.3	+ (	0.13	×	0.000457	) +	1.5	] }
	1,1-Dichloroethene	3.11E+00	=	7.35E+00	× { (	65	×	0.002	) + [	0.3	+ (	0.13	×	1.0701	) +	1.5	] }
	1,2-Dichlorobenzene	3.75E+02	=	3.89E+02	× { (	379	×	0.002	) + [	0.3	+ (	0.13	×	0.0779	) +	1.5	] }
	1,2-Dichloroethane	1.47E+00	=	5.25E+00	× { (	38	×	0.002	) + [	0.3	+ (	0.13	×	0.040139	) +	1.5	] }
	1,2-Dichloropropane	1.60E+00	=	5.25E+00	× { (	47	×	0.002	) + [	0.3	+ (	0.13	×	0.1148	) +	1.5	] }
	4-Methyl-2-Pentanone (MIBK)	7.76E+01	=	1.66E+02	× { (	134	×	0.002	) + [	0.3	+ (	0.13	×	0.00574	) +	1.5	] }
	Acetone	1.29E+02	=	6.39E+02	× { (	0.575	×	0.002	) + [	0.3	+ (	0.13	×	0.0015908	) +	1.5	] }
	Benzene	1.80E+00	=	5.25E+00	× { (	62	×	0.002	) + [	0.3	+ (	0.13	×	0.22755	) +	1.5	] }
	bis(2-Chloroethyl)ether	3.62E-03	=	1.03E-02	× { (	76	×	0.002	) + [	0.3	+ (	0.13	×	0.000738	) +	1.5	] }
	Carbon disulfide	4.37E+02	=	1.09E+03	× { (	45.7	×	0.002	) + [	0.3	+ (	0.13	×	1.2423	) +	1.5	] }
	Carbon tetrachloride	3.21E+00	=	5.25E+00	× { (	152	×	0.002	) + [	0.3	+ (	0.13	×	1.2464	) +	1.5	] }
	Chlorobenzene	2.74E+01	=	4.14E+01	× { (	224	×	0.002	) + [	0.3	+ (	0.13	×	0.1517	) +	1.5	] }
	Chloroform	5.51E-02	=	1.73E-01	× { (	53	×	0.002	) + [	0.3	+ (	0.13	×	0.15047	) +	1.5	] }
	Ethylbenzene	4.67E+02	=	7.35E+02	× { (	204	×	0.002	) + [	0.3	+ (	0.13	×	0.32308	) +	1.5	] }
	Methyl ethyl ketone (2-Butanone)	4.18E+02	=	2.00E+03	× { (	4.5	×	0.002	) + [	0.3	+ (	0.13	×	0.0011234	) +	1.5	] }
	Methylene chloride	1.02E+00	=	4.49E+00	× { (	10	×	0.002	) + [	0.3	+ (	0.13	×	0.08979	) +	1.5	] }
	Tetrachloroethene	4.18E+00	=	5.25E+00	× { (	265	×	0.002	) + [	0.3	+ (	0.13	×	0.7544	) +	1.5	] }

TABLE 2
SITE-SPECIFIC SOIL SCREENING LEVELS – SOIL-WATER PARTITION EQUATION MODEL
CEDAR CHEMICAL CORPORATION, WEST HELENA, ARKANSAS

	EQUATION	SSL	=	C_w	× { (	K_d			+ [	θ_w	+ (	θ_a	×	H'	) +	ρ_b	] }
	UNITS	mg/kg		mg/L		L/kg				unitless		unitless		unitless		kg/L	
	Toluene	5.29E+02	=	1.05E+03	× { (	140	×	0.002	) + [	0.3	+ (	0.13	×	0.27224	) +	1.5	] }
	Trichloroethene	2.23E+00	=	5.25E+00	× { (	94.3	×	0.002	) + [	0.3	+ (	0.13	×	0.4223	) +	1.5	] }
	Xylene (total)	1.05E+03	=	1.50E+03	× { (	241	×	0.002	) + [	0.3	+ (	0.13	×	0.21279	) +	1.5	] }

Notes:

SSL = soil screening level based on mass-limit equation
C_w = target soil leachate concentration (Region 6 Medium Specific Screening Level for tap-water or if available maximum contaminant level) adjusted using a DAF of 20
K_d = soil-water partition coefficient for inorganics at pH 6.8 from the Soil Screening Guidance Technical Background Document (USEPA, 1996).
θ_w = water-filled soil porosity (default value)
θ_a = air-filled soil porosity (default value)
H' = Henry's law constant (dimensionless)
ρ_b = dry soil bulk density (default value)
K_{oc} = soil organic carbon-water partition coefficient
f_{oc} = fraction of organic carbon in soil (g carbon/g soil)
mg/k = milligrams per kilogram
mg/L = milligrams per liter
L/kg = liter per kilogram

SRC = Henry's law constant or K_{oc} taken from the Syracuse Research Corporation Environmental Fate Database at http://esc-plaza.syrres.com/efdb.htm.
HSD = Henry's law constant or K_{oc} taken from the Hazardous Substance Data Bank at http://toxnet.nlm.nih.gov/.

TABLE 3
BACKGROUND CONCENTRATION CALCULATION FOR INORGANIC COMPOUNDS
DETECTED IN SURFACE SOIL
CEDAR CHEMICAL CORPORATION, WEST HELENA, ARKANSAS

Sample Location	Concentration Arsenic	Barium	Chromium	Lead
BGHA-1	***3.9***	***204***	***13.1***	***10.1***
BGHA-2	***6.2***	***174***	***ND***	***10.3***
BGHA-3	***5.3***	***138***	***10.7***	***11.2***
CEDSBKG901	7.9	NS	NS	NS
CEDSBK1001	7.95	NS	NS	NS
CEDSBKG501	9.5	NS	NS	NS
CEDSBKG601	9.8	NS	NS	NS
CEDSBKG801	18	NS	NS	NS
CEDSBKG201	20	NS	NS	NS
CEDSBKG101	21	NS	NS	NS
CEDSBKG401	26	NS	NS	NS
CEDSBKG701	31	NS	NS	NS
CEDSBKG301	61	NS	NS	NS
Mean	17.5	172	11.9	10.5
Standard Deviation (SD)	15.6355426	33.04542328	1.697056275	0.5859465
Background Concentration[a]	**31.6**	**238**	**15.3**	**11.7**

All units are milligrams per kilogram (mg/kg)
ND = Not detected
NS = Not sampled
a = With the exception of arsenic all background concentrations were calculated as mean + 2 SD. The arsenic background value is the 95% upper confidence limit.

TABLE 4
OCCURRENCE, DISTRIBUTION AND SELECTION OF CHEMICALS OF POTENTIAL CONCERN
CEDAR CHEMICAL CORPORATION, WEST HELENA, ARKANSAS

Scenario Timeframe:	Current/Future
Medium:	Soil
Exposure Medium:	Surface Soil
Exposure Point	Site 1 Surface Soil

CAS Number	Chemical	Minimum (1) Concentration	Minimum Qualifier	Maximum (1) Concentration	Maximum Qualifier	Units	Location of Maximum Concentration	Detection Frequency	Range of Detection Limits	Concentration Used for Screening	Background (2) Value	Screening (3) Toxicity Value		COPC Flag	Rationale for (4) Contaminant Deletion or Selection
7440382	**Arsenic**	**3.2**		**44.6**		**mg/kg**	**001SHA0201**	**10/12**	**5**	**44.6**	**31.6**	**0.38**	**C**	**YES**	**ASL**
72548	4,4'-DDD	12		110		ug/kg	001SHA0101	5/13	7-420	110	N/A	2356	C	NO	BSL
72559	4,4'-DDE	3.8		98		ug/kg	001SHA0101	9/13	2.7-150	98	N/A	1663	C	NO	BSL
50293	4,4'-DDT	9.7		380		ug/kg	001SHA0101	3/13	8-460	380	N/A	1663	C	NO	BSL
309002	Aldrin	22		22		ug/kg	001SHA0201	1/13	2.7-150	22	N/A	26.1	C	NO	BSL
319857	Beta-BHC	47		510		ug/kg	001SHA0501	2/13	4-24	510	N/A	315	C	YES	ASL
60571	**Dieldrin**	**593**		**593**		**ug/kg**	**001SHA0501**	**1/13**	**1.3-15**	**593**	**N/A**	**27.8**	**C**	**YES**	**ASL**
106467	1,4-Dichlorobenzene	260		260		ug/kg	001SHA0501	1/13	660-150000	260	N/A	3037	C	NO	BSL
84742	Di-n-butylphthalate	750		750		ug/kg	001SHA0501	1/13	660-150000	750	N/A	606294	N	NO	BSL
88857	Dinoseb	9600		9600		ug/kg	001SHA0101	1/13	462-150000	9600	N/A	6063	N	YES	ASL
129000	Pyrene	160		160		ug/kg	001SHA0201	1/13	660-150000	160	N/A	168406	N	NO	BSL
107062	**1,2-Dichloroethane**	**16**		**7500**		**ug/kg**	**001SHA0501**	**2/12**	**5-6**	**7500**	**N/A**	**339**	**C**	**YES**	**ASL**
78933	2-Butanone (MEK)	53		57		ug/kg	001SHA0401	2/12	11-100	57	N/A	702007	N	NO	BSL
108101	4-Methyl-2-Pentanone (MIBK)	92		92		ug/kg	001SHA0501	1/12	50-65	92	N/A	76023	N	NO	BSL
67641	Acetone	64		190		ug/kg	001SGB0101	3/12	11-100	190	N/A	148568	N	NO	BSL
67663	Chloroform	98		98		ug/kg	001SHA0501	1/12	5-6	98	N/A	245	C	NO	BSL
100414	Ethylbenzene	13		13		ug/kg	001SHA0501	1/12	5-6	13	N/A	233948	sat	NO	BSL
75092	Methylene chloride	6		6		ug/kg	001SHA0501	1/12	5-20	6	N/A	8506	C	NO	BSL
127184	Tetrachloroethene	760		760		ug/kg	001SHA0501	1/12	5-6	760	N/A	4727	C	NO	BSL
108883	Toluene	2		930		ug/kg	001SHA0501	3/12	5-6	930	N/A	521170	sat	NO	BSL

(1) Minimum/maximum detected concentration.
(2) Background concentration calculated using the arithmetic mean plus two standard deviations.
(3) Residential soil screening values are from USEPA Region 6 Human Health Medium-Specific Screening Levels (USEPA, 1999).
(4) Rationale Codes Selection Reason: Above Screening Levels (ASL)

Deletion Reason: Below Screening Level (BSL)

Definitions: N/A = Not Applicable
COPC = Chemical of Potential Concern
C = Carcinogenic
N = Non-Carcinogenic
mg/kg = milligram per kilogram
ug/kg = microgram per kilogram
sat = Screening level is based on the soil saturation equation (USEPA, 1999).

TABLE 5
OCCURRENCE, DISTRIBUTION AND SELECTION OF CHEMICALS OF POTENTIAL CONCERN
CEDAR CHEMICAL CORPORATION, WEST HELENA, ARKANSAS

Scenario Timefram	Current Future
Medium:	Soil
Exposure Medium:	Surface Soil
Exposure Point:	Site 2 Surface Soil

CAS Number	Chemical	Minimum Concentration (1)	Minimum Qualifier	Maximum Concentration (1)	Maximum Qualifier	Units	Location of Maximum Concentration	Detection Frequency	Range of Detection Limits	Concentration Used for Screening	Background Value (2)	Screening Toxicity Value (3)		COPC Flag	Rationale for Contaminant Deletion or Selection (4)
7440382	Arsenic	9.1		59		mg/kg	002SHA0501	4/13	0.2	59	31.6	0.39	C	YES	ASL
7440393	Barium	89.4		89.4		mg/kg	002SHA0501	1/1	N/A	89.4	238.0	5375	N	NO	BSL
7440439	Cadmium	161.8		161.8		mg/kg	002SHA0501	1/1	N/A	161.8	N/A	39	N	YES	ASL
7440473	Chromium	95.3		95.3		mg/kg	002SHA0501	1/1	N/A	95.3	15.3	211	N	NO	BSL
7439921	Lead	65.9		65.9		mg/kg	002SHA0501	1/1	N/A	65.9	11.7	400	N	NO	BSL
7439976	Mercury	111.7		111.7		mg/kg	002SHA0501	1/1	N/A	111.7	N/A	23	N	YES	ASL
7782492	Selenium	70.9		70.9		mg/kg	002SHA0501	1/1	N/A	70.9	N/A	391	N	NO	BSL
7440224	Silver	89.9		89.9		mg/kg	002SHA0501	1/1	N/A	89.9	N/A	391	N	NO	BSL
72548	4,4'-DDD	15		15		ug/kg	002S001501	1/4	7	15	N/A	2431	C	NO	BSL
72559	4,4'-DDE	11		11		ug/kg	002S001501	1/4	2.7	11	N/A	1716	C	NO	BSL
50293	4,4'-DDT	20		190		ug/kg	002S000501	1/4	8	190	N/A	1716	C	NO	BSL
309002	Aldrin	11		58		ug/kg	002S000501	2/5	2.7	58	N/A	28	C	YES	ASL
72208	Endrin	7		7		ug/kg	002S001501	2/5	4	7	N/A	18189	N	NO	BSL
72435	Methoxychlor	55		15000		ug/kg	002S000501	5/5	N/A	15000	N/A	303147	N	NO	BSL
88857	Dinoseb	100000		100000		ug/kg	002S000501	1/4	462	100000	N/A	60629	N	YES	ASL
67641	Acetone	200		1900		ug/kg	002S001001	2/4	100	1900	N/A	1485678	N	NO	BSL

(1) Minimum/maximum detected concentration.
(2) Background concentration calculated using the arithmetic mean plus two standard deviations.
(3) Residential soil screening values are from USEPA Region 6 Human Health Medium-Specific Screening Levels (USEPA, 1999).
(4) Rationale Codes Selection Reason: Above Screening Levels (ASL)

Deletion Reason: Below Screening Level (BSL)
Background Levels (BKG)

Definitions: N/A = Not Applicable
COPC = Chemical of Potential Concern
mg/kg = milligram per kilogram
ug/kg = microgram per kilogram

TABLE 6
OCCURRENCE, DISTRIBUTION AND SELECTION OF CHEMICALS OF POTENTIAL CONCERN
CEDAR CHEMICAL CORPORATION, WEST HELENA, ARKANSAS

Scenario Timeframe:	Current Future
Medium:	Soil
Exposure Medium:	Surface Soil
Exposure Point:	Site 4 Surface Soil

CAS Number	Chemical	Minimum (1) Concentration	Minimum Qualifier	Maximum (1) Concentration	Maximum Qualifier	Units	Location of Maximum Concentration	Detection Frequency	Range of Detection Limits	Concentration Used for Screening	Background (2) Value	Screening (3) Toxicity Value		COPC Flag	Rationale for (4) Contaminant Deletion or Selection
7440382	Arsenic	3.4		7		mg/kg	004SHA0801	9/9	N/A	7	31.6	0.39	C	NO	BKG
7440393	Barium	52.6		113		mg/kg	004SHA0801	9/9	N/A	113	238	5375	N	NO	BSL
7440439	Cadmium	0.37		0.44		mg/kg	004SHA0401	3/9	0.32-0.37	0.44	N/A	39	N	NO	BSL
7440473	Chromium	10.2		19.1		mg/kg	004SHA0501	9/9	N/A	19.1	15.3	30	C	NO	BSL
7439921	Lead	3.9		13		mg/kg	004SHA0501	9/9	N/A	13	11.7	400		NO	BSL
72548	4,4'-DDD	26		350		ug/kg	004S000201	4/14	7-82	350	N/A	2431	C	NO	BSL
72559	4,4'-DDE	5.2		250		ug/kg	004S000201	9/14	2.7-27	250	N/A	1716	C	NO	BSL
50293	4,4'-DDT	49.5		260		ug/kg	004SHA0201	4/14	8-80	260	N/A	1716	C	NO	BSL
319846	Alpha-BHC	14		14		ug/kg	004SHA0601	1/14	2-22	14	N/A	90	C	NO	BSL
60571	Dieldrin	1.6		455		ug/kg	004S000401	3/14	1.3-15	455	N/A	30	C	YES	ASL
959988	Endosulfan I	32		32		ug/kg	004SHA0601	1/14	9.4-100	32	N/A	363777	N	NO	BSL
33213659	Endosulfan II	3.4		3.4		ug/kg	004SHA0401	1/14	2.7-30	3.4	N/A	363777	N	NO	BSL
76448	Heptachlor	12		12		ug/kg	004SHA0501	1/14	2-22	12	N/A	107	C	NO	BSL
72435	Methoxychlor	120		15000		ug/kg	004SHA0203	10/14	130-150	15000	N/A	303147	N	NO	BSL
95501	1,2-Dichlorobenzene	120		3700		ug/kg	004SHA0601	3/14	660-37000	3700	N/A	372612	sat	NO	IFD
95761	3,4-Dichloroaniline	85000		85000		ug/kg	004SHA0501	1/9	390-37000	85000	N/A	242518	N	NO	IFD
106478	4-Chloroaniline	8600		8600		ug/kg	004SHA0501	1/14	700-72000	8600	N/A	242518	N	NO	IFD
84742	Di-n-butylphthalate	400		540		ug/kg	004SHA0501	2/14	660-37000	540	N/A	6062944	N	NO	BSL
131113	Dimethylphthalate	94		180		ug/kg	004SHA0701	2/14	660-37000	180	N/A	100000	max	NO	BSL
88857	Dinoseb	1400		840000		ug/kg	004SHA0701	8/14	492-2310	840000	N/A	60629	N	YES	ASL
709988	Propanil	690		2500		ug/kg	004SHA0601	2/9	690-37000	2500	N/A	303147	N	NO	BSL
117817	bis(2-Ethylhexyl)phthalate (BEHP)	1200		1200		ug/kg	004SHA0501	1/14	660-37000	1200	N/A	34530	C	NO	IFD
107062	1,2-Dichloroethane	9.9		9.9		ug/kg	004S000101	1/12	5-10	9.9	N/A	341	C	NO	BSL
78933	2-Butanone (MEK)	9		130		ug/kg	004S000101	5/12	11-100	130	N/A	7020072	N	NO	BSL
108101	4-Methyl-2-Pentanone (MIBK)	19		19		ug/kg	004SHA0501	1/12	50-64	19	N/A	760225	N	NO	BSL
67641	Acetone	19		250		ug/kg	004S000101	5/12	11-100	250	N/A	1485678	N	NO	BSL
108907	Chlorobenzene	3		3		ug/kg	004SHA0602	1/12	5-8	3	N/A	54202	N	NO	BSL
100414	Ethylbenzene	4		13		ug/kg	004S000101	3/12	5-6	13	N/A	233948	sat	NO	BSL
108883	Toluene	2		350		ug/kg	004SHA0501	6/12	5-6	350	N/A	521170	sat	NO	BSL
1330207	Xylene (total)	34.5		76		ug/kg	004SHA0501	4/12	5-13	76	N/A	214480	sat	NO	BSL

(1) Minimum/maximum detected concentration.
(2) Background concentration calculated using the arithmetic mean plus two standard deviations.
(3) Residential soil screening values are from USEPA Region 6 Human Health Medium-Specific Screening Levels (USEPA, 1999).
The following surrogate screening values were used:
-Endosulfan was used for Endosulfan I and Endosulfan II
-4-Chloroaniline was used for 3,4- dichloroaniline
(4) Rationale Codes Selection Reason: Above Screening Levels (ASL)
Infrequent Detection (IFD)
Deletion Reason: Background Levels (BKG)
Below Screening Level (BSL)

Definitions: N/A = Not Applicable
COPC = Chemical of Potential Concern
C = Carcinogenic
N = Non-Carcinogenic
mg/kg = milligram per kilogram
sat = Screening level is based on the soil saturation equation (USEPA, 1999)
max = non-risk based ceiling limit

TABLE 7

OCCURRENCE, DISTRIBUTION AND SELECTION OF CHEMICALS OF POTENTIAL CONCERN
CEDAR CHEMICAL CORPORATION, WEST HELENA, ARKANSAS

Scenario Timeframe:	Current Future
Medium:	Soil
Exposure Medium:	Surface Soil
Exposure Point:	Site 6 Surface Soil

CAS Number	Chemical	Minimum (1) Concentration	Minimum Qualifier	Maximum (1) Concentration	Maximum Qualifier	Units	Location of Maximum Concentration	Detection Frequency	Range of Detection Limits	Concentration Used for Screening	Background (2) Value	Screening (3) Toxicity Value		COPC Flag	Rationale for (4) Contaminant Deletion or Selection
7440382	Arsenic	5.4		10.3		mg/kg	006SB0A201	20/20	N/A	10.3	31.6	0.39	C	NO	BKG
7440393	Barium	78.9		398		mg/kg	006SB0A201	20/20	N/A	398	238	5375	N	NO	BSL
7440439	Cadmium	0.26		0.29		mg/kg	006SB0K101	2/20	0.23-0.25	0.29	N/A	39.1	N	NO	BSL
7440473	Chromium	8.6		14.7		mg/kg	006SB0L201	20/20	N/A	14.7	15.3	30.1	C	NO	BSL
7439921	Lead	7.4		13.8		mg/kg	006SB0A101	20/20	N/A	13.8	11.7	400		NO	BSL
72548	4,4'-DDD	16		120		ug/kg	006S00H101	9/33	7-270	120	N/A	2431	C	NO	BSL
72559	4,4'-DDE	4.4		73		ug/kg	006S00H101	10/33	2.7-98	73	N/A	1716	C	NO	BSL
50293	4,4'-DDT	21		200		ug/kg	006SB0H101	10/33	8-290	200	N/A	1716	C	NO	BSL
309002	Aldrin	4.3		240		ug/kg	006SB0K201	8/33	2.7-98	240	N/A	28.4	C	YES	ASL
319846	Alpha-BHC	2.7		3.6		ug/kg	006SB0G201	3/33	2-74	3.6	N/A	90.0	C	NO	BSL
319857	Beta-BHC	7		7		ug/kg	006SB0A101	1/33	4-150	7	N/A	315	C	NO	BSL
60571	Dieldrin	5.5		78		ug/kg	006S00C201	9/33	1.3-49	78	N/A	30.2	C	YES	ASL
72208	Endrin	22		63		ug/kg	006S00L101	3/33	4-150	63	N/A	18189	N	NO	BSL
72435	Methoxychlor	210		340000		ug/kg	006S00H201	15/33	120-1500	340000	N/A	303147	N	YES	ASL
8001352	Toxaphene	2500		14000		ug/kg	006S00C101	2/33	160-5900	14000	N/A	439	C	YES	ASL
95761	3,4-Dichloroaniline	84		4900		ug/kg	006SB0F201	5/20	760-20000	4900	N/A	242518		NO	BSL
100027	4-Nitrophenol	8100		8100		ug/kg	006SB0F101	1/33	1000-16500	8100	N/A	3759026	N	NO	BSL
56553	Benzo(a)anthracene	870		870		ug/kg	006S00B101	1/33	410-8000	870	N/A	617	C	NO	IFD
117817	bis(2-Ethylhexyl)phthalate	90		110		ug/kg	006SB0D101	3/33	410-8000	110	N/A	34530	C	NO	BSL
218019	Chrysene	870		870		ug/kg	006S00B101	1/33	410-8000	870	N/A	61689	C	NO	BSL
84742	Di-n-butylphthalate	98		200		ug/kg	006SB0K201	6/33	660-8000	200	N/A	6062944	N	NO	BSL
88857	Dinoseb	430		160000		ug/kg	006S00B101	22/33	462-4200	160000	N/A	60629	N	YES	ASL
78591	Isophorone	4500		4500		ug/kg	006SB0D201	1/33	410-8000	4500	N/A	508860	C	NO	BSL
108952	Phenol	6900		6900		ug/kg	006SB0D201	1/33	410-8000	6900	N/A	36377666	N	NO	BSL
709988	Propanil	103		18000		ug/kg	006SB0F201	5/20	760-5000	18000	N/A	303147	N	NO	BSL
107062	1,2-Dichloroethane	9		9		ug/kg	006SB0J301	2/20	6-29	9	N/A	341	C	NO	BSL
78933	2-Butanone (MEK)	3		93		ug/kg	006SB0F201	3/20	6-66	93	N/A	7020072	N	NO	BSL
591786	2-Hexanone	3		3		ug/kg	006SB0F201	1/20	57-290	3	N/A	110000	sat	NO	BSL
108101	4-Methyl-2-Pentanone (MIBK)	1		500		ug/kg	006SB0D201	3/20	57-290	500	N/A	760225	N	NO	BSL
67641	Acetone	5		1345		ug/kg	006SB0G101	14/20	12-13	1345	N/A	1485678	N	NO	BSL

(1) Minimum/maximum detected concentration.

(2) Background concentration calculated using the arithmetic mean plus two standard deviations.

(3) Residential soil screening values are from USEPA Region 6 Human Health Medium-Specific Screening Levels (USEPA, 1999).
The screening value for 4-Chloroaniline was used as a surrogate for 3,4-dichloroaniline.

(4) Rationale Codes Selection Reason: Above Screening Levels (ASL)

Deletion Reason: Infrequent Detection (IFD)
Below Screening Level (BSL)
Background Screening Level (BKG)

Definitions: N/A = Not Applicable
COPC = Chemical of Potential Concern
ARAR/TBC = Applicable or Relevant and Appropriate Requirement
C = Carcinogenic
N = Non-Carcinogenic
mg/kg = milligrams per kilogram
ug/kg = micrograms per kilogram

TABLE 8
OCCURRENCE, DISTRIBUTION AND SELECTION OF CHEMICALS OF POTENTIAL CONCERN
CEDAR CHEMICAL CORPORATION, WEST HELENA, ARKANSAS

Scenario Timeframe:	Current Future
Medium:	Soil
Exposure Medium:	Surface Soil
Exposure Point:	Site 8 Surface Soil

CAS Number	Chemical	Minimum Concentration (1)	Minimum Qualifier	Maximum Concentration (1)	Maximum Qualifier	Units	Location of Maximum Concentration	Detection Frequency	Range of Detection Limits	Concentration Used for Screening	Background Value (2)	Screening Toxicity Value (3)		COPC Flag	Rationale for Contaminant Deletion or Selection (4)
7440382	Arsenic	4.2		6.3		mg/kg	008SHA0901	4/4	N/A	6.3	31.64	0.39	C	NO	BKG
7440393	Barium	77.6		248		mg/kg	008SHA0601	4/4	N/A	248	238	5375	N	NO	BSL
7440473	Chromium	16.5		22.9		mg/kg	008SHA0601	4/4	N/A	22.9	15.3	30.1	C	NO	BSL
7439921	Lead	9.4		12.5		mg/kg	008SHA0901	4/4	N/A	12.5	11.7	400		NO	BSL
7782492	Selenium	0.81		0.81		mg/kg	008SHA0801	1/4	0.62	0.81	N/A	391	N	NO	BSL
60571	Dieldrin	4		4		ug/kg	008SHA0701	1/4	1.6-1.7	4	N/A	30.2	C	NO	BSL

(1) Minimum/maximum detected concentration.
(2) Background concentration calculated using the arithmetic mean plus two standard deviations.
(3) Residential soil screening values are from USEPA Region 6 Human Health Medium-Specific Screening Levels (USEPA, 1999).
(4) Rationale Codes Deletion Reason: Background Levels (BKG)
Below Screening Level (BSL)

Definitions: N/A = Not Applicable
COPC = Chemical of Potential Concern
C = Carcinogenic
N = Non-Carcinogenic
mg/kg = milligrams per kilogram
ug/kg = micrograms per kilogram

TABLE 9
OCCURRENCE, DISTRIBUTION AND SELECTION OF CHEMICALS OF POTENTIAL CONCERN
CEDAR CHEMICAL CORPORATION, WEST HELENA, ARKANSAS

Scenario Timeframe:	Current Future
Medium:	Soil
Exposure Medium:	Surface Soil
Exposure Point:	Site 9 Surface Soil

CAS Number	Chemical	Minimum (1) Concentration	Minimum Qualifier	Maximum (1) Concentration	Maximum Qualifier	Units	Location of Maximum Concentration	Detection Frequency	Range of Detection Limits	Concentration Used for Screening	Background (2) Value	Screening (3) Toxicity Value		COPC Flag	Rationale for (4) Contaminant Deletion or Selection
7440382	Arsenic	3.4		3.5		mg/kg	009SB00301	2/2	N/A	3.5	31.6	0.39	C	NO	BKG
7440393	Barium	94.1		99.8		mg/kg	009SB00301	2/2	N/A	99.8	238	5,375	N	NO	BSL
7440473	Chromium	11.3		14.7		mg/kg	009SB00301	2/2	N/A	14.7	15.3	30.1	C	NO	BSL
7439921	Lead	8.1		9		mg/kg	009SB00301	2/2	N/A	9	11.7	400		NO	BSL
72548	4,4'-DDD	24		24		ug/kg	009SB01501	1/2	93	24	N/A	2,431	C	NO	BSL
72559	4,4'-DDE	12		12		ug/kg	009SB01501	1/2	34	12	N/A	1,716	C	NO	BSL
50293	4,4'-DDT	15		15		ug/kg	009SB01501	1/2	100	15	N/A	1,716	C	NO	BSL
76448	**Heptachlor**	**150**		**150**		**ug/kg**	**009SB00301**	**1/2**	**2.1**	**150**	N/A	**107.4**	**C**	**YES**	**ASL**
95761	**3,4-Dichloroaniline**	**150**		**450,000**		**ug/kg**	**009SB00701**	**5/16**	**840-85,000,000**	**450,000**	N/A	**242517.77**	**N**	**YES**	**ASL**
88857	**Dinoseb**	**500**		**29,000,000**		**ug/kg**	**009SB00501**	**17/19**	**7-15,000,000**	**29,000,000**	N/A	**60,629**	**N**	**YES**	**ASL**
709988	**Propanil**	**860**		**4,000,000**		**ug/kg**	**009SB00401**	**5/16**	**720-85,000,000**	**4,000,000**	N/A	**303,147**	**N**	**YES**	**ASL**
107062	1,2-Dichloroethane	43		58		ug/kg	009S002001	2/5	5-130	58	N/A	341	C	NO	BSL
78933	2-Butanone (MEK)	22		36,000		ug/kg	009S002201	4/5	11-4,000	36,000	N/A	7,020,072	N	NO	BSL
108101	4-Methyl-2-Pentanone (MIBK)	12		63		ug/kg	009S002201	2/5	50-2,000	63	N/A	760,225	N	NO	BSL
67641	Acetone	300		200,000		ug/kg	009S002201	4/5	11-4,000	200,000	N/A	1,485,678	N	NO	BSL
100414	Ethylbenzene	10		10		ug/kg	009S002201	1/5	5-200	10	N/A	233,948	sat	NO	BSL
75092	Methylene chloride	92		94		ug/kg	009S002101	2/5	5-800	94	N/A	8,607	C	NO	BSL
108883	Toluene	10		61		ug/kg	009S002001	2/5	5-200	61	N/A	521,170	sat	NO	BSL
1330207	Xylene (total)	4		130		ug/kg	009S002201	2/5	5-200	130	N/A	214,480	sat	NO	BSL

(1) Minimum/maximum detected concentration.
(2) Background concentration calculated using the arithmetic mean plus two standard deviations.
(3) Residential soil screening values are from USEPA Region 6 Human Health Medium-Specific Screening Levels (USEPA, 1999). The screening value for 4-chloroaniline was used as a surrogate for 3,4-dichloroaniline.
(4) Rationale Codes Selection Reason: Above Screening Levels (ASL)

Deletion Reason: Background Levels (BKG)
Below Screening Level (BSL)

Definitions: N/A = Not Applicable
COPC = Chemical of Potential Concern
C = Carcinogenic
N = Non-Carcinogenic
sat = Screening level is based on the soil saturation equation (USEPA, 1999)

TABLE 10
OCCURRENCE, DISTRIBUTION AND SELECTION OF CHEMICALS OF POTENTIAL CONCERN
CEDAR CHEMICAL CORPORATION, WEST HELENA, ARKANSAS

Scenario Timeframe:	Current/Future
Medium:	Soil
Exposure Medium:	Subsurface Soil
Exposure Point:	Site 1 Subsurface Soil

CAS Number	Chemical	Minimum (1) Concentration	Minimum Qualifier	Maximum (1) Concentration	Maximum Qualifier	Units	Location of Maximum Concentration	Detection Frequency	Range of Detection Limits	Concentration Used for Screening	Screening (2) Toxicity Value MSSL	Screening (2) Toxicity Value SSL	COPC Flag	Rationale for (3) Contaminant Deletion or Selection
7440382	**Arsenic**	**1.6**		**44.6**		**mg/kg**	**001SHA0201**	**16/20**	**5 - 5**	**44.6**	**2**	**1533**	**YES**	**ASL**
7440439	Cadmium	0.29		0.29		mg/kg	001SMW0606	1/16	0.33 - 0.38	0.29	1019	395	NO	BSL
72548	4,4'-DDD	12		110		ug/kg	001SHA0101	6/25	7- 700	110	14158	27002	NO	BSL
72559	4,4'-DDE	3 8		98		ug/kg	001SHA0101	10/25	2.7- 270	98	9994	35922	NO	BSL
50293	4,4'-DDT	9.7		380		ug/kg	001SHA0101	3/25	8 - 800	380	9994	328988	NO	BSL
309002	Aldrin	22		22		ug/kg	001SHA0201	1/25	2.7- 150	22	103	405	NO	BSL
319857	Beta-BHC	47		510		ug/kg	001SHA0501	2/25	4 - 400	510	1663	184	NO	BSL
84742	**Dieldrin**	**593**		**593**		**ug/kg**	**001SHA0501**	**1/25**	**1.3 - 130**	**593**	**109**	**227**	**YES**	**ASL**
106467	1,4-Dichlorobenzene	260		260		ug/kg	001SHA0501	1/25	460 - 150000	260	6988	113450	NO	BSL
84742	Di-n-butylphthalate	120		750		ug/kg	001SHA0501	2/25	660 - 150000	750	62311299	12877220	NO	BSL
88857	Dinoseb	9600		9600		ug/kg	001SHA0101	1/25	462- 150000	9600	623113	19157	NO	BSL
129000	Pyrene	160		160		ug/kg	001SHA0201	1/25	460 - 150000	160	14976044	27175499	NO	BSL
107062	**1,2-Dichloroethane**	**16**		**7500**		**ug/kg**	**001SHA0501**	**3/20**	**5 - 6**	**7500**	**746**	**1467**	**YES**	**ASL**
78933	2-Butanone (MEK)	53		57		ug/kg	001SHA0401	2/20	11 - 100	57	26408664	418104	NO	BSL
107062	4-Methyl-2-Pentanone (MIBK)	92		92		ug/kg	001SHA0501	1/20	50 - 70	92	746	77644	NO	BSL
67641	Acetone	54		190		ug/kg	001SGB0101	5/20	11 - 100	190	5827279	128573	NO	BSL
67663	Chloroform	98		98		ug/kg	001SHA0501	1/20	5 - 7	98	521	55	NO	BSL
100414	Ethylbenzene	13		13		ug/kg	001SHA0501	1/20	5 - 7	13	233948	467460	NO	BSL
75092	Methylene chloride	6		33		ug/kg	001SMW0606	2/20	5 - 20	33	19378	1023	NO	BSL
127184	Tetrachloroethene	760		760		ug/kg	001SHA0501	1/20	5 - 7	760	13479	14176	NO	BSL
108883	Toluene	2		930		ug/kg	001SHA0501	3/20	5 - 7	930	521170	528774	NO	BSL

(1) Minimum/maximum detected concentration.
(2) Industrial soil screening values are from EPA Region 6 Human Health Medium-Specific Screening Levels (October, 1999).
(3) Rationale Codes Selection Reason: Above Screening Levels (ASL)

Deletion Reason: Below Screening Level (BSL)

Definitions: N/A = Not Applicable
COPC = Chemical of Potential Concern
mg/kg = milligrams per kilogram
ug/kg = micrograms per kilogram

TABLE 11
OCCURRENCE, DISTRIBUTION AND SELECTION OF CHEMICALS OF POTENTIAL CONCERN
CEDAR CHEMICAL CORPORATION, WEST HELENA, ARKANSAS

Scenario Timeframe:	Current/Future
Medium:	Soil
Exposure Medium:	Subsurface Soil
Exposure Point:	Site 2 Subsurface Soil

CAS Number	Chemical	Minimum [1] Concentration	Minimum Qualifier	Maximum [1] Concentration	Maximum Qualifier	Units	Location of Maximum Concentration	Detection Frequency	Range of Detection Limits	Concentration Used for Screening	Screening [2] Toxicity Value MSSL	Screening [2] Toxicity Value SSL	COPC Flag	Rationale for [3] Contaminant Deletion or Selection
7440382	Arsenic	3.4		59		mg/kg	IMSB-1 (1-3')	43/53	0.2-5	59	2	1533	YES	ASL
7440393	Barium	81.7		313		mg/kg	IMSB-1 (1-3')	43/43	NA	313	100000	86520	NO	BSL
7440439	Cadmium	0.25		161.8		mg/kg	2HA-5 (0-1')	17/43	0.24-0.4	161.8	1019	395	NO	BSL
7440473	Chromium	8.2		95.3		mg/kg	2HA-5 (0-1')	43/43	NA	95.3	64	2016	YES	ASL
7439921	Lead	6.5		65.9		mg/kg	2HA-5 (0-1')	43/43	NA	65.9	2000	19	NO	BSL
7439976	Mercury	111.7		111.7		mg/kg	2HA-5 (0-1')	1/43	0.1-0.14	111.7	23	110	YES	ASL
7782492	Selenium	0.15		70.9		mg/kg	2HA-5 (0-1')	10/43	0.12-0.75	70.9	10220	273	NO	BSL
7440224	Silver	89.9		89.9		mg/kg	2HA-5 (0-1')	1/43	0.36-0.93	89.9	10220	1629	NO	BSL
72548	4,4'-DDD	10		180		ug/kg	2SB-6 (21-22')	4/58	0.0006-9300	180	14158	27002	NO	BSL
72559	4,4'-DDE	11		190		ug/kg	IMSB-1 (1-3')	2/59	0.0002-3400	190	9994	35922	NO	BSL
50293	4,4'-DDT	11		890		ug/kg	IMSB-1 (1-3')	7/58	0.0006-10000	890	9994	328988	NO	BSL
309002	Aldrin	9.3		500		ug/kg	2SB-6 (28-29')	7/59	0.0002-3400	500	103	405	YES	ASL
319846	Alpha-BHC	4.4		210		ug/kg	2SB-6 (28-29')	7/58	0.0002-2500	210	475	43	NO	BSL
319857	Beta-BHC	7.2		37		ug/kg	IMSB-3 (5-10')	3/58	0.0003-5100	37	1663	184	NO	BSL
319868	Delta-BHC	26		26		ug/kg	IMSB-1 (8-12')	1/59	0.0004-7600	26	475	1176	NO	BSL
60571	Dieldrin	7.4		350		ug/kg	IMSB-2 (10-15')	5/58	0.0001-1700	350	109	227	YES	ASL
1031078	Endosulfan Sulfate	17		17		ug/kg	2SB-15 (8-10')	1/58	0.0033-56000	17	469268	984195	NO	BSL
72208	Endrin	7		680		ug/kg	2SB-6 (28-29')	5/58	0.0003-5100	680	23463	48392	NO	BSL
53494705	Endrin ketone	6.4		6.4		ug/kg	2SB-15 (8-10')	1/48	3.8-20000	6	23463	48392	NO	BSL
58899	gamma-BHC (Lindane)	3.4		3.4		ug/kg	IMSB-3 (5-10')	2/59	0.0002-3400	3.4	2302	662	NO	BSL
5103742	gamma-Chlordane	150		150		ug/kg	2SB-6 (21-22')	1/45	11-12000	150	1829	217972	NO	BSL
76448	Heptachlor	4.9		270		ug/kg	2SB-6 (28-29')	5/58	0.0001-2500	270	388	2136	NO	BSL
72435	Methoxychlor	55		340000		ug/kg	2SB-9 (26-27')	20/58	0.009-34000	340,000	3115565	6728402	NO	BSL
120821	1,2,4-Trichlorobenzene	1200		1200		ug/kg	2SB-10 (15-20')	1/57	0.05-44000	1,200	3019460	258944	NO	BSL
95501	1,2-Dichlorobenzene	150		12000		ug/kg	2SB-9 (26-27')	5/57	0.05-44000	12,000	372612	374949	NO	BSL
91587	2-Chloronaphthalene	72		5400		ug/kg	2SB-12 (15-20')	4/57	0.05-44000	5,400	19790689	1686863	NO	BSL
88755	2-Nitrophenol	53		2900		ug/kg	2SB-10 (15-20')	8/57	0.05-44000	2900	4849101	2161413	NO	BSL
95761	3,4-Dichloroaniline	250		6700		ug/kg	IMSB-2 (5-10')	6/47	430-110000	6,700	312845	90459	NO	BSL
100027	4-Nitrophenol	46		25000		ug/kg	2SB-3 (13-14')	21/57	0.25-20000	25,000	38633005	2549684	NO	BSL
65850	Benzoic acid	540		540		ug/kg	2MW-1 (20-25')	1/33	0.25-4500	540	100000000	40471385	NO	BSL
111444	bis(2-Chloroethyl)ether	180		180		ug/kg	2SB-12 (25-30')	1/57	0.05-44000	180	488	4	NO	BSL
84742	Di-n-butylphthalate	53		3200		ug/kg	2SB-12 (15-20')	13/57	0.05-44000	3200	62311299	12877220	NO	BSL
88857	Dinoseb	1.1		100000		ug/kg	2MW-5 (0-1')	16/57	0.35-17000	100,000	623113	19157	NO	BSL
108952	Phenol	170		100000		ug/kg	2SB-12 (15-20')	20/57	0.05-44000	100000	100000000	5398264	NO	BSL
709988	Propanil	90		79000		ug/kg	2SB-12 (15-20')	28/47	840-4400	79,000	3115565	122640	NO	BSL
107062	1,2-Dichloroethane	10		170000		ug/kg	2SB-6 (28-29')	28/53	0.05-8300	170,000	746	1467	YES	ASL
78875	1,2-Dichloropropane	32		32		ug/kg	2SB-5 (15-20')	1/53	0.05-89000	32	754	1596	NO	BSL
78933	2-Butanone (MEK)	21		1700		ug/kg	2SB-10 (15-20')	5/53	1-180000	1,700	26408664	418104	NO	BSL
108101	4-Methyl-2-Pentanone (MIBK)	9		1200		ug/kg	2SB-3 (24-25')	13/53	0.5-890000	1,200	2780710	77644	NO	BSL
67641	Acetone	13		17000		ug/kg	2SB-11 (25-30')	28/53	1-180000	17,000	5827279	128573	NO	BSL
56235	Carbon tetrachloride	670		670		ug/kg	2SB-9 (26-27')	1/53	0.05-89000	670	516	3213	NO	SDE

TABLE 11
OCCURRENCE, DISTRIBUTION AND SELECTION OF CHEMICALS OF POTENTIAL CONCERN
CEDAR CHEMICAL CORPORATION, WEST HELENA, ARKANSAS

Scenario Timeframe:	Current/Future
Medium:	Soil
Exposure Medium:	Subsurface Soil
Exposure Point:	Site 2 Subsurface Soil

CAS Number	Chemical	Minimum (1) Concentration	Minimum Qualifier	Maximum (1) Concentration	Maximum Qualifier	Units	Location of Maximum Concentration	Detection Frequency	Range of Detection Limits	Concentration Used for Screening	Screening (2) Toxicity Value MSSL	SSL	COPC Flag	Rationale for (3) Contaminant Deletion or Selection
108907	Chlorobenzene	3		530		ug/kg	2SB-9 (26-27')	7/53	0.05-89000	530	182630	27393	NO	BSL
67663	Chloroform	2		13000		ug/kg	2SB-9 (26-27')	17/53	0.05-89000	13,000	521	55	YES	ASL
100414	Ethylbenzene	1		620		ug/kg	2SB-3 (24-25')	7/53	0.05-89000	620	233948	467460	NO	BSL
75092	Methylene chloride	12		380000		ug/kg	2SB-5 (25-30')	31/53	0.2-8300	380,000	19378	1023	YES	ASL
108883	Toluene	3		390000		ug/kg	2SB-10 (15-20')	19/53	0.05-89000	390,000	521170	528774	NO	BSL
1330207	Xylene (total)	3		4800		ug/kg	2SB-6 (28-29')	14/53	0.05-89000	4,800	214480	1052723	NO	BSL

(1) Minimum/maximum detected concentration.
(2) Industrial soil screening values are from USEPA Region 6 Human Health Medium-Specific Screening Levels (USEPA, 1999).
- Alpha-BHC was used for Delta-BHC
-Endosulfan was used for endosulfan sulfate
-Endrin was used for endrin ketone
-Chlordane was used for gamma-chlordane
-4-Chloroaniline was used for 3,4-dichloroaniline
(3) Rationale Codes Selection Reason: Above Screening Levels (ASL)

Deletion Below Screening Level (BSL)
Sample Depth Exceedance (SDE)
(4) Although the carbon tetrachloride concentrations exceeds screening levels, it was not selected as a COPC because the depth at which the concentrations were detected exceeded 10 feet. Hypothetical receptors for the Cedar facility would not be exposed to depths beyond 10 feet.

Definitions:
N/A = Not Applicable
COPC = Chemicals of Potential Concern
C = Carcinogen
N = Noncarcinogen
mg/kg = milligram per kilogram
ug/kg = microgram per kilogram
sat = Screening level is based on the soil saturation equation (USEPA, 1999).

TABLE 12
OCCURRENCE, DISTRIBUTION AND SELECTION OF CHEMICALS OF POTENTIAL CONCERN
CEDAR CHEMICAL CORPORATION, WEST HELENA, ARKANSAS

Scenario Timeframe:	Current/Future
Medium:	Soil
Exposure Medium:	Subsurface Soil
Exposure Point:	Site 3 Subsurface Soil

CAS Number	Chemical	Minimum (1) Concentration	Minimum Qualifier	Maximum (1) Concentration	Maximum Qualifier	Units	Location of Maximum Concentration	Detection Frequency	Range of Detection Limits	Concentration Used for Screening	Screening (3) Toxicity Value		COPC Flag	Rationale for (4) Contaminant Deletion or Selection
88857	Dinoseb	630		13,000,000		ug/kg	003SLB0602	5/5	N/A	13,000,000	1,068,868	19167	YES	ASL

(1) Minimum/maximum detected concentration.
(2) Industrial soil screening values are from USEPA Region 6 Human Health Medium-Specific Screening Levels (USEPA, 1999).
(3) Rationale Codes Selection Reason: Above Screening Levels (ASL)

Definitions: N/A = Not Applicable
COPC = Chemical of Potential Concern
C = Carcinogenic
N = Non-Carcinogenic
ug/kg = microgram per kilogram

TABLE 13
OCCURRENCE, DISTRIBUTION AND SELECTION OF CHEMICALS OF POTENTIAL CONCERN
CEDAR CHEMICAL CORPORATION, WEST HELENA, ARKANSAS

Scenario Timeframe:	Current/Future
Medium:	Soil
Exposure Medium:	Subsurface Soil
Exposure Point:	Site 4 Subsurface Soil

CAS Number	Chemical	Minimum [1] Concentration	Minimum Qualifier	Maximum [1] Concentration	Maximum Qualifier	Units	Location of Maximum Concentration	Detection Frequency	Range of Detection Limits	Concentration Used for Screening	Screening [2] Toxicity Value		COPC Flag	Rationale for [3] Contaminant Deletion or Selection
7440382	**Arsenic**	**1.3**		**15.5**		**mg/kg**	**4MW-1 (25-30')**	**16/16**	**N/A - N/A**	**15.5**	**3**	**1533**	**YES**	**ASL**
7440393	Barium	72.6		218		mg/kg	4MW-1 (10-15')	16/16	N/A - N/A	218	100000	86520	NO	BSL
7440473	Chromium	8.6		20.9		mg/kg	4HA-6 (1-2')	16/16	N/A - N/A	20.9	64	2016	NO	BSL
7439921	Lead	6.9		30		mg/kg	4MW-1 (10-15')	16/16	N/A - N/A	30	2000	19	NO	BSL
7782492	Selenium	0.64		0.64		mg/kg	4MW-2 (25-30')	1/16	0.56 - 0.65	0.64	9366	273	NO	BSL
72548	4,4'-DDD	26		350		ug/kg	4SB-2 (0-2')	8/41	7 - 430	350	18719	27002	NO	BSL
72559	4,4'-DDE	5.2		280		ug/kg	4HA-4 (1-2')	16/41	2.7 - 160	280	132147	35922	NO	BSL
50293	4,4'-DDT	19		450		ug/kg	4HA-6 (1-2')	8/41	8 - 470	450	13214	328988	NO	BSL
319846	Alpha-BHC	8.1		14		ug/kg	4HA-6 (0-1')	2/41	2 - 120	14	665	43	NO	BSL
319857	Beta-BHC	5.1		38		ug/kg	4HA-5 (2-3')	2/41	4 - 230	38	23292	184	NO	BSL
60571	**Dieldrin**	**1.6**		**630**		**ug/kg**	**4HA-6 (1-2')**	**6/41**	**1.3 - 78**	**630**	**187**	**227**	**YES**	**ASL**
959988	Endosulfan I	32		32		ug/kg	4HA-6 (0-1')	1/41	9.4 - 550	32	6413206	984195	NO	BSL
33213659	Endosulfan II	3.4		72		ug/kg	4HA-2 (1-2')	2/41	2.7 - 160	72	6413206	984195	NO	BSL
53494705	Endrin ketone	770		770		ug/kg	4HA-2 (1-2')	1/25	17 - 940	770	320660	48392	NO	BSL
	Heptachlor	12		12		ug/kg	4HA-5 (0-1')	1/41	2 - 120	12	665	2136	NO	BSL
72435	Methoxychlor	120		74,000		ug/kg	4HA-2 (1-2')	19/41	120 - 1,200	74,000	534434	6728402	NO	BSL
120821	1,2,4-Trichlorobenzene	470		470		ug/kg	4HA-4 (1-2')	1/41	430 - 1,400,000	470	3019460	258944	NO	BSL
95501	1,2-Dichlorobenzene	120		3,700		ug/kg	4HA-6 (0-1')	5/41	350 - 1,400,000	3,700	372612	374949	NO	BSL
95487	2-Methylphenol (o-Cresol)	2		2		ug/kg	4MW-1 (25-30')	1/41	430 - 1,400,000	2	5344339	757787	NO	BSL
95761	**3,4-Dichloroaniline**	**12**		**12,000,000**		**ug/kg**	**4HA-6 (1-2')**	**8/25**	**690 - 37000**	**12,000,000**	**427547**	**90459**	**YES**	**ASL**
106478	4-Chloroaniline	2,800		12,000		ug/kg	4HA-4 (1-2')	4/41	430 - 2,700,000	12,000	427547	174462	NO	BSL
100027	4-Nitrophenol	2		2		ug/kg	4MW-1 (25-30')	1/41	1000 - 6,800,000	2	6626980	2549684	NO	BSL
84742	Di-n-butylphthalate	400		2,700		ug/kg	4HA-2 (1-2')	4/41	430 - 1,400,000	2,700	100000000	12877220	NO	BSL
117840	Di-n-octylphthalate	4,300		4,300		ug/kg	4HA-5 (1-2')	1/41	430 - 1,400,000	4,300	2137735	935283301	NO	BSL
131113	Dimethylphthalate	94		180		ug/kg	4HA-7 (5-6')	3/41	430 - 1,400,000	180	100000000	8646184	NO	BSL
88857	**Dinoseb**	**45**		**1,100,000**		**ug/kg**	**4HA-2 (1-2')**	**22/41**	**462 - 1,400,000**	**1,100,000**	**106887**	**19157**	**YES**	**ASL**
206440	Fluoranthene	130		130		ug/kg	4HA-4 (1-2')	1/41	430 - 1,400,000	130	3740329	151868230	NO	BSL
78591	Isophorone	730		15,000		ug/kg	4SB-3 (6-8')	3/41	430 - 1,400,000	15,000	31503470	19352	NO	BSL
108952	Phenol	7		7		ug/kg	4MW-1 (25-30')	1/41	430 - 1,400,000	7	100000000	5398264	NO	BSL
709988	Propanil	64		130,000		ug/kg	4HA-5 (2-3')	6/25	690 - 1400000	130,000	534434	122640	NO	BSL
129000	Pyrene	110		110		ug/kg	4HA-4 (1-2')	1/41	430 - 1,400,000	110	3647509	27175499	NO	BSL
117817	bis(2-Ethylhexyl)phthalate	1,200		1,300		ug/kg	4HA-5 (1-2')	2/41	430 - 1,400,000	1,300	213774	1441906	NO	BSL
75354	1,1-Dichloroethene	2		2		ug/kg	4HA-4 (2-3')	1/35	5 - 33	2	1176	3107	NO	BSL
107062	**1,2-Dichloroethane**	**9.9**		**820**		**ug/kg**	**4MW-3 (33-38')**	**10/35**	**5 - 29**	**820**	**758**	**1467**	**YES**	**ASL**
78933	2-Butanone (MEK)	9		130		ug/kg	4SB-1 (0-2')	10/35	11 - 100	130	2721022	418104	NO	BSL
108101	4-Methyl-2-Pentanone (MIBK)	19		120		ug/kg	4HA-5 (2-3')	6/35	50 - 170	120	284694	77644	NO	BSL
67641	Acetone	12		4,400		ug/kg	4SB-1 (8-10')	18/35	11 - 100	4,400	606377	128573	NO	BSL
71432	Benzene	2		29		ug/kg	4MW-1 (10-15')	2/35	5 - 33	29	1359	1805	NO	BSL

TABLE 13
OCCURRENCE, DISTRIBUTION AND SELECTION OF CHEMICALS OF POTENTIAL CONCERN
CEDAR CHEMICAL CORPORATION, WEST HELENA, ARKANSAS

Scenario Timeframe:	Current/Future
Medium:	Soil
Exposure Medium:	Subsurface Soil
Exposure Point:	Site 4 Subsurface Soil

CAS Number	Chemical	Minimum (1) Concentration	Minimum Qualifier	Maximum (1) Concentration	Maximum Qualifier	Units	Location of Maximum Concentration	Detection Frequency	Range of Detection Limits	Concentration Used for Screening	Screening (2) Toxicity Value		COPC Flag	Rationale for (3) Contaminant Deletion or Selection
75150	Carbon disulfide	16		120		ug/kg	4HA-2 (1-2')	3/35	5 - 100	120	721254	436977	NO	BSL
108907	Chlorobenzene	3		35		ug/kg	4HA-5 (2-3')	4/35	5 - 33	35	18375	27393	NO	BSL
67663	Chloroform	12		25.5		ug/kg	4HA-4 (2-3')	2/35	5 - 33	25.5	522	55	NO	BSL
100414	Ethylbenzene	4		150		ug/kg	4HA-2 (1-2')	8/35	5 - 33	150	233948	467460	NO	BSL
75092	Methylene chloride	1		270		ug/kg	4MW-1 (25-30')	6/35	5 - 29	270	20075	1023	NO	BSL
108883	Toluene	2		56,000		ug/kg	4MW-1 (10-15')	16/35	5 - 7	56,000	521170	528774	NO	BSL

(1) Minimum/maximum detected concentration.
(2) Industrial soil screening values are from USEPA Region 6 Human Health Medium-Specific Screening Levels (USEPA, 1999).
-The following surrogate screening values were used:
-Endosulfan was used for Endosulfan I and Endosulfan II
-Endrin was used for endrin ketone
-4-Chloroaniline was used for 3,4-dichloroanaline
(3) Rationale Codes Selection Reason: Infrequent Detection but Associated Historically (HIST)

Deletion Reason: Below Screening Level (BSL)

Definitions:
N/A = Not Applicable
COPC = Chemical of Potential Concern
C = Carcinogenic
N = Non-Carcinogenic
mg/kg = milligram per kilogram
ug/kg = microgram per kilogram

TABLE 14
OCCURRENCE, DISTRIBUTION AND SELECTION OF CHEMICALS OF POTENTIAL CONCERN
CEDAR CHEMICAL CORPORATION, WEST HELENA, ARKANSAS

Scenario Timeframe:	Current/Future
Medium:	Soil
Exposure Medium:	Subsurface Soil
Exposure Point:	Site 5 Subsurface Soil

CAS Number	Chemical	Minimum (1) Concentration	Minimum Qualifier	Maximum (1) Concentration	Maximum Qualifier	Units	Location of Maximum Concentration	Detection Frequency	Range of Detection Limits	Concentration Used for Screening	Screening (2) Toxicity Value		COPC Flag	Rationale for (3) Contaminant Deletion or Selection
7440382	Arsenic	7.4		9.7		mg/kg	005SB00302	6/6	N/A	9.7	3	1533	NO	SDE
7440393	Barium	126		168		mg/kg	005SB00201	6/6	N/A	168	100000	86520	NO	BSL
7440439	Cadmium	0.4		0.4		mg/kg	005SB000302	1/6	0.25 - 0.38	0.4	934	395	NO	BSL
7440473	Chromium	9.1		11.7		mg/kg	005SB00201	6/6	N/A	11.7	64	2016	NO	BSL
7439921	Lead	8.3		10.4		mg/kg	005SB00102	6/6	N/A	10.4	2000	19	NO	BSL
319846	Alpha-BHC	3.7		6.8		ug/kg	005SB00202	2/6	2.5 - 2.6	6.8	665	43	NO	BSL
33213659	Endosulfan II	5.9		12		ug/kg	005SB00201	2/6	3.3 - 3.4	12	6413206	984195	NO	BSL
58899	gamma-BHC (Lindane)	6.2		6.2		ug/kg	005SB00202	1/6	3.3 - 3.4	6.2	3225	662	NO	BSL
51285	2,4-Dinitrophenol	23,000		49,000		ug/kg	005SB00202	2/6	4200 - 4300	49,000	213774	45990	NO	BSL
95761	3,4-Dichloroanline	1,200		1200		ug/kg	005SB00102	1/6	820 - 860	1200	427547	90459	NO	BSL
534521	4,6-Dinitro-2-methylphenol	200		200		ug/kg	005SB00201	1/6	4200 - 4300	200	N/A	105777	NO	BSL
88857	Dinoseb	57,000		170,000		ug/kg	005SB00201	2/6	4200 - 4300	170,000	106887	19157	NO	SDE
107062	1,2-Dichloroethane	4		4		ug/kg	005SB00302	1/6	6 - 820	4	758	1467	NO	BSL
78933	2-Butanone (MEK)	120		44,000		ug/kg	005SB00202	3/6	12 -13	44,000	2721022	418104	NO	BSL
108101	4-Methyl-2-Pentanone (MIBK)	1		170		ug/kg	005SB00302	3/6	59 - 8200	170	284694	77644	NO	BSL
67641	Acetone	3,900		21,000		ug/kg	005SB00302	3/6	12 - 13	21,000	606377	128573	NO	BSL
67663	Chloroform	4		4		ug/kg	005SB00302	1/6	6 - 820	4	522	55	NO	BSL
100414	Ethylbenzene	3		3		ug/kg	005SB00201	1/6	6 - 820	3	233948	467460	NO	BSL
75092	Methylene chloride	8		140		ug/kg	005SB00102	5/6	820 - 820	140	20075	1023	NO	BSL

(1) Minimum/maximum detected concentration.

(2) Industrial soil screening values are from USEPA Region 6 Human Health Medium-Specific Screening Levels (USEPA, 1999)
The following surrogate screening values were used:
-Endosulfan was used for Endosulfan II
-4-Chloroaniline was used for 3,4-dichloroaniline

(3) Rationale Codes Selection Reason: Above Screening Levels (ASL)

Deletion Reason: Below Screening Level (BSL)
Sample Depth Exceedance (SDE)

(4) Although arsenic and dinoseb concentrations were greater than their screening levels, neither were selected as COPCs because the depth at which the concentrations were detected exceeded 10 feet. Hypothetical receptors for the Cedar facility would not be exposed to depths beyond 10 feet.

Definitions: N/A = Not Applicable
COPC = Chemical of Potential Concern
C = Carcinogenic
N = Non-Carcinogenic

TABLE 15
OCCURRENCE, DISTRIBUTION AND SELECTION OF CHEMICALS OF POTENTIAL CONCERN
CEDAR CHEMICAL CORPORATION, WEST HELENA, ARKANSAS

Scenario Timeframe:	Current/Future
Medium:	Soil
Exposure Medium:	Subsurface Soil
Exposure Point:	Site 9 Subsurface Soil

CAS Number	Chemical	Minimum (1) Concentration	Minimum Qualifier	Maximum (1) Concentration	Maximum Qualifier	Units	Location of Maximum Concentration	Detection Frequency	Range of Detection Limits	Concentration Used for Screening	Screening (2) Toxicity Value		COPC Flag	Rationale for (3) Contaminant Deletion or Selection
7440382	**Arsenic**	**3.4**		**7.3**		**mg/kg**	**009SB00302**	**4/4**	**N/A**	**7.3**	**3**	**1533**	**YES**	**ASL**
7440393	Barium	94.1		150		mg/kg	009SB00302	4/4	N/A	150	100000	86520	NO	BSL
7440473	Chromium	10.8		14.7		mg/kg	009SB00301	4/4	N/A	14.7	64	2016	NO	BSL
7439921	Lead	8.1		11.2		mg/kg	009SB00302	4/4	N/A	11.2	2000	19	NO	BSL
72548	4,4- DDD	24		24		ug/kg	009SB01501	1/4	9 - 4	24	18719	27002	NO	BSL
72559	4,4-DDE	12		12		ug/kg	009SB01501	1/4	3 - 4	12	13214	35922	NO	BSL
50293	4,4-DDT	15		15		ug/kg	009SB01501	1/4	10 - 4	15	13214	328988	NO	BSL
75448	Heptachlor	150		150		ug/kg	009SB00301	1/4	2 - 4	150	665	2136	NO	BSL
51285	2,4-Dinitrophenol	3,400		3,400		ug/kg	009SB00202	1/45	3300 - 45	3,400	213774	45990	NO	BSL
95761	**3,4-Dichloroaniline**	**130**		**450000**		**ug/kg**	**009SB00701**	**7/36**	**840 - 36**	**450000**	**427547**	**90459**	**YES**	**ASL**
88857	**Dinoseb**	**500**		**29,000,000**		**ug/kg**	**009SB00501**	**39/45**	**462 - 45**	**29,000,000**	**106887**	**19157**	**YES**	**ASL**
709988	**Propanil**	**150**		**4,000,000**		**ug/kg**	**009SB00401**	**11/36**	**720 - 36**	**4,000,000**	**534434**	**122640**	**YES**	**ASL**
107062	1,2-Dichloroethane	43		730		ug/kg	009S002004	4/13	5 -13	730	758	1467	NO	BSL
78933	2-Butanone (MEK)	22		36,000		ug/kg	009S002201	8/13	11 - 13	36,000	2721022	418104	NO	BSL
108101	4-Methyl-2-Pentanone (MIBK)	12		63		ug/kg	009S002201	3/13	50 - 13	63	284694	77644	NO	BSL

(1) Minimum/maximum detected concentration.
(2) Industrial soil screening values are from USEPA Region 6 Human Health Medium-Specific Screening Levels (USEPA, 1999).
The screening value for 4-chloroaniline was used as a surrogate for 3,4-dichloroaniline.
(3) Rationale Codes Selection Reason: Above Screening Levels (ASL)

Deletion Reason: Below Screening Level (BSL)

Definitions:
N/A = Not Applicable
COPC = Chemical of Potential Concern
C = Carcinogenic
N = Non-Carcinogenic
mg/kg = milligram per kilogram
ug/kg = microgram per kilogram
sat = screening level based on the soil saturation equation (

TABLE 16
OCCURRENCE, DISTRIBUTION AND SELECTION OF CHEMICALS OF POTENTIAL CONCERN
CEDAR CHEMICAL CORPORATION, WEST HELENA, ARKANSAS

Scenario Timeframe:	Current
Medium:	Groundwater
Exposure Medium:	Groundwater
Exposure Point:	Perched Groundwater

CAS Number	Chemical	Minimum [1] Concentration	Minimum Qualifier	Maximum [1] Concentration	Maximum Qualifier	Units	Location of Maximum Concentration	Detection Frequency	Range of Detection Limits	Concentration Used for Screening	Screening [2] Toxicity Value		COPC Flag	Rationale for [3] Contaminant Deletion or Selection
7440382	Arsenic	13.5		60		µg/L	2MW-2	9/9	N/A	60	0.09	C	YES	ASL
7440393	Barium	324		2,400		µg/L	EMW-4	9/9	N/A	2,400	2000	N	YES	ASL
7440439	Cadmium	3.6		16		µg/L	EMW-6B	4/9	3	16	5	N	YES	ASL
7440473	Chromium	21.2		226		µg/L	EMW-4	9/9	N/A	226	100	N	YES	ASL
7439896	Iron	22,500		347,000		µg/L	EMW-4	9/9	N/A	347,000	21900	N	NO	EN
7439921	Lead	10.8		174		µg/L	EMW-4	9/9	N/A	174	15	N	YES	ASL
7439976	Mercury	0.23		0.23		µg/L	2MW-2	1/9	0.2	0.23	2	N	NO	BSL
7782492	Selenium	5		5		µg/L	2MW-2	1/9	5	5	50	N	NO	BSL
50293	4,4'-DDT	0.49		1		µg/L	EMW-4	2/10	0.12-0.13	0.56	0.395	C	YES	HIST
319846	Alpha-BHC	0.05		0.05		µg/L	EMW-1	1/10	0.03	0.05	0.021	C	YES	HIST
72435	Methoxychlor	3.4		3		µg/L	2MW-1	1/10	1.8-1.9	3.4	40	N	NO	BSL
95501	1,2-Dichlorobenzene	7		130		µg/L	EMW-6B	4/9	10	130	600	N	NO	BSL
541731	1,3-Dichlorobenzene	3.5		4		µg/L	1MW-3	1/9	10-50	3.5	5	N	NO	BSL
106467	1,4-Dichlorobenzene	4		4		µg/L	1MW-3	1/9	10-50	4	2	C	YES	ASL
606202	2,6-Dinitrotoluene	320		320		µg/L	1MW-5	1/9	10-50	320	73	N	YES	ASL
91576	2-Methylnaphthalene	6		6		µg/L	EMW-6B	1/9	10	6.0	188	N	NO	BSL
95487	2-Methylphenol (o-Cresol)	2		2		µg/L	EMW-1	1/9	10-50	2.0	3650	N	NO	BSL
95761	3,4-Dichloroaniline	12		58,000		µg/L	EMW-6B	5/9	10-63	58,000	292	N	YES	NTX
106478	4-Chloroaniline	1		5,900		µg/L	EMW-6B	4/9	10	5,900	292	N	YES	ASL
84742	Di-n-butylphthalate	1.5		2		µg/L	1MW-5	2/9	10-50	2	7300	N	NO	BSL
131113	Dimethylphthalate	10		10		µg/L	EMW-1	1/9	10-50	10	730000	N	NO	BSL
88857	Dinoseb	42		42		µg/L	EMW-1	1/9	50-250	42	7	N	YES	ASL
91203	Naphthalene	15		15		µg/L	EMW-6B	1/9	10	15	25	N	NO	BSL
108952	Phenol	1		1		µg/L	EMW-4	1/9	10-50	1	43800	N	NO	BSL
709988	Propanil	10		18		µg/L	EMW-6B	2/9	10	18	365	N	NO	BSL
111444	bis(2-Chloroethyl)ether	5		5		µg/L	EMW-4	1/9	10-50	5	0.039	C	YES	ASL
107062	1,2-Dichloroethane	19		29,000		µg/L	2MW-1	7/10	5	29,000	0.49	C	YES	ASL
108101	4-Methyl-2-Pentanone (MIBK)	2,200		2,200		µg/L	2MW-1	1/10	50-1000	2,200	631	N	YES	ASL
67641	Acetone	4,800		4,800		µg/L	2MW-1	1/10	10-200	4,800	2433	N	YES	ASL
71432	Benzene	17		17		µg/L	EMW-6B	1/10	5-2500	17	1.5	C	YES	ASL
108907	Chlorobenzene	16		30		µg/L	EMW-6B	2/10	5-2500	30	100	N	NO	BSL
67663	Chloroform	1		700		µg/L	2MW-1	4/10	5-100	700	0.66	C	YES	ASL

TABLE 16
OCCURRENCE, DISTRIBUTION AND SELECTION OF CHEMICALS OF POTENTIAL CONCERN
CEDAR CHEMICAL CORPORATION, WEST HELENA, ARKANSAS

Scenario Timeframe:	Current
Medium:	Groundwater
Exposure Medium:	Groundwater
Exposure Point:	Perched Groundwater

CAS Number	Chemical	Minimum [1] Concentration	Minimum Qualifier	Maximum [1] Concentration	Maximum Qualifier	Units	Location of Maximum Concentration	Detection Frequency	Range of Detection Limits	Concentration Used for Screening	Screening [2] Toxicity Value		COPC Flag	Rationale for [3] Contaminant Deletion or Selection
75092	**Methylene chloride**	**600,000**		**600,000**		**µg/L**	**2MW-1**	**1/10**	**5-100**	**600,000**	**5**	**C**	**YES**	**ASL**
108883	Toluene	940		940		µg/L	2MW-1	1/10	5-100	940	1000	N	NO	BSL
79016	**Trichloroethene**	**28**		**28**		**µg/L**	**1MW-4**	**1/10**	**5-2500**	**28**	**5**	**C**	**YES**	**ASL**
1330207	Xylene (total)	1,100		1,100		µg/L	2MW-1	1/10	5-100	1,100	2863	N	NO	BSL

(1) Minimum/maximum detected concentration.

(2) Screening values are from EPA Region 6 Human Health Medium-Specific Screening Levels (October, 1999) modified using Region 4 PRE Guidance (USEPA, 1994). To convert residential screening values to industiral screening values, residential screening levels for volatile organic compounds are divided by 0.25. All other chemicals are divided by 0.5 to obtain the industrial screening value.

(3) Rationale Codes Selection Reason: Infrequent Detection but Associated Historically (HIST)
Above Screening Levels (ASL)
Deletion Reason: No Toxicity Information (NTX)
Below Screening Level (BSL)

Definitions: N/A = Not Applicable
COPC = Chemical of Potential Concern
C = Carcinogenic
N = Non-Carcinogenic
µg/L = micrograms per liter

TABLE 17

OCCURRENCE, DISTRIBUTION AND SELECTION OF CHEMICALS OF POTENTIAL CONCERN

CEDAR CHEMICAL CORPORATION, WEST HELENA, ARKANSAS

Scenario Timeframe:	Current
Medium:	Groundwater
Exposure Medium:	Groundwater
Exposure Point:	Alluvial Groundwater

CAS Number	Chemical	Minimum (1) Concentration	Minimum Qualifier	Maximum (1) Concentration	Maximum Qualifier	Units	Location of Maximum Concentration	Detection Frequenc	Range of Detection Limits	Concentration Used for Screening	Screening (2) Toxicity Value		COPC Flag	Rationale for (3) Contaminant Deletion or Selection
79005	1,1,2-Trichloroethane	27		27		µg/L	4MW-3	1/75	5 - 5000	27	0.8	C	YES	ASL
95501	1,2-Dichlorobenzene	17		76		µg/L	4MW-2	2/21	10	76	1481	N	NO	BSL
107062	1,2-Dichloroethane	6		87,000		µg/L	EMW-7	43/75	5 - 10	87,000	0.49	C	YES	ASL
78875	1,2-Dichloropropane	43		43		µg/L	4MW-3	1/75	5 -5000	43	0.66	C	YES	ASL
78933	2-Butanone (MEK)	13		77		µg/L	OFFMW-2	2/75	10 - 50000	77	21900	N	NO	BSL
108101	4-Methyl-2-Pentanone (MIBK)	11		2,500		µg/L	2MW-3	4/75	10 - 50000	2,500	631	N	YES	ASL
67641	Acetone	43		2,000		µg/L	2MW-3	12/75	10 - 50000	2,000	2433	N	NO	BSL
71432	Benzene	7		46		µg/L	4MW-2	2/75	5 -5000	46	0.72	C	YES	ASL
75274	Bromodichloromethane	6		6		µg/L	EMW-7	1/75	5 - 5000	6	0.72	C	YES	ASL
75252	Bromoform	11		11		µg/L	4MW-4	1/75	5 - 5000	11	0.00	N	YES	ASL
75150	Carbon disulfide	14		14		µg/L	4MW-2	1/75	5 - 50000	14	4171	N	NO	BSL
108907	Chlorobenzene	10		470		µg/L	2MW-4	6/75	5 - 5000	470	158	N	YES	ASL
75003	Chloroethane	79		79		µg/L	2MW-3	1/75	10 - 10000	79	34353	N	NO	BSL
67663	Chloroform	3		1,400		µg/L	4MW-2	8/75	5 - 5000	1,400	0.66	C	YES	ASL
124481	Dibromochloromethane	13		13		µg/L	4MW-4	1/75	5 - 5000	13	0.53	C	YES	ASL
100414	Ethylbenzene	54		54		µg/L	EMW-3	1/75	5 - 5000	54	700	N	NO	BSL
75092	Methylene chloride	130		5,000		µg/L	9GB-21 (30')	10/75	5 - 10000	5,000	17.10	C	YES	ASL
108883	Toluene	21		140,000		µg/L	4MW-1	8/75	5 - 2500	140,000	1000	N	YES	ASL
108054	Vinyl acetate	10		10		µg/L	EMW-7	1/75	5 - 25000	10	1650	N	NO	BSL
1330207	Xylene (total)	4		1,400		µg/L	4MW-1	7/75	5 - 2500	1,400	5725	N	NO	BSL
95476	o-Xylene	10		10		µg/L	EMW-7	1/21	10	10	5725	N	NO	BSL
156605	trans-1,2-Dichloroethene	10		10		µg/L	EMW-7	1/64	5 - 2500	10	100	N	NO	BSL

(1) Minimum/maximum detected concentration.

(2) Concentration used for screening are the more stringent of calculated industrial tapwater MSSL or MCLs (USEPA, 1996). Guidance for calculating industrial MSSLs is provided in Table 1 and Appendix C.

(3) Rationale Codes Selection Reason: Above Screening Levels (ASL)

Deletion Reason: Below Screening Level (BSL)

Definitions: N/A = Not Applicable
COPC = Chemical of Potential Concern
C = Carcinogenic
N = Non-Carcinogenic
µg/L = micrograms per liter

TABLE 18
OCCURRENCE, DISTRIBUTION AND SELECTION OF CHEMICALS OF POTENTIAL CONCERN
CEDAR CHEMICAL CORPORATION, WEST HELENA, ARKANSAS

Scenario Timeframe:	Future
Medium:	Sediment
Exposure Medium:	Sediment
Exposure Point:	Site 1

CAS Number	Chemical	Minimum [1] Concentration	Minimum Qualifier	Maximum [1] Concentration	Maximum Qualifier	Units	Location of Maximum Concentration	Detection Frequency	Range of Detection Limits	Concentration Used for Screening	Screening [2] Toxicity Value		COPC Flag	Rationale for [3] Contaminant Deletion or Selection
7440382	**Arsenic**	**19**		**123**		**mg/kg**	**1SED-3**	**3/3**	**N/A**	**123**	**0.39**	**C**	**YES**	**ASL**
7440393	Barium	27.8		69.2		mg/kg	1SED-3	3/3	N/A	69.2	5,155	N	NO	BSL
7440439	Cadmium	0.63		0.94		mg/kg	1SED-1	2/3	0.37	0.94	3.91	N	NO	BSL
7440473	**Chromium**	**16.7**		**82**		**mg/kg**	**1SED-3**	**3/3**	**N/A**	**82**	**30**	**C**	**YES**	**ASL**
7439921	Lead	11.4		15.9		mg/kg	1SED-1	3/3	N/A	15.9	400		NO	BSL
7439976	Mercury	2.7		3.3		mg/kg	1SED-3	2/3	0.12	3.3	22	N	NO	BSL
7440224	Silver	1.2		1.2		mg/kg	1SED-3	1/3	0.37-0.6	1.2	375	N	NO	BSL
50293	4,4'-DDT	450		450		ug/kg	1SED-3	1/3	9.9-160	450	1,716	C	NO	BSL
319857	Beta-BHC	86		180		ug/kg	1SED-1	2/3	4.9	180	315	C	NO	BSL
58899	gamma-BHC (Lindane)	63		63		ug/kg	1SED-1	1/3	3.3-38	63	436	C	NO	BSL
5103742	gamma-Chlordane	300		300		ug/kg	1SED-1	1/3	12-66	300	303,147	C	NO	BSL
95761	3,4-Dichloroaniline	5,500		1,200,000		ug/kg	1SED-1	3/3	N/A	1,200,000	34,530	N	NO	BSL
106445	4-Methylphenol (p-Cresol)	39,000		39,000		ug/kg	1SED-1	1/3	4,100-94,000	39,000	7,020,072	N	NO	BSL
117817	bis(2-Ethylhexyl)phthalate	13,000		13,000		ug/kg	1SED-3	1/3	4,100-140,000	13,000	760,225	C	NO	BSL
78933	2-Butanone (MEK)	2		1800		ug/kg	1SED-1	3/3	N/A	1800	1,485,678	N	NO	BSL
591786	2-Hexanone	12		210		ug/kg	1SED-1	2/3	62	210	669	sat	NO	BSL
108101	4-Methyl-2-Pentanone (MIBK)	22		22		ug/kg	1SED-3	1/3	62-460	22	54,202	N	NO	BSL
67641	Acetone	280		1,200		ug/kg	1SED-1	2/3	12	1,200	233,948	N	NO	BSL
71432	Benzene	6		30		ug/kg	1SED-1	2/3	6	30	521,170	C	NO	BSL
108907	Chlorobenzene	66		190		ug/kg	1SED-1	2/3	6	190	54,202	N	NO	BSL
100414	Ethylbenzene	19		19		ug/kg	1SED-3	1/3	6-46	19	233,948	sat	NO	BSL
108883	Toluene	87		170		ug/kg	1SED-1	2/3	6	170	521,170	sat	NO	BSL
1330207	Xylene (total)	74		330		ug/kg	1SED-3	2/3	6	330	214,480	sat	NO	BSL

(1) Minimum/maximum detected concentration.
(2) Residential soil screening values are from USEPA Region 6 Human Health Medium-Specific Screening Levels (USEPA, 1999).
The screening value for 4-chloroaniline was used as a surrogate for 3,4-dichloroaniline.
(3) Rationale Codes Selection Reason: Above Screening Levels (ASL)

Deletion Reason: Below Screening Level (BSL)

Definitions:
N/A = Not Applicable
COPC = Chemical of Potential Concern
C = Carcinogenic
N = Non-Carcinogenic
sat = screening level based on the soil saturation equation (USEPA, 1996)
mg/kg = milligram per kilogram

TABLE 19
OCCURRENCE, DISTRIBUTION AND SELECTION OF CHEMICALS OF POTENTIAL CONCERN
CEDAR CHEMICAL CORPORATION, WEST HELENA, ARKANSAS

Scenario Timeframe:	Future
Medium:	Sediment
Exposure Medium:	Sediment
Exposure Point:	Site 3

CAS Number	Chemical	Minimum [1] Concentration	Minimum Qualifier	Maximum [1] Concentration	Maximum Qualifier	Units	Location of Maximum Concentration	Detection Frequency	Range of Detection Limits	Concentration Used for Screening	Screening [2] Toxicity Value		COPC Flag	Rationale for [3] Contaminant Deletion or Selection
7440382	**Arsenic**	**3.6**		**222**		**mg/kg**	**3SED-9**	**11/34**	**5**	**222**	**0.39**	**C**	**YES**	**ASL**
7440393	Barium	87.2		215		mg/kg	3SED-10	10/10	N/A	215	537	N	NO	BSL
7440473	Chromium	8		19.1		mg/kg	3SED-6	10/10	N/A	19.1	30.1	C	NO	BSL
7439921	Lead	7.4		13.9		mg/kg	3SED-2	10/10	N/A	13.9	400		NO	BSL
72548	4,4'-DDD	7.6		170		ug/kg	3SED-20-N	10/34	7-91	170	2,431	C	NO	BSL
72559	4,4'-DDE	5.1		78		ug/kg	3SED-20-S	8/34	2.7-33	78	1,716	C	NO	BSL
50293	4,4'-DDT	8		91		ug/kg	3SED-21-S	4/34	8-99	91	1,716	C	NO	BSL
309002	**Aldrin**	**2.8**		**354**		**ug/kg**	**3SED-3**	**4/34**	**2.7-33**	**354**	**28.4**	**C**	**YES**	**ASL**
60571	**Dieldrin**	**2**		**3,400**		**ug/kg**	**3SED-3**	**13/34**	**1.3-17**	**3,400**	**30.2**	**C**	**YES**	**ASL**
72208	Endrin	76		89		ug/kg	3SED-21-N	2/34	4-50	89	1,819	N	NO	BSL
53494705	Endrin ketone	19		19		ug/kg	3SED-10	1/10	20-200	19	1,819	N	NO	BSL
58899	gamma-BHC (Lindane)	18		18		ug/kg	3SED-20-N	1/34	2.7-33	18	436	C	NO	BSL
72435	Methoxychlor	130		3,600		ug/kg	3SED-1	21/34	120-460	3,600	30,315	N	NO	BSL
8001352	**Toxaphene**	**1,600**		**1,600**		**ug/kg**	**3SED-21-S**	**1/34**	**160-2,000**	**1,600**	**439**	**C**	**YES**	**ASL**
120821	1,2,4-Trichlorobenzene	92		230		ug/kg	3SED-2	2/10	380-930	230	52,144	N	NO	BSL
95501	1,2-Dichlorobenzene	120		300		ug/kg	3SED-3	2/10	380-930	300	372,612	sat	NO	BSL
91576	2-Methylnaphthalene	550		550		ug/kg	3SED-5	1/10	380-930	550	5,528	N	NO	BSL
95761	**3,4-Dichloroaniline**	**310**		**100,000**		**ug/kg**	**3SED-5**	**8/10**	**830-930**	**100,000**	**24,252**	**N**	**YES**	**ASL**
106478	4-Chloroaniline	190		500		ug/kg	3SED-3	2/10	380-930	500	24,252	N	NO	BSL
100027	4-Nitrophenol	350		350		ug/kg	3SED-1	1/10	930-4,600	350	375,903	N	NO	BSL
117840	Di-n-octylphthalate	180		180		ug/kg	3SED-8	1/10	380-930	180	121,259	N	NO	BSL
88857	Dinoseb	4,000		4,000		ug/kg	3SED-7	1/10	930-6,300	4,000	6,063	N	NO	BSL
91203	Naphthalene	86		86		ug/kg	3SED-5	1/10	380-930	86	5,528	N	NO	BSL
87865	**Pentachlorophenol**	**200**		**5,300**		**ug/kg**	**3SED-1**	**2/10**	**930-4,600**	**5,300**	**2,946**	**C**	**YES**	**ASL**
709988	Propanil	44		110		ug/kg	3SED-2	2/10	790-930	110	30,315	N	NO	BSL
107062	1,2-Dichloroethane	43		43		ug/kg	3SED-10	1/10	6-7	43	341	C	NO	BSL
67641	Acetone	130		130		ug/kg	3SED-3	1/10	11-14	130	148,568	N	NO	BSL
108907	Chlorobenzene	11		34		ug/kg	3SED-2	2/10	6-7	34	5,420	N	NO	BSL
100414	Ethylbenzene	2		7		ug/kg	3SED-5	2/10	6-7	7	233,948	sat	NO	BSL
75092	Methylene chloride	2		160		ug/kg	3SED-10	2/10	6-7	160	8,607	C	NO	BSL

TABLE 19
OCCURRENCE, DISTRIBUTION AND SELECTION OF CHEMICALS OF POTENTIAL CONCERN
CEDAR CHEMICAL CORPORATION, WEST HELENA, ARKANSAS

Scenario Timeframe:	Future
Medium:	Sediment
Exposure Medium:	Sediment
Exposure Point:	Site 3

CAS Number	Chemical	Minimum (1) Concentration	Minimum Qualifier	Maximum (1) Concentration	Maximum Qualifier	Units	Location of Maximum Concentration	Detection Frequency	Range of Detection Limits	Concentration Used for Screening	Screening (2) Toxicity Value	COPC Flag	Rationale for (3) Contaminant Deletion or Selection
1330207	Xylene (total)	12		44		ug/kg	3SED-5	2/10	6-7	44	214,480 sat	NO	BSL

(1) Minimum/maximum detected concentration.
(2) Background concentration calculated using the arithmetic mean plus two standard deviations.
(3) Residential soil screening values are from USEPA Region 6 Human Health Medium-Specific Screening Levels (USEPA, 1999).
The following screening values were used as surrogates:
-Endrin was used for endrin ketone.
4-Chloroaniline was used for 3,4-dichloroaniline.
(4) Rationale Codes Selection Reason: Above Screening Levels (ASL)
Deletion Reason: Below Screening Level (BSL)

Definitions:
N/A = Not Applicable
COPC = Chemical of Potential Concern
C = Carcinogenic
N = Non-Carcinogenic
sat = screening level based on the soil saturation equation (USEPA, 1996)
mg/kg = milligrams per kilogram
ug/kg = micrograms per kilogram

TABLE 20
MEDIUM-SPECIFIC EXPOSURE POINT CONCENTRATION SUMMARY
CEDAR CHEMICAL CORPORATION, WEST HELENA, ARKANSAS

Scenario Timeframe: Current/Future
Medium: Soil
Exposure Medium: Surface Soil
Exposure Point: Site 1 Surface Soil

Chemical of Potential Concern	Units	Arithmetic Mean	95% UCL of Normal Data	Maximum Detected Concentration	Maximum Qualifier	EPC Units	Reasonable Maximum Exposure			Central Tendency		
							Medium EPC Value	Medium EPC Statistic	Medium EPC Rationale	Medium EPC Value	Medium EPC Statistic	Medium EPC Rationale
Arsenic	mg/kg	10.1	14.4	44.6		mg/kg	14.4	UCL-T	(1)	10.1	Mean-N	(3)
Dieldrin	mg/kg	0.59	NA	0.59		mg/kg	0.59	MAX	(2)	0.59	Mean-N	(3)
1,2-Dichloroethane	mg/kg	3.8	NA	7.5		mg/kg	7.5	MAX	(2)	3.8	Mean-N	(3)

UCL = Upper Confidence Limit
EPC = Exposure Point Concentration
mg/kg = milligram per kilogram
UCL-T = 95% UCL of Log-transformed Data
MAX = Maximum Detected Value
NA = Not Applicable

(1) The UCL was less than the maximum detected concentration; therefore, the UCL was selected as the EPC.
(2) The maximum detected concentration was selected as the EPC because the estimated UCL was greater than the maximum detected concentration.
(3) The mean concentration is the most representative value for the central tendency exposure calculation.

TABLE 21
MEDIUM-SPECIFIC EXPOSURE POINT CONCENTRATION SUMMARY
CEDAR CHEMICAL CORPORATION, WEST HELENA, ARKANSAS

Scenario Timeframe:	Current/Future
Medium:	Soil
Exposure Medium:	Surface Soil
Exposure Point:	Site 2 Surface Soil

Chemical of Potential Concern	Units	Arithmetic Mean	95% UCL of Normal Data	Maximum Detected Concentration	Maximum Qualifier	EPC Units	Reasonable Maximum Exposure			Central Tendency		
							Medium EPC Value	Medium EPC Statistic	Medium EPC Rationale	Medium EPC Value	Medium EPC Statistic	Medium EPC Rationale
Aldrin	mg/kg	0.0345	N/A	0.058		mg/kg	0.058	MAX	(1)	0.0345	Mean-N	(2)
Dinoseb	mg/kg	100	N/A	100		mg/kg	100	MAX	(1)	100	Mean-N	(2)

mg/kg = milligrams per kilogram
MAX = Maximum Detected Value
N/A = Not Applicable

(1) Sample population (n) is less than 10. A UCL could not be calculated.
(2) The mean concentration is the most representative value for the central tendency exposure calculation.

TABLE 22
MEDIUM-SPECIFIC EXPOSURE POINT CONCENTRATION SUMMARY
CEDAR CHEMICAL CORPORATION, WEST HELENA, ARKANSAS

Scenario Timeframe:	Current/Future
Medium:	Soil
Exposure Medium:	Surface Soil
Exposure Point:	Site 4 Surface Soil

Chemical of Potential Concern	Units	Arithmetic Mean	95% UCL of Normal Data	Maximum Detected Concentration	Maximum Qualifier	EPC Units	Reasonable Maximum Exposure			Central Tendency		
							Medium EPC Value	Medium EPC Statistic	Medium EPC Rationale	Medium EPC Value	Medium EPC Statistic	Medium EPC Rationale
Dieldrin	mg/kg	0.216	N/A	0.455		mg/kg	0.455	MAX	(1)	0.22	Mean-N	(3)
Dinoseb	mg/kg	170	248.4	840		mg/kg	248	UCL-T	(2)	170	Mean-N	(3)

EPC = Exposure Point Concentration
mg/kg = milligrams per kilogram
MAX = maximum Detected Concentration
UCL-T = 95% of UCL of Log-transformed Data
N/A = Not Applicable

For specific information regarding the calculation of the UCL refer to Appendix B.

(1) The data distribution was neither normal nor lognormal; therefore, the maximum concentration was selected as the EPC.
(2) The 95% UCL was less than the maximum detected concentration. The UCL was selected as the EPC.
(3) The mean concentration is the most representative value for the central tendency exposure calculation.

TABLE 23
MEDIUM-SPECIFIC EXPOSURE POINT CONCENTRATION SUMMARY
CEDAR CHEMICAL CORPORATION, WEST HELENA, ARKANSAS

Scenario Timeframe:	Future
Medium:	Soil
Exposure Medium:	Surface Soil
Exposure Point:	Site 6 Surface Soil

Chemical of Potential Concern	Units	Arithmetic Mean	95% UCL of Normal Data	Maximum Detected Concentration	Maximum Qualifier	EPC Units	Reasonable Maximum Exposure			Central Tendency		
							Medium EPC Value	Medium EPC Statistic	Medium EPC Rationale	Medium EPC Value	Medium EPC Statistic	Medium EPC Rationale
Aldrin	mg/kg	0.043	0.017	0.24		mg/kg	0.017	UCL-T	(1)	0.04	Mean-N	(2)
Dieldrin	mg/kg	0.033	0.031	0.078		mg/kg	0.031	UCL-T	(1)	0.03	Mean-N	(2)
Methoxychlor	mg/kg	31	20.1	340		mg/kg	20.1	UCL-T	(1)	31	Mean-N	(2)
Toxaphene	mg/kg	8.25	0.78	14		mg/kg	0.78	UCL-T	(1)	8.3	Mean-N	(2)
Dinoseb	mg/kg	20.3	38	160		mg/kg	38	UCL-T	(1)	20.3	Mean-N	(2)

UCL = Upper Confidence Limit
mg/kg = milligrams per kilogram
EPC = Exposure Point Concentration
N/A = Not Applicable

(1) Because the UCL-T is less than the maximum concentration, it was selected as the EPC.
(2) The mean concentration is the most representative value for the central tendency exposure calculation.

TABLE 24
MEDIUM-SPECIFIC EXPOSURE POINT CONCENTRATION SUMMARY
CEDAR CHEMICAL CORPORATION, WEST HELENA, ARKANSAS

Scenario Timeframe:	Current/Future
Medium:	Soil
Exposure Medium:	Surface Soil
Exposure Point:	Site 9 Surface Soil

Chemical of Potential Concern	Units	Arithmetic Mean	95% UCL of Normal Data	Maximum Detected Concentration	Maximum Qualifier	EPC Units	Reasonable Maximum Exposure			Central Tendency		
							Medium EPC Value	Medium EPC Statistic	Medium EPC Rationale	Medium EPC Value	Medium EPC Statistic	Medium EPC Rationale
Heptachlor	mg/kg	0.15	N/A	2		mg/kg	1.5	MAX	(1)	0.15	Mean-N	(3)
3,4-Dichloroaniline	mg/kg	112	42,227,172	450		mg/kg	450	MAX	(2)	112	Mean-N	(3)
Dinoseb	mg/kg	7,593	17,181,279	29,000		mg/kg	29,000	MAX	(2)	7593	Mean-N	(3)
Propanil	mg/kg	3796	36,428,134	4,000		mg/kg	4,000	MAX	(2)	3796	Mean-N	(3)

UCL = Upper Confidence Limit
mg/kg = milligrams per kilogram
EPC = Exposure Point Concentration
MAX = Maximum Detected Value
N/A = Not Applicable

(1) The population of the data set is 2. A UCL could not be calculated.
(2) The UCL is greater than the maximum detected concentration; therefore, the maximum concentration was selected as the EPC.
(3) The mean concentration is the most representative value for the central tendency exposure calculation.

TABLE 25
MEDIUM-SPECIFIC EXPOSURE POINT CONCENTRATION SUMMARY
CEDAR CHEMICAL CORPORATION, WEST HELENA, ARKANSAS

Scenario Timeframe:	Future
Medium:	Soil
Exposure Medium:	Subsurface Soil
Exposure Point:	Site 1 Subsurface Soil

Chemical of Potential Concern	Units	Arithmetic Mean	95% UCL of Normal Data	Maximum Detected Concentration	Maximum Qualifier	EPC Units	Reasonable Maximum Exposure			Central Tendency		
							Medium EPC Value	Medium EPC Statistic	Medium EPC Rationale	Medium EPC Value	Medium EPC Statistic	Medium EPC Rationale
Arsenic	mg/kg	8.91	10.6	44.6		mg/kg	10.59	UCL-T	(1)	8.5	Mean	(3)
Dieldrin	mg/kg	0.593	N/A	0.593		mg/kg	0.593	MAX	(2)	0.59	Mean	(3)
1,2-Dichloroethane	mg/kg	3.758	N/A	7.5		mg/kg	7.5	MAX	(2)	2.6	Mean	(3)

UCL = Upper Confidence Limit
MAX = Maximum Detected Value
EPC = Exposure Point Concentration
mg/kg = milligram per kilogram
UCL-T = 95% of UCL of Lognormal Data

(1) The UCL-T is less than the maximum concentration; therefore, the UCL-N was selected as the EPC.
(2) Both the lognormal and normal distributions were rejected. The maximum detected concentration was selected as the EPC.
(3) The mean concentration is the most representative value for the central tendency exposure calculation.

TABLE 26
MEDIUM-SPECIFIC EXPOSURE POINT CONCENTRATION SUMMARY
CEDAR CHEMICAL CORPORATION, WEST HELENA, ARKANSAS

Scenario Timeframe:	Future
Medium:	Soil
Exposure Medium:	Subsurface Soil
Exposure Point:	Site 2 Subsurface Soil

Chemical of Potential Concern	Units	Arithmetic Mean	95% UCL of Normal Data	Maximum Detected Concentration	Maximum Qualifier	EPC Units	Reasonable Maximum Exposure			Central Tendency		
							Medium EPC Value	Medium EPC Statistic	Medium EPC Rationale	Medium EPC Value	Medium EPC Statistic	Medium EPC Rationale
Arsenic	mg/kg	11.5	17.9	59.0		mg/kg	17.9	UCL-T	(1)	11.5	Mean	(3)
Chromium	mg/kg	18.6	25.2	95.3		mg/kg	25.2	UCL-T	(1)	18.6	Mean	(3)
Aldrin	mg/kg	0.103	N/A	0.42		mg/kg	0.42	MAX	(2)	0.1	Mean	(3)
Dieldrin	mg/kg	0.021	N/A	0.056		mg/kg	0.056	MAX	(2)	0.0	Mean	(3)
1,2-Dichloroethane	mg/kg	0.41	N/A	0.81		mg/kg	0.81	MAX	(2)	0.4	Mean	(3)
Chloroform	mg/kg	0.002	N/A	0.002		mg/kg	0.002	MAX	(2)	0.0	Mean	(3)
Methylene chloride	mg/kg	1.35	N/A	4		mg/kg	4	MAX	(2)	1.3	Mean	(3)

UCL = Upper Confidence Limit
MAX = Maximum Detected Value
EPC = Exposure Point Concentration
mg/kg = milligram per kilogram
UCL-T = 95% UCL of Lognormal Data
Mean-N = Mean of Normal Data
N/A = Not applicable

(1) The UCL-T is less than the maximum concentration.
(2) The data set had less than 10 samples.
(3) The mean concentration is the most representative value for the central tendency exposure calculation.

TABLE 27
MEDIUM-SPECIFIC EXPOSURE POINT CONCENTRATION SUMMARY
CEDAR CHEMICAL CORPORATION, WEST HELENA, ARKANSAS

Scenario Timeframe:	Future
Medium:	Soil
Exposure Medium:	Subsurface Soil
Exposure Point:	Site 3 Subsurface Soil

Chemical of Potential Concern	Units	Arithmetic Mean	95% UCL of Normal Data	Maximum Detected Concentration	Maximum Qualifier	EPC Units	Reasonable Maximum Exposure			Central Tendency		
							Medium EPC Value	Medium EPC Statistic	Medium EPC Rationale	Medium EPC Value	Medium EPC Statistic	Medium EPC Rationale
Dinoseb	mg/kg	3,340	N/A	13,000		mg/kg	13,000	MAX	(1)	3,340	Mean	(2)

UCL = Upper Confidence Limit
EPC = Exposure Point Concentration
mg/kg = milligram per kilogram
N/A = Not Applicable
MAX = Maximum detected value
Mean = Arithmetic Mean

(1) Data set less than 10. A UCL was not calculated.
(2) The mean concentration is the most representative value for the central tendency exposure calculation.

TABLE 28
MEDIUM-SPECIFIC EXPOSURE POINT CONCENTRATION SUMMARY
CEDAR CHEMICAL CORPORATION, WEST HELENA, ARKANSAS

Scenario Timeframe:	Future
Medium:	Soil
Exposure Medium:	Subsurface Soil
Exposure Point:	Site 4 Subsurface Soil

Chemical of Potential Concern	Units	Arithmetic Mean	95% UCL of Normal Data	Maximum Detected Concentration	Maximum Qualifier	EPC Units	Reasonable Maximum Exposure			Central Tendency		
							Medium EPC Value	Medium EPC Statistic	Medium EPC Rationale	Medium EPC Value	Medium EPC Statistic	Medium EPC Rationale
Arsenic	mg/kg	5.39	6.11	8.7		mg/kg	6.11	UCL-T	(1)	5.39	Mean-N	(3)
Dieldrin	mg/kg	0.27	0.037	0.63		mg/kg	0.037	UCL-T	(1)	0.27	Mean-N	(3)
3,4-Dichloroaniline	mg/kg	1667	11181616716	12000		mg/kg	12000	MAX	(2)	1667	Mean-N	(3)
Dinoseb	mg/kg	244	4199	1,100		mg/kg	1,100	MAX	(2)	244	Mean-N	(3)
1,2-Dichloroethane	mg/kg	0.09	NA	0.34		mg/kg	0.335	MAX	(2)	0.09	Mean-N	(3)

UCL = Upper Confidence Limit
MAX = Maximum Detected Value
UCL-T = 95% UCL of Log-transformed Data

(1) The 95% UCL-T was less than the maximum concentration.
(2) The 95% UCL-T was greater than the maximum concentration.
(3) The mean concentration is the most representative vallue for the central tendency exposure calculation.

TABLE 29
MEDIUM-SPECIFIC EXPOSURE POINT CONCENTRATION SUMMARY
CEDAR CHEMICAL CORPORATION, WEST HELENA, ARKANSAS

Scenario Timeframe:	Future
Medium:	Soil
Exposure Medium:	Subsurface Soil
Exposure Point:	Site 9 Subsurface Soil

Chemical of Potential Concern	Units	Arithmetic Mean (1)	95% UCL of Normal Data	Maximum Detected Concentration	Maximum Qualifier	EPC Units	Reasonable Maximum Exposure			Central Tendency		
							Medium EPC Value	Medium EPC Statistic	Medium EPC Rationale	Medium EPC Value	Medium EPC Statistic	Medium EPC Rationale
Arsenic	mg/kg	5.3	N/A	7.3		mg/kg	7.3	MAX	(1)	5.3	Mean-N	(2)
3,4-Dichloroaniline	mg/kg	80	142192067	450		mg/kg	450	MAX	(1)	80	Mean-N	(2)
Dinoseb	mg/kg	5380	578,977	29000		mg/kg	29,000	MAX	(1)	5380	Mean-N	(2)
Propanil	mg/kg	445	203,639	4000		mg/kg	4,000	MAX	(1)	445	Mean-N	(2)

UCL = Upper Confidence Limit
EPC = Exposure Point Concentration
mg/kg = milligram per kilogram
MAX = Maximum Detected Value
Mean-N = Arithmetic Mean of Normal Data

For specific information regarding the calculation of the UCL refer to Appendix B.

(1) There are 4 samples in the data set. A UCL could not be calculated.
(2) The arithmetic represents the average detected concentrations for those sample locations ≤ 10 feet below ground surface.
(3) The UCL-T is greater than the maximum detected concentration; therefore, the maximum concentration was selected as the EPC.

TABLE 30
MEDIUM-SPECIFIC EXPOSURE POINT CONCENTRATION SUMMARY
CEDAR CHEMICAL, WEST HELENA, ARKANSAS

Scenario Timeframe:	Future
Medium:	Sediment
Exposure Medium:	Sediment
Exposure Point:	Site 1

Chemical of Potential Concern	Units	Arithmetic Mean	95% UCL of Normal Data	Maximum Detected Concentration	Maximum Qualifier	EPC Units	Reasonable Maximum Exposure			Central Tendency		
							Medium EPC Value	Medium EPC Statistic	Medium EPC Rationale	Medium EPC Value	Medium EPC Statistic	Medium EPC Rationale
Arsenic	mg/kg	67.7	N/A	123		mg/kg	123	MAX	(1)	67.7	Mean-N	(2)
Chromium	mg/kg	50.2	N/A	82		mg/kg	82	MAX	(1)	50.2	Mean-N	(2)

UCL = Upper Confidence Limit
EPC = Exposure Point Concentration
mg/kg = milligram per kilogram
N/A = Not Applicable
MAX = Maximum Detected Value
Mean-N = Arithmetic Mean of Normal Data

(1) The population of the data set is 3. The 95% UCL could not be calculated.
(2) The mean concentration is the most representative value for the central tendency exposure calculation.

TABLE 31
MEDIUM-SPECIFIC EXPOSURE POINT CONCENTRATION SUMMARY
CEDAR CHEMICAL, WEST HELENA, ARKANSAS

Scenario Timeframe:	Future
Medium:	Sediment
Exposure Medium:	Sediment
Exposure Point:	Site 3

Chemical of Potential Concern	Units	Arithmetic Mean	95% UCL of Normal Data	Maximum Detected Concentration	Maximum Qualifier	EPC Units	Reasonable Maximum Exposure			Central Tendency		
							Medium EPC Value	Medium EPC Statistic	Medium EPC Rationale	Medium EPC Value	Medium EPC Statistic	Medium EPC Rationale
Arsenic	mg/kg	27.6	8.36	222		mg/kg	8.36	UCL-T	(1)	27.6	Mean-N	(4)
Aldrin	mg/kg	0.10	0.011	0.35		mg/kg	0.011	UCL-T	(1)	0.1	Mean-N	(4)
Dieldrin	mg/kg	0.33	0.2	3.4		mg/kg	0.245	UCL-T	(1)	0.3	Mean-N	(4)
Toxaphene	mg/kg	1.6	N/A	1.6		mg/kg	1.6	MAX	(2)	1.6	Mean-N	(4)
Pentachlorophenol	mg/kg	2.8	6.2	5.3		mg/kg	5.3	MAX	(3)	2.8	Mean-N	(4)

UCL = Upper Confidence Limit
EPC = Exposure Point Concentration
mg/kg = milligram per kilogram
UCL-T = 95th Percentile Upper Confidence Limit for Log-transformed Data
N/A = Not Applicable
MAX = Maximum Detected Value

(1) The UCL was less than the maximum concentration; therefore, the UCL was selected as the EPC.
(2) Both the lognormal and normal distributions were rejected, the maximum detected concentration was selected as the EPC.
(3) The UCL is greater than the maximum detected concentration; therefore, the maximum detected concentration was selected as the EPC.
(4) The mean concentration is the most representative value for the central tendency exposure.

TABLE 32
MEDIUM-SPECIFIC EXPOSURE POINT CONCENTRATION SUMMARY
CEDAR CHEMICAL CORPORATION, WEST HELENA, ARKANSAS

Scenario Timeframe:	Current/Future
Medium:	Groundwater
Exposure Medium:	Groundwater
Exposure Point:	Perched Groundwater

Chemical of Potential Concern	Units	Arithmetic Mean	95% UCL of Normal Data	Maximum Detected Concentration	Maximum Qualifier	EPC Units	Reasonable Maximum Exposure			Central Tendency		
							Medium EPC Value	Medium EPC Statistic	Medium EPC Rationale	Medium EPC Value	Medium EPC Statistic	Medium EPC Rationale
Arsenic	ug/L	34	49.94	60.4		ug/L	49.94	UCL-T	(1)	34	Mean-N	(3)
Barium	ug/L	845	1362.39	2400		ug/L	1362	UCL-T	(1)	845	Mean-N	(3)
Cadmium	ug/L	7.1	8.71	16.3		ug/L	8.71	UCL-T	(1)	7.1	Mean-N	(3)
Chromium	ug/L	83	151.60	226		ug/L	152	UCL-T	(1)	83	Mean-N	(3)
Lead	ug/L	48	105.26	174		ug/L	105.26	UCL-T	(1)	48	Mean-N	(3)
4,4'-DDT	ug/L	0.154	0.34	0.56		ug/L	0.34	UCL-T	(1)	0.154	Mean-N	(3)
Alpha-BHC	ug/L	0.05	0.02	0.05		ug/L	0.02	UCL-T	(1)	0.05	Mean-N	(3)
2,6-Dinitrotoluene	ug/L	320	220.59	320		ug/L	220.59	UCL-T	(1)	320	Mean-N	(3)
3,4-Dichloroaniline	ug/L	11661	17,779,614	58,000		ug/L	58000	MAX	(2)	11,661	Mean-N	(3)
4-Chloroaniline	ug/L	686	840,454	5,900		ug/L	5900	MAX	(2)	686	Mean-N	(3)
bis(2-Chloroethyl)ether	ug/L	5	10.75	5		ug/L	5	MAX	(2)	5	Mean-N	(3)
Dinoseb	ug/L	42	107.32	42.000		ug/L	42	MAX	(2)	42	Mean-N	(3)
1,2-Dichloroethane	ug/L	3,666	280,961,146	29,000		ug/L	29000	MAX	(2)	3,666	Mean-N	(3)
4-Methyl-2-Pentanone (MIBK)	ug/L	2,200	5,672	2,200		ug/L	2200	MAX	(2)	2,200	Mean-N	(3)
Acetone	ug/L	4,800	N/A	4,800		ug/L	4800	MAX	(2)	4,800	Mean-N	(3)
Benzene	ug/L	138.7	4,215	17		ug/L	17	MAX	(2)	139	Mean-N	(3)
Chloroform	ug/L	176	3,837	700		ug/L	700	MAX	(2)	176	Mean-N	(3)
Methylene chloride	ug/L	60,015	7,457,119,902	600,000		ug/L	600000	MAX	(2)	60,015	Mean-N	(3)
Trichloroethene	ug/L	138.6	4,148	28		ug/L	28	MAX	(2)	139	Mean-N	(3)

UCL = Upper Confidence Limit
EPC = Exposure Point Concentration
µg/L = microgram per liter
UCL-T = 95th Percentile Upper Confidence Limit for Log-transformed Data
Mean-N = Arithmetic Mean of Normal Data
MAX = Maximum Detected Value

(1) The maximum concentration is greater than the 95% UCL. The 95% UCL was selected as the EPC.
(2) The UCL was greater than the maximum detected concentration; therefore, the maximum concentration was selected as the EPC.
(3) The mean concentration is the most reporesentative value for the central tendency exposure calculation.

TABLE 33
MEDIUM-SPECIFIC EXPOSURE POINT CONCENTRATION SUMMARY
CEDAR CHEMICAL CORPORATION, WEST HELENA, ARKANSAS

Scenario Timeframe:	Current/Future
Medium:	Groundwater
Exposure Medium:	Groundwater
Exposure Point:	Alluvial Groundwater

Chemical of Potential Concern	Units	Arithmetic Mean	95% UCL of Normal Data	Maximum Detected Concentration	Maximum Qualifier	EPC Units	Reasonable Maximum Exposure			Central Tendency		
							Medium EPC Value	Medium EPC Statistic	Medium EPC Rationale	Medium EPC Value	Medium EPC Statistic	Medium EPC Rationale
1,1,2-Trichloroethane	µg/L	27	46	27		µg/L	27	MAX	(1)	27	Mean-N	(3)
1,2-Dichloroethane	µg/L	7,742	72,816	87,000		µg/L	72816	UCL-T	(2)	7,742	Mean-N	(3)
1,2-Dichloropropane	µg/L	43	51	43		µg/L	43	MAX	(1)	43	Mean-N	(3)
4-Methyl-2-pentanone (MIBK)	µg/L	888	864	2,500		µg/L	864.46	UCL-T	(2)	888	Mean-N	(3)
Acetone	µg/L	470	1,088	2,000		µg/L	1087.52	UCL-T	(2)	470	Mean-N	(3)
Benzene	µg/L	27	48	46		µg/L	46	MAX	(1)	27	Mean-N	(3)
Bromodichloromethane	µg/L	6	44	6		µg/L	6.1	MAX	(1)	6	Mean-N	(3)
Bromoform	µg/L	11	43	11		µg/L	11	MAX	(1)	11	Mean-N	(3)
Chlorobenzene	µg/L	135	69	470		µg/L	68.91	UCL-T	(2)	135	Mean-N	(3)
Chloroform	µg/L	478	103	1,400		µg/L	102.52	UCL-T	(2)	478	Mean-N	(3)
Dibromochloromethane	µg/L	13	45	13		µg/L	13	MAX	(1)	13	Mean-N	(3)
Methylene Chloride	µg/L	1,471	648	5,000		µg/L	647.57	UCL-T	(2)	1,471	Mean-N	(3)
Toluene	µg/L	31,379	257	140,000		µg/L	257.19	UCL-T	(2)	31,379	Mean-N	(3)

MAX = Maximum detected value
UCL = Upper confidence limit
EPC = Exposure point concentration
µg/L = micrograms per liter
N/A = Not applicable

(1) The maximum detected concentration is less than the 95% UCL; therefore, the maximum concentration was selected as the EPC.
(2) The 95% UCL is less than the maximum detected concentration; therefore, the 95% UCLwas selected as the EPC.
(3) The mean concentration is the average detected concentration.

TABLE 34
ESTIMATED AIR CONCENTRATIONS FROM IRRIGATED WATER
CEDAR CHEMICAL CORPORATION, WEST HELENA, ARKANSAS

Chemical	Average Detected Concentration (mg/L)	Average Inhaled Concentration (mg/m^3)	Maximum Detected Concentration (mg/L)	Maximum Inhaled Concentration (mg/m^3)	Henry's Law Constant ($atm\text{-}m^3/g\text{-}mole$)	Notes
1,1,2-Trichloroethane	0.027	5.70E-04	0.027	1.90E-02	9.13E-04	
1,2-Dichloroethane	8.294	2.72E-01	87	2.86E+00	1.10E-03	
1,2-Dichloropropane	0.043	3.05E-03	0.043	7.07E-02	2.82E-03	
4-Methyl-2-Pentanone (MIBK)	0.89	9.87E-03	2.5	2.78E-02	3.93E-04	a
Acetone	0.47	1.21E+00	2	5.16E+00	3.88E-05	
Benzene	0.0265	5.49E-03	0.046	2.16E-01	5.50E-03	
Bromodichloromethane	0.0061	1.70E-04	0.0061	2.79E-02	1.61E-03	a
Bromoform	0.011	5.40E-04	0.011	1.25E-02	5.00E-04	
Chlorobenzene	0.135	9.17E-03	0.47	4.77E-02	3.70E-03	
Chloroform	0.387	7.60E-04	1.4	1.44E-01	3.20E-03	
Dibromochloromethane	0.013	1.40E-04	0.013	1.40E-04	7.89E-04	a
Methylene Chloride	1.471	7.30E-02	5	4.42E+01	2.19E-03	
Toluene	31.4	4.56E+00	140	2.80E+01	6.60E-03	

Notes:

a - Converted using $H_c = H' \times R \times T$

H_c = Henry's Law Constant

H' = Henry's law (dimensionless)

R = Gas constant (8.2057 x 10-5 $atm\text{-}m^3/gmole\text{-}K$)

T = temperature (Kelvin scale)

TABLE 36
INGESTION-SPECIFIC INTAKE FACTOR
REASONABLE MAXIMUM EXPOSURE
CONSTRUCTION WORKER EXPOSURE: INGESTION OF CHEMICALS IN SOIL AND DUST
CEDAR CHEMICAL CORPORATION, WEST HELENA, ARKANSAS

EQUATION UNITS	IF oral kg/kg-day	=	(	IR mg/day	×	EF days/yr	×	ED yr	×	FI Unitless	×	CF kg/mg	)	+	(	BW kg	×	AT days	)
NONCARCINOGENIC	1.13E-06	=	(	480	×	60	×	1	×	1	×	1.00E-06	)	+	(	70	×	365	)
CARCINOGENIC	1.61E-08	=	(	480	×	60	×	1	×	1	×	1.00E-06	)	+	(	70	×	25,550	)

See Table 35 for definitions and sources of equation variables identified as follows:

IF = intake factor
IR = ingestion rate
AT = averaging time
EF = exposure frequency
BW = body weight
ED = exposure duration
FI = fraction ingested
CF = conversion factor

TABLE 37
DERMAL-SPECIFIC INTAKE FACTOR
REASONABLE MAXIMUM EXPOSURE
CONSTRUCTION WORKER EXPOSURE: DERMAL CONTACT WITH CHEMICALS IN SOIL
CEDAR CHEMICAL CORPORATION, WEST HELENA, ARKANSAS

EQUATION UNITS	IF derm =	(SA ×	AF ×	ABS ×	EF ×	ED ×	CF) + (	BW ×	AT)
	kg/kg-day	cm^2/event	mg/cm2	unitless	events/year	years	kg/mg	kg	days
NONCARCINOGENIC									
Arsenic	2.89E-07 = (	4.10E+03 ×	1 ×	3.00E-02 ×	60 ×	1	)x(1.00E-06) + (	70 ×	365)
Other Metals	9.63E-08 = (	4.10E+03 ×	1 ×	1.00E-02 ×	60 ×	1	)x(1.00E-06) + (	70 ×	365)
Dieldrin	9.63E-07 = (	4.10E+03 ×	1 ×	1.00E-01 ×	60 ×	1	)x(1.00E-06) + (	70 ×	365)
1,2-Dichloroethane	9.63E-07 = (	4.10E+03 ×	1 ×	1.00E-01 ×	60 ×	1	)x(1.00E-06) + (	70 ×	365)
Methoxychlor	9.63E-07 = (	4.10E+03 ×	1 ×	1.00E-01 ×	60 ×	1	)x(1.00E-06) + (	70 ×	365)
Heptachlor	9.63E-07 = (	4.10E+03 ×	1 ×	1.00E-01 ×	60 ×	1	)x(1.00E-06) + (	70 ×	365)
Dinoseb	9.63E-07 = (	4.10E+03 ×	1 ×	1.00E-01 ×	60 ×	1	)x(1.00E-06) + (	70 ×	365)
Toxaphene	9.63E-07 = (	4.10E+03 ×	1 ×	1.00E-01 ×	60 ×	1	)x(1.00E-06) + (	70 ×	365)
3,4-Dichloroaniline	4.01E-06 = (	4.10E+03 ×	1 ×	1.00E-01 ×	60 ×	1	)x(1.00E-06) + (	70 ×	365)
Propanil	9.63E-07 = (	4.10E+03 ×	1 ×	1.00E-01 ×	60 ×	1	)x(1.00E-06) + (	70 ×	365)
1,2-Dichloroethane	9.63E-07 = (	4.10E+03 ×	1 ×	1.00E-01 ×	60 ×	1	)x(1.00E-06) + (	70 ×	365)
Carbon Tetrachloride	9.63E-07 = (	4.10E+03 ×	1 ×	1.00E-01 ×	60 ×	1	)x(1.00E-06) + (	70 ×	365)
Chloroform	9.63E-07 = (	4.10E+03 ×	1 ×	1.00E-01 ×	60 ×	1	)x(1.00E-06) + (	70 ×	365)
Methylene chloride	9.63E-07 = (	4.10E+03 ×	1 ×	1.00E-01 ×	60 ×	1	)x(1.00E-06) + (	70 ×	365)
CARCINOGENIC									
Arsenic	4.13E-09 = (	4.10E+03 ×	1 ×	3.00E-02 ×	60 ×	1	)x(1.00E-06) + (	70 ×	25,550)
Other Metals	1.38E-09 = (	4.10E+03 ×	1 ×	1.00E-02 ×	60 ×	1	)x(1.00E-06) + (	70 ×	25,550)
Dieldrin	1.38E-08 = (	4.10E+03 ×	1 ×	1.00E-01 ×	60 ×	1	)x(1.00E-06) + (	70 ×	25,550)
1,2-Dichloroethane	1.38E-08 = (	4.10E+03 ×	1 ×	1.00E-01 ×	60 ×	1	)x(1.00E-06) + (	70 ×	25,550)
Methoxychlor	1.38E-08 = (	4.10E+03 ×	1 ×	1.00E-01 ×	60 ×	1	)x(1.00E-06) + (	70 ×	25,550)
Heptachlor	1.38E-08 = (	4.10E+03 ×	1 ×	1.00E-01 ×	60 ×	1	)x(1.00E-06) + (	70 ×	25,550)
Dinoseb	1.38E-08 = (	4.10E+03 ×	1 ×	1.00E-01 ×	60 ×	1	)x(1.00E-06) + (	70 ×	25,550)
Toxaphene	1.38E-08 = (	4.10E+03 ×	1 ×	1.00E-01 ×	60 ×	1	)x(1.00E-06) + (	70 ×	25,550)
3,4-Dichloroaniline	1.38E-08 = (	4.10E+03 ×	1 ×	1.00E-01 ×	60 ×	1	)x(1.00E-06) + (	70 ×	25,550)
Propanil	1.38E-08 = (	4.10E+03 ×	1 ×	1.00E-01 ×	60 ×	1	)x(1.00E-06) + (	70 ×	25,550)
1,2-Dichloroethane	1.38E-08 = (	4.10E+03 ×	1 ×	1.00E-01 ×	60 ×	1	)x(1.00E-06) + (	70 ×	25,550)
Carbon tetrachloride	1.38E-08 = (	4.10E+03 ×	1 ×	1.00E-01 ×	60 ×	1	)x(1.00E-06) + (	70 ×	25,550)
Chloroform	1.38E-08 = (	4.10E+03 ×	1 ×	1.00E-01 ×	60 ×	1	)x(1.00E-06) + (	70 ×	25,550)
Methylene chloride	1.38E-08 = (	4.10E+03 ×	1 ×	1.00E-01 ×	60 ×	1	)x(1.00E-06) + (	70 ×	25,550)

See Table 35 for definitions and sources of equation variables identified as follows:

IF = intake factor
CF = conversion factor
SA = skin surface area available for contact
AF = soil to skin adherence factor
ABS = absorption factor
EF = exposure frequency
ED = exposure duration
BW = body weight
AT = averaging time

TABLE 38
REASONABLE MAXIMUM EXPOSURE
INHALATION-SPECIFIC INTAKE FACTOR
CONSTRUCTION WORKER EXPOSURE: INHALATION OF AIRBORNE CHEMICALS FROM SOIL
CEDAR CHEMICAL CORPORATION, WEST HELENA, ARKANSAS

EQUATION UNITS	IFinh kg/kg-day	=	(	Inh R m^3/day	×	EF days/yr	×	ED yr	×	1	/	PEF m^3/kg	+	1	/	VF m^3/kg	)	+	(	BW kg	×	AT days	)
NONCARCINOGENIC EFFECTS																							
Metals	3.56E-11	=	(	20	×	60	×	1	×	1	/	1.32E+09	+	1	/	N/A	)	+	(	70	×	365	)
Aldrin	3.56E-11	=	(	20	×	60	×	1	×	1	/	1.32E+09	+	1	/	N/A	)	+	(	70	×	365	)
Dieldrin	3.56E-11	=	(	20	×	60	×	1	×	1	/	1.32E+09	+	1	/	N/A	)	+	(	70	×	365	)
Methoxychlor	3.56E-11	=	(	20	×	60	×	1	×	1	/	1.32E+09	+	1	/	N/A	)	+	(	70	×	365	)
Heptachlor	3.56E-11	=	(	20	×	60	×	1	×	1	/	1.32E+09	+	1	/	N/A	)	+	(	70	×	365	)
Dinoseb	3.56E-11	=	(	20	×	60	×	1	×	1	/	1.32E+09	+	1	/	N/A	)	+	(	70	×	365	)
Toxaphene	3.56E-11	=	(	20	×	60	×	1	×	1	/	1.32E+09	+	1	/	N/A	)	+	(	70	×	365	)
3,4-Dichloroaniline	3.56E-11	=	(	20	×	60	×	1	×	1	/	1.32E+09	+	1	/	N/A	)	+	(	70	×	365	)
Propanil	3.56E-11	=	(	20	×	60	×	1	×	1	/	1.32E+09	+	1	/	N/A	)	+	(	70	×	365	)
1,2-Dichloroethane	2.24E-05	=	(	20	×	60	×	1	×	1	/	1.32E+09	+	1	/	2.10E+03	)	+	(	70	×	365	)
Carbon tetrachloride	4.27E-05	=	(	20	×	60	×	1	×	1	/	1.32E+09	+	1	/	1.10E+03	)	+	(	70	×	365	)
Chloroform	3.35E-05	=	(	20	×	60	×	1	×	1	/	1.32E+09	+	1	/	1.40E+03	)	+	(	70	×	365	)
Methylene chloride	3.61E-05	=	(	20	×	60	×	1	×	1	/	1.32E+09	+	1	/	1.30E+03	)	+	(	70	×	365	)
CARCINOGENIC EFFECTS																							
Metals	5.08E-13	=	(	20	×	60	×	1	×	1	/	1.32E+09	+	1	/	N/A	)	+	(	70	×	25,550	)
Aldrin	5.08E-13	=	(	20	×	60	×	1	×	1	/	1.32E+09	+	1	/	N/A	)	+	(	70	×	25,550	)
Dieldrin	5.08E-13	=	(	20	×	60	×	1	×	1	/	1.32E+09	+	1	/	N/A	)	+	(	70	×	25,550	)
Methoxychlor	5.08E-13	=	(	20	×	60	×	1	×	1	/	1.32E+09	+	1	/	N/A	)	+	(	70	×	25,550	)
Heptachlor	5.08E-13	=	(	20	×	60	×	1	×	1	/	1.32E+09	+	1	/	N/A	)	+	(	70	×	25,550	)
Dinoseb	5.08E-13	=	(	20	×	60	×	1	×	1	/	1.32E+09	+	1	/	N/A	)	+	(	70	×	25,550	)
Toxaphene	5.08E-13	=	(	20	×	60	×	1	×	1	/	1.32E+09	+	1	/	N/A	)	+	(	70	×	25,550	)
3,4-Dichloroaniline	5.08E-13	=	(	20	×	60	×	1	×	1	/	1.32E+09	+	1	/	N/A	)	+	(	70	×	25,550	)
Propanil	5.08E-13	=	(	20	×	60	×	1	×	1	/	1.32E+09	+	1	/	N/A	)	+	(	70	×	25,550	)
1,2-Dichloroethane	3.20E-07	=	(	20	×	60	×	1	×	1	/	1.32E+09	+	1	/	2.10E+03	)	+	(	70	×	25,550	)
Carbon tetrachloride	6.10E-07	=	(	20	×	60	×	1	×	1	/	1.32E+09	+	1	/	1.10E+03	)	+	(	70	×	25,550	)
Chloroform	4.79E-07	=	(	20	×	60	×	1	×	1	/	1.32E+09	+	1	/	1.40E+03	)	+	(	70	×	25,550	)
Methylene chloride	5.16E-07	=	(	20	×	60	×	1	×	1	/	1.32E+09	+	1	/	1.30E+03	)	+	(	70	×	25,550	)

See Table 35 for definitions and sources of equation variables identified as follows:

IF = Intake factor
IR = Inhalation Rate
EF = Exposure frequency
ED = Exposure duration
ET = Exposure time

TABLE 39
VALUES USED FOR DAILY INTAKE CALCULATIONS
CEDAR CHEMICAL CORPORATION, WEST HELENA, ARKANSAS

Scenario Timeframe: Future
Medium: Sediment
Exposure Medium: Sediment
Exposure Point: Site 1, 3
Receptor Population: Construction Worker
Receptor Age: Adult

Exposure Route	Parameter Code	Parameter Definition	Units	RME Value	RME Rationale/ Reference	CT Value	CT Rationale/ Reference	Intake Equation/ Model Name
Ingestion	IR	Ingestion Rate of Sediment	mg/day	50	U.S. EPA, 1989	50	USEPA, 1997	IF = (IR)(ET)(EF)(ED)(FI)(CF)
	EF	Exposure Frequency	days/year	60[a]	Conservative assumption	20[b]	Conservative Assumption	
	ED	Exposure Duration	years	1	Conservative assumption	1	Conservative Assumption	
	FI	Fraction Ingested from Contaminated Source	unitless	1	Conservative assumption	1	Conservative Assumption	
	CF	Conversion Factor	kg/mg	1.00E-06	SI system	1E-06	SI System	
	BW	Body Weight	kg	70	U.S. EPA, 1989	70	USEPA, 1989	
	AT - N	Averaging Time - Noncancer	days	365	U.S. EPA, 1989	365	USEPA, 1989	
	AT - C	Averaging Time - Cancer	days	25,550	U.S. EPA, 1989	25,550	USEPA, 1989	
Dermal	SA	Skin Surface Area	cm^2	4,100	U.S. EPA, 1997	3,600[c]	USEPA, 1997	IF = (SA)(AF)(ABS)(EF)(ED)(CF) (BW)(AT)
	AF	Adherence Factor	mg/cm^2	1	U.S. EPA, 1995	0.0367[d]	USEPA, 1995	
	ABS	Dermal Absorption Factor	unitless	Chemical Specific	U.S. EPA, 1998	Chemical Specific	USEPA, 1998	
	EF	Exposure Frequency	days/year	60a	Conservative assumption	20[b]	Conservative Assumption	
	ED	Exposure Duration	years	1	Conservative assumption	1	Conservative Assumption	
	CF	Conversion Factor	kg/mg	1.00E-06	SI system	1E-06	SI System	
	BW	Body Weight	kg	70	U.S. EPA, 1989	70	USEPA, 1989	
	AT-N	Averaging Time - Noncancer	days	365	U.S. EPA, 1989	365	USEPA, 1989	
	AT-C	Averaging Time - Cancer	days	25,550	U.S. EPA, 1989	25,550	USEPA, 1989	

RME = Reasonable Maximum Exposure
CT = Central Tendency
mg = milligram
kg = kilogram
m^3 = cubic meters
cm^2 = square centimeters

USEPA. 1989. Risk Assessment Guidance for Superfund - Volume I: Human Health Evaluation Manual (Part A) Interim Final. (USEPA/540/1/89/002). Washington, DC. Office of Emergency and Remedial Response.
USEPA. 1997. Exposure Factors Handbook. Washington, DC. Office of Emergency and Remedial Response.
USEPA. 1998. USEPA Region 6 Human Health Medium-Specific Screening Levels. October.
USEPA. 1995. USEPA Region 4: Supplemental Guidance to RAGS: Bulletin 3. Exposure Assessment. Atlanta, GA. Office of Health Assessment - Waste Management Division.

a - Exposure frequency based on period of time the construction worker is exposed to contaminated soil during excavation activities.
b - Conservative estimate based on a 1 worker month per year frequency. Value obtained from the Department of Energy Oak Ridge Reservation, Risk Assessment Information System website at http://risk.lsd.ornl.gov/homepage/rap_tool.htm.
c - 50th percentile skin surface area based on exposed head (1300 sq. cm), forearms (1310 sq. cm) and hands (990 sq. cm).

TABLE 39
VALUES USED FOR DAILY INTAKE CALCULATIONS
CEDAR CHEMICAL CORPORATION, WEST HELENA, ARKANSAS

Scenario Timeframe: Future
Medium: Sediment
Exposure Medium: Sediment
Exposure Point: Site 1, 3
Receptor Population: Construction Worker
Receptor Age: Adult

Exposure Route	Parameter Code	Parameter Definition	Units	RME Value	RME Rationale/ Reference	CT Value	CT Rationale/ Reference	Intake Equation/ Model Name
Ingestion	IR	Ingestion Rate of Sediment	mg/day	50	U.S. EPA, 1989	50	USEPA, 1997	IF = (IR)(ET)(EF)(ED)(FI)(CF)
	EF	Exposure Frequency	days/year	60[a]	Conservative assumption	20[b]	Conservative Assumption	
	ED	Exposure Duration	years	1	Conservative assumption	1	Conservative Assumption	
	FI	Fraction Ingested from Contaminated Source	unitless	1	Conservative assumption	1	Conservative Assumption	
	CF	Conversion Factor	kg/mg	1.00E-06	SI system	1E-06	SI System	
	BW	Body Weight	kg	70	U.S. EPA, 1989	70	USEPA, 1989	
	AT - N	Averaging Time - Noncancer	days	365	U.S. EPA, 1989	365	USEPA, 1989	
	AT - C	Averaging Time - Cancer	days	25,550	U.S. EPA, 1989	25,550	USEPA, 1989	
Dermal	SA	Skin Surface Area	cm^2	4,100	U.S. EPA, 1997	3,600[c]	USEPA, 1997	IF = (SA)(AF)(ABS)(EF)(ED)(CF) (BW)(AT)
	AF	Adherence Factor	mg/cm^2	1	U.S. EPA, 1995	0.0387[d]	USEPA, 1995	
	ABS	Dermal Absorption Factor	unitless	Chemical Specific	U.S. EPA, 1998	Chemical Specific	USEPA, 1998	
	EF	Exposure Frequency	days/year	60a	Conservative assumption	20[b]	Conservative Assumption	
	ED	Exposure Duration	years	1	Conservative assumption	1	Conservative Assumption	
	CF	Conversion Factor	kg/mg	1.00E-06	SI system	1E-06	SI System	
	BW	Body Weight	kg	70	U.S. EPA, 1989	70	USEPA, 1989	
	AT-N	Averaging Time - Noncancer	days	365	U.S. EPA, 1989	365	USEPA, 1989	
	AT-C	Averaging Time - Cancer	days	25,550	U.S. EPA, 1989	25,550	USEPA, 1989	

RME = Reasonable Maximum Exposure
CT = Central Tendency
mg = milligram
kg = kilogram
m^3 = cubic meters
cm^2 = square centimeters

USEPA. 1989. Risk Assessment Guidance for Superfund - Volume I: Human Health Evaluation Manual (Part A) Interim Final. (USEPA/540/1/89/002). Washington, DC. Office of Emergency and Remedial Response.
USEPA. 1997. Exposure Factors Handbook. Washington, DC. Office of Emergency and Remedial Response.
USEPA. 1998. USEPA Region 6 Human Health Medium-Specific Screening Levels. October.
USEPA. 1995. USEPA Region 4: Supplemental Guidance to RAGS: Bulletin 3. Exposure Assessment. Atlanta, GA. Office of Health Assessment - Waste Management Division.

a - Exposure frequency based on period of time the construction worker is exposed to contaminated soil during excavation activities.
b - Conservative estimate based on a 1 worker month per year frequency. Value obtained from the Department of Energy Oak Ridge Reservation, Risk Assessment Information System website at http://risk.lsd.ornl.gov/homepage/rap_tool.htm.
c - 50th percentile skin surface area based on exposed head (1300 sq. cm), forearms (1310 sq. cm) and hands (990 sq. cm).

TABLE 40
INGESTION-SPECIFIC INTAKE FACTOR

CONSTRUCTION WORKER EXPOSURE: INGESTION OF CHEMICALS IN SEDIMENT
CEDAR CHEMICAL CORPORATION, WEST HELENA, ARKANSAS

EQUATION UNITS	IF ing kg sediment/kg BW - day	=	(	IR mg/day	×	EF days/year	×	ED years	×	FI unitless	×	CF kg/mg	)+(	BW kg	×	AT days	)
NONCARCINOGENIC	1.17E-07	=	(	50	×	60	×	1	×	1	×	1.00E-06	)+(	70	×	365	)
CARCINOGENIC	1.68E-09	=	(	50	×	60	×	1	×	1	×	1.00E-06	)+(	70	×	25,550	)

See Table 39 for definitions and sources of equation variables identified as follows:

IF = intake factor
ET = exposure time
EF = exposure frequency
ED = exposure duration
FI = fraction ingested from contaminated source
IR = ingestion rate
EF = exposure frequency
ED = exposure duratnion
CF = conversion factor

TABLE 41
DERMAL-SPECIFIC INTAKE FACTOR
REASONABLE MAXIMUM EXPOSURE
CONSTRUCTION WORKER EXPOSURE: DERMAL CONTACT WITH CHEMICALS IN SEDIMENT
CEDAR CHEMICAL CORPORATION, WEST HELENA, ARKANSAS

EQUATION UNITS	IF derm kg sediment/kg BW - day	= (	SA cm2	×	AF mg/cm2	×	ABS unitless	×	EF days/year	×	ED year	×	CF kg/mg	)+(	BW kg	×	AT days	)
NONCARCINOGENIC																		
Arsenic	2.89E-07	= (	4.1E+03	×	1	×	3.0E-02	×	60	×	1	×	1.E-06	)+(	70	×	365	)
Aldrin	9.63E-07	= (	4.1E+03	×	1	×	1.0E-01	×	60	×	1	×	1.E-06	)+(	70	×	365	)
Dieldrin	9.63E-07	= (	4.1E+03	×	1	×	1.0E-01	×	60	×	1	×	1.E-06	)+(	70	×	365	)
Toxaphene	9.63E-07	= (	4.1E+03	×	1	×	1.0E-01	×	60	×	1	×	1.E-06	)+(	70	×	365	)
Pentachlorophenol	2.41E-06	= (	4.1E+03	×	1	×	2.5E-01	×	60	×	1	×	1.E-06	)+(	70	×	365	)
CARCINOGENIC																		
Arsenic	4.13E-09	= (	4.1E+03	×	1	×	3.0E-02	×	60	×	1	×	1.E-06	)+(	70	×	25,550	)
Aldrin	1.38E-08	= (	4.1E+03	×	1	×	1.0E-01	×	60	×	1	×	1.E-06	)+(	70	×	25,550	)
Dieldrin	1.38E-08	= (	4.1E+03	×	1	×	1.0E-01	×	60	×	1	×	1.E-06	)+(	70	×	25,550	)
Toxaphene	1.38E-08	= (	4.1E+03	×	1	×	1.0E-01	×	60	×	1	×	1.E-06	)+(	70	×	25,550	)
Pentachlorophenol	3.44E-08	= (	4.1E+03	×	1	×	2.5E-01	×	60	×	1	×	1.E-06	)+(	70	×	25,550	)

See Table 39 for diefinitions and sources of equation variables idenitified as follows:
IF = intake factor
CF = conversion factor
SA = skin surface area available for contact
ABS = absorption factor
EF = exposure frequency
ED = exposure duration

TABLE 42
VALUES USED FOR DAILY INTAKE CALCULATIONS
CEDAR CHEMICAL CORPORATION, WEST HELENA, ARKANSAS

Scenario Timeframe: Future
Medium: Groundwater
Exposure Medium: Groundwater
Exposure Point: Perched Groundwater
Receptor Population: Construction Worker
Receptor Age: Adult

Exposure Route	Parameter Code	Parameter Definition	Units	RME Value	RME Rationale/ Reference	CT Value	CT Rationale/ Reference	Intake Equation/ Model Name
Ingestion	IR-W	Ingestion Rate of Water	mg/day	0.01	USEPA, 1997	0.01	USEPA, 1997	CDI ing = (IR)(CF)(FI)(EF)(ED) / (BW)(AT)
	EF	Exposure Frequency	days/year	60[b]	U.S. EPA, 1989	20[b]	Conservative Assumption	
	ED	Exposure Duration	years	1	Conservative assumption	1	Conservative Assumption	
	ET	Exposure Time	hours/day	8	USEPA, 1989	4[c]	Conservative Assumption	
	BW	Body Weight	kg	70	U.S. EPA, 1989	70	USEPA, 1989	
	AT-C	Averaging Time (Cancer)	days	25,550	U.S. EPA, 1989	25,550	USEPA, 1989	
	AT-N	Averaging Time (Noncancer)	days	365	U.S. EPA, 1989	365	USEPA, 1989	
Dermal	SA	Skin Surface Area Available for Contact	cm^3	4,100	U.S. EPA, 1992	3,600[d]	USEPA, 1997	CDI inh = (IR)(EF)(ED)[(1/VF)+(1/PEF)] / (BW)(AT)
	EF	Exposure Frequency	days/year	60[b]	U.S. EPA, 1989	20[b]	USEPA, 1989	
	ED	Exposure Duration	years	1	Conservative assumption	1	Conservative Assumption	
	AT-C	Averaging Time (Cancer)	days	25,550	U.S. EPA, 1989	25,550	USEPA, 1989	
	AT-N	Averaging Time (Noncancer)	days	365	U.S. EPA, 1989	365	USEPA, 1989	
	PC	Dermal Permeability Constant	cm/hr	Chemical specific	U.S. EPA, 1996	Chemical Specific	USEPA, 1989	
	ET	Exposure Time	hours/day	8	U.S. EPA, 1998	4	USEPA, 1989	
	CF	Conversion Factor	L/cm^3	1.00E-03	SI System	1.00E-03	SI System	

RME = Reasonable Maximum Exposure
CT = Central Tendency
mg = milligram
kg = kilogram
m^3 = cubic meters
cm^2 = square centimeters
IF = intake factor
SI system = International System of Units

USEPA. 1991 Human Health Evaluation Manual, Supplemental Guidance: "Standard Default Exposure Factors." Washington, DC. Office of Solid Waste and Emergency Response (OSWER Directive 9285.6-03).
USEPA. 1989. Risk Assessment Guidance for Superfund - Volume I: Human Health Evaluation Manual (Part A) Interim Final. (EPA/540/1/89/002). Washington, DC. Office of Emergency and Remedial Response.
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USEPA. 1999. EPA Region 6 Human Health Medium-Specific Screening Levels. October.
USEPA. 1996. Soil Screening Guidance: User's Guide. 2nd Edition. Washington, DC. Office of Solid Waste and Emergency Response. (Publication 9355.4-23).
USEPA. 1995. EPA Region 4: Supplemental Guidance to RAGS: Bulletin 3. Exposure Assessment. Atlanta, GA. Office of Health Assessment - Waste Management Division.

a - Exposure frequency based on the period of time the construction worker is exposed to contaminated perched groundwater during excavation activities.
b - Conservative estimate based on a 1 worker month per year frequency. Value obtained from the Department of Energy Oak Ridge Reservation, Risk Assesment Information System website at http://risk.lsd.ornl.gov/homepage/rap_tool.htm.

TABLE 43
INGESTION-SPECIFIC INTAKE FACTOR
CONSTRUCTION WORKER EXPOSURE: INGESTION OF CHEMICALS IN PERCHED GROUNDWATER
CEDAR CHEMICAL CORPORATION, WEST HELENA, ARKANSAS

EQUATION UNITS	IF oral =	(IR	×	ET	×	EF	×	ED	) ÷	(BW	×	AT	)
	kg/kg-day	mg/hour		hours/day		days/yr		yr		kg		days	
NONCARCINOGENIC	1.88E-04 =	(0.01	×	8	×	60	×	1	) +	(70	×	365	)
CARCINOGENIC	2.68E-06 =	(0.01	×	8	×	60	×	1	) +	(70	×	25,550	)

See Table 42 for definitions and sources of equation variables identified as follows:

IF = intake factor
IR = inhalation rate
ET = exposure time
EF = exposure frequency
ED = exposure duration
CF = conversion factor
BW = body weight
AT = averaging time

TABLE 44
DERMAL-SPECIFIC INTAKE FACTOR
REASONABLE MAXIMUM EXPOSURE
CONSTRUCTION WORKER EXPOSURE: DERMAL CONTACT WITH CHEMICALS IN GROUNDWATER

EQUATION	IF derm	=	(	CF	×	SA	×	PC	×	ET	×	EF	×	ED	)	÷	(	BW	×
UNITS	L/kg-day			L/cm^3		cm^2/event		cm/hr		hours/day		events/year		years				kg	
NONCARCINOGENIC EFFECTS																			
Arsenic	7.70E-05	=	(	1E-03	×	4100	×	1.00E-03	×	8	×	60	×	1	)	÷	(	70	×
Barium	7.70E-05	=	(	1E-03	×	4100	×	1.00E-03	×	8	×	60	×	1	)	÷	(	70	×
Cadmium	7.70E-05	=	(	1E-03	×	4100	×	1.00E-03	×	8	×	60	×	1	)	÷	(	70	×
Chromium	7.70E-05	=	(	1E-03	×	4100	×	1.00E-03	×	8	×	60	×	1	)	÷	(	70	×
4,4'-DDT	3.31E-02	=	(	1E-03	×	4100	×	4.30E-01	×	8	×	60	×	1	)	÷	(	70	×
alpha-BHC	1.46E-03	=	(	1E-03	×	4100	×	1.90E-02	×	8	×	60	×	1	)	÷	(	70	×
2,6-Dinitrotoluene	1.93E-04	=	(	1E-03	×	4100	×	2.50E-03	×	8	×	60	×	1	)	÷	(	70	×
3,4-Dichloroaniline	2.39E-03	=	(	1E-03	×	4100	×	3.10E-02	×	8	×	60	×	1	)	÷	(	70	×
4-Chloroaniline	2.39E-03	=	(	1E-03	×	4100	×	3.10E-02	×	8	×	60	×	1	)	÷	(	70	×
bis(2-Chloroethyl)ether	1.62E-04	=	(	1E-03	×	4100	×	2.10E-03	×	8	×	60	×	1	)	÷	(	70	×
Dinoseb	2.16E-03	=	(	1E-03	×	4100	×	2.80E-02	×	8	×	60	×	1	)	÷	(	70	×
1,2-Dichloroethane	4.08E-04	=	(	1E-03	×	4100	×	5.30E-03	×	8	×	60	×	1	)	÷	(	70	×
4-Methyl-2-pentanone	2.54E-04	=	(	1E-03	×	4100	×	3.30E-03	×	8	×	60	×	1	)	÷	(	70	×
Acetone	4.39E-05	=	(	1E-03	×	4100	×	5.70E-04	×	8	×	60	×	1	)	÷	(	70	×
Benzene	1.62E-03	=	(	1E-03	×	4100	×	2.10E-02	×	8	×	60	×	1	)	÷	(	70	×
Chloroform	6.86E-04	=	(	1E-03	×	4100	×	8.90E-03	×	8	×	60	×	1	)	÷	(	70	×
Methylene chloride	3.47E-04	=	(	1E-03	×	4100	×	4.50E-03	×	8	×	60	×	1	)	÷	(	70	×
Trichloroethene	1.23E-03	=	(	1E-03	×	4100	×	1.60E-02	×	8	×	60	×	1	)	÷	(	70	×
CARCINOGENIC EFFECTS																			
Arsenic	1.10E-06	=	(	1E-03	×	4100	×	1.00E-03	×	8	×	60	×	1	)	÷	(	70	×
4,4'-DDT	4.73E-04	=	(	1E-03	×	4100	×	4.30E-01	×	8	×	60	×	1	)	÷	(	70	×
alpha-BHC	2.09E-05	=	(	1E-03	×	4100	×	1.90E-02	×	8	×	60	×	1	)	÷	(	70	×
1,4-Dichlorobenzene	6.82E-05	=	(	1E-03	×	4100	×	6.20E-02	×	8	×	60	×	1	)	÷	(	70	×
2,6-Dinitrotoluene	2.75E-06	=	(	1E-03	×	4100	×	2.50E-03	×	8	×	60	×	1	)	÷	(	70	×
4-Chloroaniline	3.41E-05	=	(	1E-03	×	4100	×	3.10E-02	×	8	×	60	×	1	)	÷	(	70	×
bis(2-Chloroethyl)ether	2.31E-06	=	(	1E-03	×	4100	×	2.10E-03	×	8	×	60	×	1	)	÷	(	70	×
Dinoseb	3.08E-05	=	(	1E-03	×	4100	×	2.80E-02	×	8	×	60	×	1	)	÷	(	70	×
1,2-Dichloroethane	5.83E-06	=	(	1E-03	×	4100	×	5.30E-03	×	8	×	60	×	1	)	÷	(	70	×
4-Methyl-2-pentanone	3.63E-06	=	(	1E-03	×	4100	×	3.30E-03	×	8	×	60	×	1	)	÷	(	70	×
Acetone	6.27E-07	=	(	1E-03	×	4100	×	5.70E-04	×	8	×	60	×	1	)	÷	(	70	×
Benzene	2.31E-05	=	(	1E-03	×	4100	×	2.10E-02	×	8	×	60	×	1	)	÷	(	70	×
Chloroform	9.79E-06	=	(	1E-03	×	4100	×	8.90E-03	×	8	×	60	×	1	)	÷	(	70	×
Methylene chloride	4.95E-06	=	(	1E-03	×	4100	×	4.50E-03	×	8	×	60	×	1	)	÷	(	70	×
Trichloroethene	1.76E-05	=	(	1E-03	×	4100	×	1.60E-02	×	8	×	60	×	1	)	÷	(	70	×

See Table 42 for definitions and sources of equation variables identified as follows:

IF = intake factor
CF = conversion factor
SA = skin surface area available for contact
PC = permeability constant
EF = exposure frequency
ED = exposure duration
BW = body weight
AT = averaging time

TABLE 45
VALUES USED FOR DAILY INTAKE CALCULATIONS
CEDAR CHEMICAL CORPORATION, WEST HELENA, ARKANSAS

Scenario Timeframe: Future
Medium: Soil
Exposure Medium: Surface Soil
Exposure Point: Sites 1, 2, 3, 4, 5, 6, 8, 9
Receptor Population: Site Worker
Receptor Age: Adult

xposure Rout	Parameter Code	Parameter Definition	Units	RME Value	RME Rationale/ Reference	CT[a] Value	CT Rationale/ Reference	Intake Equation/ Model Name
Ingestion	IR-S	Ingestion Rate of Soil	mg/day	50	USEPA, 1989	50	USEPA, 1989	CDI ing = (IR)(CF)(FI)(EF)(ED) / (BW)(AT)
	EF	Exposure Frequency	days/year	250	USEPA, 1989	250	USEPA, 1989	
	ED	Exposure Duration	years	25	USEPA, 1989	6.6	USEPA, 1989	
	FI	source	unitless	1	Conservative assumption	0.1	Conservative Assumption	
	CF	Conversion Factor	kg/mg	1E-06	SI system	1E-06	SI System	
	BW	Body Weight	kg	70	USEPA, 1989	70	USEPA, 1989	
	AT-C	Averaging Time (Cancer)	days	25,550	USEPA, 1989	25,550	USEPA, 1989	
	AT-N	Averaging Time (Noncancer)	days	9,125	USEPA, 1989	2,409	USEPA, 1989	
Inhalation	InR-S	Inhalation Rate of Soil	m^3/day	20	USEPA, 1989	11.3	USEPA, 1997	CDI inh = (IR)(EF)(ED)[(1/VF)+(1/PEF)] / (BW)(AT)
	EF	Exposure Frequency	days/year	250	USEPA, 1989	250	USEPA, 1989	
	ED	Exposure Duration	years	25	USEPA, 1989	6.6	USEPA, 1997	
	BW	Body Weight	kg	70	USEPA, 1989	70	USEPA, 1989	
	AT-C	Averaging Time (Cancer)	days	25,550	USEPA, 1989	25,550	USEPA, 1989	
	AT-N	Averaging Time (Noncancer)	days	9,125	USEPA, 1989	2,409	USEPA, 1989	
	PEF	Particulate Emission Factor	m^3/kg	1.32E+09	USEPA, 1996	1.32E+09	USEPA, 1996	
	VF	Volatilization Factor	m^3/kg	Chemical specific	USEPA, 1998	Chemical Specific	USEPA, 1998	
Dermal	EF	Exposure Frequency	days/year	250	USEPA, 1989	250	USEPA, 1998	CDI derm = (CF)(SA)(AF)(ABSd)(EF)(ED) / (BW)(AT)
	ED	Exposure Duration	years	25	USEPA, 1989	6.6	USEPA, 1997	
	CF	Conversion Factor	kg/mg	1E-06	SI system	1E-06	SI System	
	SA	Skin Surface Area Available for Contact	cm^2	4,100	USEPA, 1997	3,600	USEPA, 1997	
	ABSd	Dermal Absorption Factor	unitless	Chemical specific	USEPA, 1998	Chemical Specific	USEPA, 1998	
	AF	Soil to Skil Adherence Factor	mg/cm^2/event	1	USEPA, 1995	0.0367	USEPA, 1997	
	AT-C	Averaging Time (Cancer)	days	25,550	USEPA, 1989	25,550	USEPA, 1989	
	AT-N	Averaging Time (Noncancer)	days	9,125	USEPA, 1989	2,409	USEPA, 1989	

RME = Reasonable Maximum Exposure
CT = Central Tendency
mg = milligram
kg = kilogram
m^3 = cubic meters
cm^2 = square centimeters

a = The central tendency exposure was not evaluated for this site.
b = This exposure frequency assumes the site worker is present at this site 3 hours per day rather than 8 hours per day: (0.375 × 250 days year = 93.75 days/year).

USEPA. 1989. Risk Assessment Guidance for Superfund - Volume I: Human Health Evaluation Manual (Part A) Interim Final. (EPA/540/1/89/002). Washington, DC. Office of Emergency and Remedial Response.
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USEPA. 1998. EPA Region 6 Human Health Medium-Specific Screening Levels. October.
USEPA. 1995. EPA Region 4: Supplemental Guidance to RAGS: Bulletin 3. Exposure Assessment. Atlanta, GA. Office of Health Assessment - Waste Management Division.

TABLE 46
INGESTION-SPECIFIC INTAKE FACTOR
SITE WORKER EXPOSURE: INGESTION OF CHEMICALS IN SOIL
CEDAR CHEMICAL CORPORATION, WEST HELENA, ARKANSAS

Intake = CS × IR × CF × FI × EF × ED

EQUATION UNITS	IF oral =	(IR ×	EF ×	ED ×	FI ×	CF) ÷ (	BW ×	AT)
	kg/kg-day	mg/day	days/yr	yr	unitless	kg/mg	kg	days
NONCARCINOGENIC	4.89E-07 = (	50 ×	250 ×	25 ×	1 ×	1.00E-06) ÷ (	70 ×	9,125)
CARCINOGENIC	1.75E-07 = (	50 ×	250 ×	25 ×	1 ×	1.00E-06) ÷ (	70 ×	25,550)

See Table 45 for definitions and sources of equation variables identified as follows:

IF = intake factor
IR = ingestion rate
AT = averaging time
EF = exposure frequency
BW = body weight
ED = exposure duration
FI = fraction ingested
CF = conversion factor

TABLE 47
DERMAL-SPECIFIC INTAKE FACTOR
SITE WORKER EXPOSURE: DERMAL CONTACT WITH CHEMICALS IN SOIL
CEDAR CHEMICAL CORPORATION, WEST HELENA, ARKANSAS

EQUATION UNITS	IF derm = (SA × AF)x(ABS)x(EF)x(ED)x(CF) + (BW)x(AT)
	kg/kg-day = (cm^2/event × mg/cm^2)x(unitless)x(events/year)x(years)x(kg/mg) + (kg)x(days)
NONCARCINOGENIC	
Arsenic	1.20E-06 = (4100 × 1 × 3E-02 × 250 × 25 × 1E-06) + (70 × 9,125)
Aldrin	4.01E-06 = (4100 × 1 × 1E-01 × 250 × 25 × 1E-06) + (70 × 9,125)
Dieldrin	4.01E-06 = (4100 × 1 × 1E-01 × 250 × 25 × 1E-06) + (70 × 9,125)
Heptachlor	4.01E-06 = (4100 × 1 × 1E-01 × 250 × 25 × 1E-06) + (70 × 9,125)
Methoxychlor	4.01E-06 = (4100 × 1 × 1E-01 × 250 × 25 × 1E-06) + (70 × 9,125)
3,4-Dichloroaniline	4.01E-06 = (4100 × 1 × 1E-01 × 250 × 25 × 1E-06) + (70 × 9,125)
Dinoseb	4.01E-06 = (4100 × 1 × 1E-01 × 250 × 25 × 1E-06) + (70 × 9,125)
Propanil	4.01E-06 = (4100 × 1 × 1E-01 × 250 × 25 × 1E-06) + (70 × 9,125)
Toxaphene	4.01E-06 = (4100 × 1 × 1E-01 × 250 × 25 × 1E-06) + (70 × 9,125)
1,2-Dichloroethane	4.01E-06 = (4100 × 1 × 1E-01 × 250 × 25 × 1E-06) + (70 × 9,125)
CARCINOGENIC	
Arsenic	4.30E-07 = (4100 × 1 × 3E-02 × 250 × 25 × 1E-06) + (70 × 25,550)
Aldrin	1.43E-06 = (4100 × 1 × 1E-01 × 250 × 25 × 1E-06) + (70 × 25,550)
Dieldrin	1.43E-06 = (4100 × 1 × 1E-01 × 250 × 25 × 1E-06) + (70 × 25,550)
Heptachlor	1.43E-06 = (4100 × 1 × 1E-01 × 250 × 25 × 1E-06) + (70 × 25,550)
Methoxychlor	1.43E-06 = (4100 × 1 × 1E-01 × 250 × 25 × 1E-06) + (70 × 25,550)
3,4-Dichloroaniline	1.43E-06 = (4100 × 1 × 1E-01 × 250 × 25 × 1E-06) + (70 × 25,550)
Dinoseb	1.43E-06 = (4100 × 1 × 1E-01 × 250 × 25 × 1E-06) + (70 × 25,550)
Propanil	1.43E-06 = (4100 × 1 × 1E-01 × 250 × 25 × 1E-06) + (70 × 25,550)
Toxaphene	1.43E-06 = (4100 × 1 × 1E-01 × 250 × 25 × 1E-06) + (70 × 25,550)
1,2-Dichloroethane	1.43E-06 = (4100 × 1 × 1E-01 × 250 × 25 × 1E-06) + (70 × 25,550)

See Table 45 for definitions and sources of equation variables identified as follows:

IF = intake factor
CF = conversion factor
SA = skin surface area available for contact
AF = soil to skin adherence factor
ABS = absorption factor
EF = exposure frequency
ED = exposure duration
BW = body weight
AT = averaging time

TABLE 48
INHALATION-SPECIFIC INTAKE FACTOR
SITE WORKER EXPOSURE: INHALATION OF AIRBORNE CHEMICALS FROM SOIL
CEDAR CHEMICAL CORPORATION, WEST HELENA, ARKANSAS

EQUATION UNITS	IFinh kg/kg-day	=	(	IR m^3/day	×	EF days/yr	×	ED yr	×	1	/	PEF m3/kg	+	1	/	VF m3/kg	)	+	(	BW kg	×	AT days	)
NONCARCINOGENIC EFFECTS																							
Arsenic	1.48E-10	=	(	20	×	250	×	25	×	1	/	1.32E+09	+	1	/	N/A	)	+	(	70	×	9,125	)
Aldrin	1.48E-10	=	(	20	×	250	×	25	×	1	/	1.32E+09	+	1	/	N/A	)	+	(	70	×	9,125	)
Dieldrin	1.48E-10	=	(	20	×	250	×	25	×	1	/	1.32E+09	+	1	/	N/A	)	+	(	70	×	9,125	)
Heptachlor	1.48E-10	=	(	20	×	250	×	25	×	1	/	1.32E+09	+	1	/	N/A	)	+	(	70	×	9,125	)
Methoxychlor	1.48E-10	=	(	20	×	250	×	25	×	1	/	1.32E+09	+	1	/	N/A	)	+	(	70	×	9,125	)
3,4-Dichloroaniline	1.48E-10	=	(	20	×	250	×	25	×	1	/	1.32E+09	+	1	/	N/A	)	+	(	70	×	9,125	)
Dinoseb	1.48E-10	=	(	20	×	250	×	25	×	1	/	1.32E+09	+	1	/	N/A	)	+	(	70	×	9,125	)
Propanil	1.48E-10	=	(	20	×	250	×	25	×	1	/	1.32E+09	+	1	/	N/A	)	+	(	70	×	9,125	)
Toxaphene	1.48E-10	=	(	20	×	250	×	25	×	1	/	1.32E+09	+	1	/	N/A	)	+	(	70	×	9,125	)
1,2-Dichloroethane	9.32E-05	=	(	20	×	250	×	25	×	1	/	1.32E+09	+	1	/	2.10E+03	)	+	(	70	×	9,125	)
CARCINOGENIC EFFECTS																							
Arsenic	5.29E-11	=	(	20	×	250	×	25	×	1	/	1.32E+09	+	1	/	N/A	)	+	(	70	×	25,550	)
Aldrin	5.29E-11	=	(	20	×	250	×	25	×	1	/	1.32E+09	+	1	/	N/A	)	+	(	70	×	25,550	)
Dieldrin	5.29E-11	=	(	20	×	250	×	25	×	1	/	1.32E+09	+	1	/	N/A	)	+	(	70	×	25,550	)
Heptachlor	5.29E-11	=	(	20	×	250	×	25	×	1	/	1.32E+09	+	1	/	N/A	)	+	(	70	×	25,550	)
Methoxychlor	5.29E-11	=	(	20	×	250	×	25	×	1	/	1.32E+09	+	1	/	N/A	)	+	(	70	×	25,550	)
3,4-Dichloroaniline	5.29E-11	=	(	20	×	250	×	25	×	1	/	1.32E+09	+	1	/	N/A	)	+	(	70	×	25,550	)
Dinoseb	5.29E-11	=	(	20	×	250	×	25	×	1	/	1.32E+09	+	1	/	N/A	)	+	(	70	×	25,550	)
Propanil	5.29E-11	=	(	20	×	250	×	25	×	1	/	1.32E+09	+	1	/	N/A	)	+	(	70	×	25,550	)
Toxaphene	5.29E-11	=	(	20	×	250	×	25	×	1	/	1.32E+09	+	1	/	N/A	)	+	(	70	×	25,550	)
1,2-Dichloroethane	3.33E-05	=	(	20	×	250	×	25	×	1	/	1.32E+09	+	1	/	2.10E+03	)	+	(	70	×	25,550	)

See Table 45 for definitions and sources of equation variables identified as follows:

IF = Intake factor
IR = Inhalation Rate
EF = Exposure frequency
ED = Exposure duration
ET = Exposure time
PEF = Particulate emission factor
VF = Volatilization factor
BW = Body weight
AT = Averaging time

TABLE 49
VALUES USED FOR DAILY INTAKE CALCULATIONS
CEDAR CHEMICAL CORPORATION, WEST HELENA, ARKANSAS

Scenario Timeframe: Future
Medium: Soil
Exposure Medium: Surface Soil
Exposure Point: Sites 1, 2, 3, 4, 5, 6, 8, 9
Receptor Population: Trespasser
Receptor Age: Adolescent

Exposure Route	Parameter Code	Parameter Definition	Units	RME Value	RME Rationale/ Reference	CT Value	CT Rationale/ Reference	Intake Equation/ Model Name
Ingestion	IR-S	Ingestion Rate of Soil	mg/day	50	U.S. EPA, 1989	50	U.S. EPA, 1989	CDI ing = (IR)(CF)(FI)(EF)(ED) (BW)(AT)
	EF	Exposure Frequency	days/year	52	Conservative assumption	26	Conservative assumption	
	ED	Exposure Duration	years	10	Conservative assumption	10	Conservative assumption	
	FI	Fraction ingested from contaminated source	unitless	1	Conservative assumption	0.1	Conservative assumption	
	CF	Conversion Factor	kg/mg	1E-06	SI system	1.00E-06	SI system	
	BW	Body Weight	kg	45	U.S. EPA, 1989	45	U.S. EPA, 1989	
	AT-C	Averaging Time (Cancer)	days	25,550	U.S. EPA, 1989	25,550	U.S. EPA, 1989	
	AT-N	Averaging Time (Noncancer)	days	3,650	U.S. EPA, 1989	3,650	U.S. EPA, 1989	
Inhalation	InR-S	Inhalation Rate of Soil	m3/day	20	U.S. EPA, 1989	11.3	U.S. EPA, 1989	CDI inh = (IR)(EF)(ED)[(1/VF)+(1/PEF)] (BW)(AT)
	EF	Exposure Frequency	days/year	52	Conservative assumption	26	Conservative assumption	
	ED	Exposure Duration	years	10	Conservative assumption	10	Conservative assumption	
	BW	Body Weight	kg	45	U.S. EPA, 1989	45	U.S. EPA, 1989	
	AT-C	Averaging Time (Cancer)	days	25550	U.S. EPA, 1989	25,550	U.S. EPA, 1989	
	AT-N	Averaging Time (Noncancer)	days	3650	U.S. EPA, 1989	3,650	U.S. EPA, 1989	
	PEF	Particulate Emission Factor	m3/kg	1.32E+09	U.S. EPA, 1996	1.32E+09	U.S. EPA, 1996	
	VF	Volatilization Factor	m3/kg	Chemical specific	U.S. EPA, 1998	Chemical Specific	U.S. EPA, 1998	
Dermal	EF	Exposure Frequency	days/year	52	Conservative assumption	26	Conservative assumption	CDI derm = (CF)(SA)(AF)(ABSd)(EF)(ED) (BW)(AT)
	ED	Exposure Duration	years	10	Conservative assumption	10	Conservative assumption	
	CF	Conversion Factor	kg/mg	1E-06	SI system	1.00E-06	SI system	
	SA	Skin Surface Area Available for Contact	cm2	4100	U.S. EPA, 1997	3,600	U.S. EPA, 1997	
	ABSd	Dermal Absorption Factor	unitless	Chemical specific	U.S. EPA, 1998	Chemical Specific	U.S. EPA, 1998	
	AF	Soil to Skil Adherence Factor	mg/cm2/event	1	U.S. EPA, 1995	0.0367	U.S. EPA, 1995	
	AT-C	Averaging Time (Cancer)	days	25,550	U.S. EPA, 1989	25,550	U.S. EPA, 1989	
	AT-N	Averaging Time (Noncancer)	days	3,650	U.S. EPA, 1989	3,650	U.S. EPA, 1989	

RME = Reasonable Maximum Exposure
CT = Central Tendency
mg = milligram
kg = kilogram
m^3 = cubic meters
cm^2 = square centimeters

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TABLE 50
INGESTION-SPECIFIC INTAKE FACTOR
TRESPASSER/VISITOR EXPOSURE: INGESTION OF CHEMICALS IN SOIL AND DUST
CEDAR CHEMICAL CORPORATION, WEST HELENA, ARKANSAS

EQUATION UNITS	IF oral kg/kg-day	=	(IR mg/day	×	EF days/yr	×	ED yr	×	FI Unitless	×	CF kg/mg	) ÷	(BW kg	×	AT days	)
NONCARCINOGENIC	1.58E-07	=	(50	×	52	×	10	×	1	×	1.00E-06	) ÷	(45	×	3,650	)
CARCINOGENIC	2.26E-08	=	(50	×	52	×	10	×	1	×	1.00E-06	) ÷	(45	×	25,550	)

See Table 49 for definitions and sources of equation variables identified as follows:

IF = intake factor
IR = ingestion rate
AT = averaging time
EF = exposure frequency
BW = body weight
ED = exposure duration
FI = fraction ingested
CF = conversion factor

TABLE 51
DERMAL-SPECIFIC INTAKE FACTOR
TRESPASSER/VISITOR EXPOSURE: DERMAL CONTACT WITH CHEMICALS IN SOIL
CEDAR CHEMICAL CORPORATION, WEST HELENA, ARKANSAS

EQUATION UNITS	IF derm = (	SA ×	AF ×	ABS ×	EF ×	ED ×	CF) + (	BW ×	AT)
	kg/kg-day	cm2/event	mg/cm2	unitless	events/year	years	kg/mg	kg	days
NONCARCINOGENIC									
Arsenic	3.89E-07 = (	4100 ×	1.0 ×	3.00E-02 ×	52 ×	10 ×	1.00E-06) + (	45 ×	3,650)
Aldrin	1.30E-06 = (	4100 ×	1.0 ×	1.00E-01 ×	52 ×	10 ×	1.00E-06) + (	45 ×	3,650)
Dieldrin	1.30E-06 = (	4100 ×	1.0 ×	1.00E-01 ×	52 ×	10 ×	1.00E-06) + (	45 ×	3,650)
Heptachlor	1.30E-06 = (	4100 ×	1.0 ×	1.00E-01 ×	52 ×	10 ×	1.00E-06) + (	45 ×	3,650)
Methoxychlor	1.30E-06 = (	4100 ×	1.0 ×	1.00E-01 ×	52 ×	10 ×	1.00E-06) + (	45 ×	3,650)
3,4-Dichloroaniline	1.30E-06 = (	4100 ×	1.0 ×	1.00E-01 ×	52 ×	10 ×	1.00E-06) + (	45 ×	3,650)
Dinoseb	1.30E-06 = (	4100 ×	1.0 ×	1.00E-01 ×	52 ×	10 ×	1.00E-06) + (	45 ×	3,650)
Propanil	1.30E-06 = (	4100 ×	1.0 ×	1.00E-01 ×	52 ×	10 ×	1.00E-06) + (	45 ×	3,650)
Toxaphene	1.30E-06 = (	4100 ×	1.0 ×	1.00E-01 ×	52 ×	10 ×	1.00E-06) + (	45 ×	3,650)
1,2-Dichloroethane	1.30E-06 = (	4100 ×	1.0 ×	1.00E-01 ×	52 ×	10 ×	1.00E-06) + (	45 ×	3,650)
CARCINOGENIC									
Arsenic	5.56E-08 = (	4100 ×	1.0 ×	3.00E-02 ×	52 ×	10 ×	1.00E-06) + (	45 ×	25,550)
Aldrin	1.85E-07 = (	4100 ×	1.0 ×	1.00E-01 ×	52 ×	10 ×	1.00E-06) + (	45 ×	25,550)
Dieldrin	1.85E-07 = (	4100 ×	1.0 ×	1.00E-01 ×	52 ×	10 ×	1.00E-06) + (	45 ×	25,550)
Heptachlor	1.85E-07 = (	4100 ×	1.0 ×	1.00E-01 ×	52 ×	10 ×	1.00E-06) + (	45 ×	25,550)
Methoxychlor	1.85E-07 = (	4100 ×	1.0 ×	1.00E-01 ×	52 ×	10 ×	1.00E-06) + (	45 ×	25,550)
3,4-Dichloroaniline	1.85E-07 = (	4100 ×	1.0 ×	1.00E-01 ×	52 ×	10 ×	1.00E-06) + (	45 ×	25,550)
Dinoseb	1.85E-07 = (	4100 ×	1.0 ×	1.00E-01 ×	52 ×	10 ×	1.00E-06) + (	45 ×	25,550)
Propanil	1.85E-07 = (	4100 ×	1.0 ×	1.00E-01 ×	52 ×	10 ×	1.00E-06) + (	45 ×	25,550)
Toxaphene	1.85E-07 = (	4100 ×	1.0 ×	1.00E-01 ×	52 ×	10 ×	1.00E-06) + (	45 ×	25,550)
1,2-Dichloroethane	1.85E-07 = (	4100 ×	1.0 ×	1.00E-01 ×	52 ×	10 ×	1.00E-06) + (	45 ×	25,550)

See Table 49 for definitions and sources of equation variables identified as follows:

IF = intake factor
CF = conversion factor
SA = skin surface area available for contact
AF = soil to skin adherence factor
ABS = absorption factor
EF = exposure frequency
ED = exposure duration
BW = body weight
AT = averaging time

TABLE 52
INHALATION-SPECIFIC INTAKE FACTOR
TRESPASSER/VISITOR EXPOSURE: INHALATION OF AIRBORNE CHEMICALS FROM SOIL
CEDAR CHEMICAL CORPORATION, WEST HELENA, ARKANSAS

EQUATION UNITS	IFinh = kg/kg-day	(Inh R m^3/day	× EF days/yr	× ED yr	× 1 / PEF m^3/kg	+ 1 / VF m^3/kg	) ÷ (BW kg	× AT days)
NONCARCINOGENIC EFFECTS								
Arsenic	3.08E-11	20	52	10	1.32E+09	N/A	70	3,650
Aldrin	3.08E-11	20	52	10	1.32E+09	N/A	70	3,650
Dieldrin	3.08E-11	20	52	10	1.32E+09	N/A	70	3,650
Heptachlor	3.08E-11	20	52	10	1.32E+09	N/A	70	3,650
Methoxychlor	3.08E-11	20	52	10	1.32E+09	N/A	70	3,650
3,4-Dichloroaniline	3.08E-11	20	52	10	1.32E+09	N/A	70	3,650
Dinoseb	3.08E-11	20	52	10	1.32E+09	N/A	70	3,650
Propanil	3.08E-11	20	52	10	1.32E+09	N/A	70	3,650
Toxaphene	3.08E-11	20	52	10	1.32E+09	N/A	70	3,650
1,2-Dichloroethane	1.94E-05	20	52	10	1.32E+09	2.10E+03	70	3,650
CARCINOGENIC EFFECTS								
Arsenic	4.41E-12	20	52	10	1.32E+09	N/A	70	25,550
Aldrin	4.41E-12	20	52	10	1.32E+09	N/A	70	25,550
Dieldrin	4.41E-12	20	52	10	1.32E+09	N/A	70	25,550
Heptachlor	4.41E-12	20	52	10	1.32E+09	N/A	70	25,550
Methoxychlor	4.41E-12	20	52	10	1.32E+09	N/A	70	25,550
3,4-Dichloroaniline	4.41E-12	20	52	10	1.32E+09	N/A	70	25,550
Dinoseb	4.41E-12	20	52	10	1.32E+09	N/A	70	25,550
Propanil	4.41E-12	20	52	10	1.32E+09	N/A	70	25,550
Toxaphene	4.41E-12	20	52	10	1.32E+09	N/A	70	25,550
1,2-Dichloroethane	2.77E-06	20	52	10	1.32E+09	2.10E+03	70	25,550

See Table 49 for definitions and sources of equation variables identified as follows:

IF = Intake factor
IR = Inhalation Rate
EF = Exposure frequency
ED = Exposure duration
ET = Exposure time
PEF = Particulate Emission Factor

TABLE 52
INHALATION-SPECIFIC INTAKE FACTOR
TRESPASSER/VISITOR EXPOSURE: INHALATION OF AIRBORNE CHEMICALS FROM SOIL
CEDAR CHEMICAL CORPORATION, WEST HELENA, ARKANSAS

	IFinh	= (	Inh R	×	EF	×	ED	×	1 /	PEF	+	1 /	VF	)	+ (	BW	×	AT	)
EQUATION UNITS	kg/kg-day		m^3/day		days/yr		yr			m^3/kg			m^3/kg			kg		days	

VF= Volatilization Factor

TABLE 53
VALUES USED FOR DAILY INTAKE CALCULATIONS
CEDAR CHEMICAL CORPORATION, WEST HELENA, ARKANSAS

Scenario Timeframe: Future
Medium: Sediment
Exposure Medium: Sediment
Exposure Point: Site 1, 3
Receptor Population: Trespasser
Receptor Age: Adolescent

Exposure Route	Parameter Code	Parameter Definition	Units	RME Value	RME Rationale/ Reference	CT Value	CT Rationale/ Reference	Intake Equation/ Model Name
Ingestion	IR	Ingestion Rate of Sediment	mg/day	50	U.S. EPA, 1989	50	U.S. EPA, 1989	IF = (IR)(ET)(EF)(ED)(FI)(CF) / (BW)(AT)
	ET	Exposure Time	hours/day	2	Conservative assumption	2	Conservative assumption	
	EF	Exposure Frequency	days/year	52	Conservative assumption	26	Conservative assumption	
	ED	Exposure Duration	years	10	Conservative assumption	10	Conservative assumption	
	FI	Fraction Ingested from Contaminated Source	unitless	1	Conservative assumption	0.1	Conservative assumption	
	CF	Conversion Factor	kg/mg	1E-06	SI system	1.00E-06	SI system	
	BW	Body Weight	kg	45	U.S. EPA, 1989	45	U.S. EPA, 1989	
	AT - N	Averaging Time - Noncancer	days	3,650	U.S. EPA, 1989	3650	U.S. EPA, 1989	
	AT - C	Averaging Time - Cancer	days	25,550	U.S. EPA, 1989	25550	U.S. EPA, 1989	
Dermal	SA	Skin Surface Area	cm^2	4,100	U.S. EPA, 1997	3,600	--	IF = (SA)(AF)(ABS)(EF)(ED)(CF) / (BW)(AT)
	AF	Adherence Factor	mg/cm^2	1	U.S. EPA, 1995	0.0367	--	
	ABS	Dermal Absorption Factor	unitless	Chemical Specific	U.S. EPA, 1998	Chemical Specific	--	
	EF	Exposure Frequency	days/year	52	Conservative assumption	26	--	
	ED	Exposure Duration	years	10	Conservative assumption	10	--	
	CF	Conversion Factor	kg/mg	1E-06	SI System	1.00E-06	--	
	BW	Body Weight	kg	45	U.S. EPA, 1989	45	--	
	AT-N	Averaging Time - Noncancer	days	3,650	U.S. EPA, 1989	3650	--	
	AT-C	Averaging Time - Cancer	days	25,550	U.S. EPA, 1989	25550	--	

RME = Reasonable Maximum Exposure
CT = Central Tendency
mg = milligram
kg = kilogram
m^3 = cubic meters
cm^2 = square centimeters

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TABLE 54
INGESTION-SPECIFIC INTAKE FACTOR
TRESPASSER EXPOSURE: INGESTION OF CHEMICALS IN SEDIMENT
CEDAR CHEMICAL CORPORATION, WEST HELENA, ARKANSAS

EQUATION UNITS	IF ing kg sediment/kg BW - day	=	(	IR mg/day	×	ET hours/day	×	EF days/year	×	ED years	×	FI unitless	×	CF kg/mg	)+(	BW kg	×	AT days	)
NONCARCINOGENI	3.17E-07	=	(	50	×	2	×	52	×	10	×	1	×	1E-06	)+(	45	×	3,650	)
CARCINOGENIC	4.52E-08	=	(	50	×	2	×	52	×	10	×	1	×	1E-06	)+(	45	×	25,550	)

See Table 53 for definitions and sources of equation variables identified as follows:
IF = intake factor
ET = exposure time
EF = exposure frequency
ED = exposure duration
FI = fraction ingested from contaminated source

IR = ingestion rate
EF = exposure frequency
ED = exposure duratnion
CF = conversion factor

TABLE 55
DERMAL-SPECIFIC INTAKE FACTOR
TRESPASSER EXPOSURE: DERMAL CONTACT WITH CHEMICALS IN SEDIMENT
CEDAR CHEMICAL CORPORATION, WEST HELENA, ARKANSAS

	IF derm	= (	SA	×	AF	×	ABS	×	EF	×	ED	×	CF	)+(	BW	×	AT	)
EQUATION UNITS	**kg sediment/kg BW - day**		**cm^2**		**mg/cm^2**		**unitless**		**days/year**		**year**		**kg/mg**		**kg**		**days**	
NONCARCINOGENIC																		
Arsenic	3.89E-07	= (	4.1E+03	×	1	×	3.0E-02	×	52	×	10	×	1.E-06	)+(	45	×	3,650	)
Aldrin	1.30E-06	= (	4.1E+03	×	1	×	1.0E-01	×	52	×	10	×	1.E-06	)+(	45	×	3,650	)
Dieldrin	1.30E-06	= (	4.1E+03	×	1	×	1.0E-01	×	52	×	10	×	1.E-06	)+(	45	×	3,650	)
Toxaphene	1.30E-06	= (	4.1E+03	×	1	×	1.0E-01	×	52	×	10	×	1.E-06	)+(	45	×	3,650	)
Pentachlorophenol	3.25E-06	= (	4.1E+03	×	1	×	2.5E-01	×	52	×	10	×	1.E-06	)+(	45	×	3,650	)
CARCINOGENIC																		
Arsenic	5.56E-08	= (	4.1E+03	×	1	×	3.0E-02	×	52	×	10	×	1.E-06	)+(	45	×	25,550	)
Aldrin	1.85E-07	= (	4.1E+03	×	1	×	1.0E-01	×	52	×	10	×	1.E-06	)+(	45	×	25,550	)
Dieldrin	1.85E-07	= (	4.1E+03	×	1	×	1.0E-01	×	52	×	10	×	1.E-06	)+(	45	×	25,550	)
Toxaphene	1.85E-07	= (	4.1E+03	×	1	×	1.0E-01	×	52	×	10	×	1.E-06	)+(	45	×	25,550	)
Pentachlorophenol	4.64E-07	= (	4.1E+03	×	1	×	2.5E-01	×	52	×	10	×	1.E-06	)+(	45	×	25,550	)

See Table 53 for diefinitions and sources of equation variables idenitified as follows:
IF = intake factor
CF = conversion factor
SA = skin surface area available for contact
ABS = absorption factor
EF = exposure frequency
ED = exposure duration

TABLE 56
VALUES USED FOR DAILY INTAKE CALCULATIONS
CEDAR CHEMICAL CORPORATION, WEST HELENA, ARKANSAS

Scenario Timeframe: Future
Medium: Groundwater
Exposure Medium: Groundwater
Exposure Point: Alluvial Groundwater
Receptor Population: Offsite Agricultural Worker
Receptor Age: Adult

m^3/hr

Exposure Route	Parameter Code	Parameter Definition	Units	RME Value	USEPA, 1989 Rationale/ Reference	CT Value	CT Rationale/ Reference	Intake Equation/ Model Name
Inhalation[a]	IR-A	Inhalation Rate of Air	L/hr	0.83	USEPA, 1991	0.471	USEPA, 1991	IF Inh = (IR)(EF)(ED)
	EF	Exposure Frequency	days/year	44.6	CES, 1999	44.6	CES, 1999	#REF!
	ED	Exposure Duration	years	25	USEPA, 1989	25	USEPA, 1989	
	ET	Exposure Time	hours/day	4	Conservative Assumption	2	Conservative Assumption	
	BW	Body Weight	kg	70	USEPA, 1989	70	USEPA, 1989	
	AT-C	Averaging Time (Cancer)	days	25550	USEPA, 1989	25550	USEPA, 1989	
	AT-N	Averaging Time (Noncancer)	days	9125	USEPA, 1989	9125	USEPA, 1989	

RME = Reasonable Maximum Exposure
CT = Central Tendency
mg = milligram
kg = kilogram
m^3 = cubic meters
cm^2 = square centimeters
IF = intake factor

a = Inhalation of Groundwater While Showering intake factor calculated in accordance with Technical Memorandum Guidance on Estimating Exposure to VOCs During Showering, (USEPA, 1991).

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TABLE 57

INHALATION-SPECIFIC INTAKE FACTOR

OFFSITE AGRICULTURAL WORKER EXPOSURE: INHALATION OF AIRBORNE (VAPOR PHASE) CHEMICALS FROM GROUNDWATER

CEDAR CHEMICAL CORPORATION, WEST HELENA, ARKANSAS

EQUATION UNITS	IFinh m³/kg-day	=	(IR m³/hr	×	EF days/yr	×	ED yr	×	ET hr/day	) + (	BW kg	×	AT days	)
NONCARCINOGENIC EFFECTS	5.80E-03	=	(0.83	×	44.6	×	25	×	4	) + (	70	×	9,125	)
CARCINOGENIC EFFECTS	2.07E-03	=	(0.83	×	44.6	×	25	×	4	) + (	70	×	25,550	)

See Table 56 for definitions and sources of equation variables identified as follows:

IF = Intake factor

IR = Inhalation Rate

EF = Exposure frequency

ED = Exposure duration

ET = Exposure time

TABLE 58
NON-CANCER TOXICITY DATA -- ORAL/DERMAL
CEDAR CHEMICAL CORPORATION, WEST HELENA, ARKANSAS

Chemical of Potential Concern	Chronic/ Subchronic	Oral RfD Value	Oral RfD Units	Oral to Dermal Adjustment Factor (1)	Adjusted Dermal RfD (2)	Units	Primary Target Organ	Combined Uncertainty/Modifying Factors	Sources of RfD: Target Organ	Dates of RfD: Target Organ (3)
Arsenic	Chronic	3.0E-04	mg/kg-day	1	3.0E-04	mg/kg-day	Skin	3/1	IRIS	06/01/95
Arsenic	Subchronic	3.0E-04	mg/kg-day	1	3.0E-04	mg/kg-day	Skin	3	HEAST	07/01/97
Chromium VI	Chronic	3.0E-03	mg/kg-day	0.2	6.0E-04	mg/kg-day	NOAEL	300/3	IRIS	09/03/98
Mercury	Chronic	ND	ND	ND	N/A	ND	ND	ND	IRIS	06/01/95
Chromium	Chronic	1.5E+00	mg/kg-day	0.2	3.0E-01	mg/kg-day	NOEL	1000/10	IRIS	09/03/98
Dieldrin	Subchronic	5.0E-05	mg/kg-day	0.5	2.5E-05	mg/kg-day	Liver	100/1	IRIS	01/01/91
Dieldrin	Chronic	5.0E-05	mg/kg-day	0.5	2.5E-05	mg/kg-day	Liver	100/1	HEAST	07/01/97
Aldrin	Chronic	3.0E-05	mg/kg-day	0.5	1.5E-05	mg/kg-day	Liver	1000/1	IRIS	01/01/91
Aldrin	Subchronic	3.00E-05	mg/kg-day	0.5	1.5E-05	mg/kg-day	Liver	1000/1	HEAST	07/01/97
Methoxychlor	Chronic	5.0E-03	mg/kg-day	0.5	2.5E-03	mg/kg-day	Reproduction	1000/1	IRIS	04/01/92
Methoxychlor	Subchronic	5.0E-03	mg/kg-day	0.5	2.5E-03	mg/kg-day	Reproduction	1000/1	HEAST	07/01/97
Toxaphene	ND	ND	ND	ND	ND	ND	ND	ND	IRIS	01/01/91
Heptachlor	Chronic	5.0E-04	mg/kg-day	0.5	2.5E-04	mg/kg-day	Liver	300/1	IRIS	01/01/91
Heptachlor	Subchronic	5.0E-04	mg/kg-day	0.5	2.5E-04	mg/kg-day	Liver	300/1	HEAST	07/01/97
1,2-Dichloroethane	Chronic	3.0E-02	mg/kg-day	0.5	1.5E-02	mg/kg-day	ND	ND	Region 6	05/01/99
1,2-Dichloroethane	Subchronic	ND	ND	ND	ND	ND	ND	ND	HEAST	07/01/97
Carbon tetrachloride	Subchronic	7.0E-04	mg/kg-day	0.5	3.5E-04	mg/kg-day	Liver	1000/1	IRIS	01/01/91
Chloroform	Subchronic	1.0E-02	mg/kg-day	0.5	5.0E-03	mg/kg-day	Liver	300	HEAST	07/01/97
Chloroform	Chronic	1.00E-02	mg/kg-day	0.5	5.0E-03	mg/kg-day	Liver	1000/1	IRIS	01/01/91
Methylene chloride	Subchronic	6.0E-02	mg/kg-day	0.8	4.8E-02	mg/kg-day	Liver	100/1	HEAST	07/01/97
Methylene chloride	Chronic	6.0E-02	mg/kg-day	0.8	4.8E-02	mg/kg-day	Liver	100/1	IRIS	01/01/91
Dinoseb	Chronic	1.0E-03	mg/kg-day	0.5	5.0E-04	mg/kg-day	Whole body	100/1	IRIS	10/01/89
Dinoseb	Subchronic	1E-03	mg/kg-day	0.5	5.0E-04	mg/kg-day	Whole body	1000/1	HEAST	07/01/97
3,4-Dichloroaniline (4)	Chronic	4.0E-03	mg/kg-day	0.5	2.0E-03	mg/kg-day	Spleen	3000	IRIS	08/22/88
4-Chloroaniline	Chronic	4.0E-03	mg/kg-day	0.5	2.0E-03	mg/kg-day	Spleen	3000	IRIS	08/22/88
Propanil	Chronic	5.0E-03	mg/kg-day	0.5	2.5E-03	mg/kg-day	Spleen	1000/1	IRIS	03/01/88
Pentachlorophenol	Chronic	3.0E-02	mg/kg-day	0.5	1.5E-02	mg/kg-day	Liver & kidney	100	IRIS	03/01/91
Acetone	Subchronic	1.0E-01	mg/kg-day	0.8	8.0E-02	mg/kg-day	Liver, kidney & blood	1000/1	IRIS	07/01/90
Bromoform	Subchronic	2.0E-02	mg/kg-day	0.8	1.6E-02	mg/kg-day	Liver	1000/1	IRIS	12/01/93
Chloroethane	ND	4.0E-01	mg/kg-day	0.8	3.2E-01	mg/kg-day	ND	ND	Region 6	05/01/99
4-Methyl-2-pentanone	Chronic	8.0E-02	mg/kg-day	0.8	6.4E-02	mg/kg-day	Whole body, liver & kidney	3000	HEAST	07/01/97
4-Methyl-2-pentanone	Subchronic	8.0E-01	mg/kg-day	0.8	6.4E-01	mg/kg-day	Whole body, liver & kidney	300	HEAST	07/01/97
Toluene	ND	2.0E-01	mg/kg-day	0.8	1.6E-01	mg/kg-day	Liver & kidney	1000	IRIS	08/01/92
Trichloroethene	ND	6.0E-03	mg/kg-day	0.8	4.8E-03	mg/kg-day	ND	ND	Region 6	05/01/99

TABLE 58
NON-CANCER TOXICITY DATA -- ORAL/DERMAL
CEDAR CHEMICAL CORPORATION, WEST HELENA, ARKANSAS

Chemical of Potential Concern	Chronic/ Subchronic	Oral RfD Value	Oral RfD Units	Oral to Dermal Adjustment Factor (1)	Adjusted Dermal RfD (2)	Units	Primary Target Organ	Combined Uncertainty/Modifying Factors	Sources of RfD: Target Organ	Dates of RfD: Target Organ (3)
Benzene	ND	3.0E-03	mg/kg-day	0.8	2.4E-03	mg/kg-day	ND	ND	Region 6	05/01/99
Barium	Subchronic	7.0E-02	mg/kg-day	0.2	1.4E-02	mg/kg-day	NOAEL	3/1	IRIS	01/21/99
Barium	Subchronic	7.0E-02	mg/kg-day	0.2	1.4E-02	mg/kg-day	Cardiovascular	3	HEAST	07/01/97
Cadmium	Chronic	5.0E-04	mg/kg-day	0.2	1.0E-04	mg/kg-day	Proteinuria	10/1	IRIS	01/01/91
Cadmium	Subchronic	N/A	N/A	0.2	N/A	N/A	N/A	ND	HEAST	07/01/97
Lead	ND	ND	ND	ND	ND	ND	ND	ND	IRIS	03/01/88
Selenium	Chronic	5.0E-03	mg/kg-day	0.2	1.0E-03	mg/kg-day	Whole body	3/1	IRIS	06/01/91
Selenium	Subchronic	5.0E-03	mg/kg-day	0.2	1.0E-03	mg/kg-day	Whole body	3	HEAST	07/01/97
Silver	Chronic	5.0E-03	mg/kg-day	0.2	1.0E-03	mg/kg-day	Skin	3/1	IRIS	12/01/91
Silver	Subchronic	5.0E-03	mg/kg-day	0.2	1.0E-03	mg/kg-day	Skin	3	HEAST	07/01/97
4,4'-DDD	ND	ND	ND	ND	ND	ND	ND	ND	IRIS	08/22/88
4,4'-DDE	ND	ND	ND	ND	ND	ND	ND	ND	IRIS	08/22/88
4,4'-DDT	Chronic	5.0E-04	mg/kg-day	0.5	2.5E-04	mg/kg-day	Liver	100/1	IRIS	01/01/91
4,4'-DDT	Subchronic	5.0E-04	mg/kg-day	0.5	2.5E-04	mg/kg-day	Liver	100/1	HEAST	07/01/97
alpha-BHC	ND	ND	ND	ND	ND	ND	ND	ND	IRIS	01/01/91
beta-BHC	ND	ND	ND	ND	ND	ND	ND	ND	IRIS	01/01/91
delta-BHC	ND	ND	ND	ND	ND	ND	ND	ND	IRIS	03/31/87
Endosulfan I	Chronic	6.0E-03	mg/kg-day	0.5	3.0E-03	mg/kg-day	Whole body, kidney, & blood vessel	100/1	IRIS	10/01/94
Endosulfan I	Subchronic	6.0E-03	mg/kg-day	0.5	3.0E-03	mg/kg-day	Whole body, kidney, & blood vessel	100	HEAST	07/01/97
Endosulfan II	Chronic	6.0E-03	mg/kg-day	0.5	3.0E-03	mg/kg-day	Whole body, kidney, & blood vessel	100/1	IRIS	10/01/94
Endosulfan II	Subchronic	6.0E-03	mg/kg-day	0.5	3.0E-03	mg/kg-day	Whole body, kidney, & blood vessel	100	HEAST	07/01/97
Endosulfan sulfate	Chronic	6.0E-03	mg/kg-day	0.5	3.0E-03	mg/kg-day	Whole body, kidney, & blood vessel	100/1	IRIS	10/01/94
Endrin	Chronic	3.0E-04	mg/kg-day	0.5	1.5E-04	mg/kg-day	CNS & liver	100/1	IRIS	10/01/89
Endrin	Subchronic	3.0E-04	mg/kg-day	0.5	1.5E-04	mg/kg-day	CNS & liver	100	HEAST	07/01/97
Endrin ketone	Chronic	3.0E-04	mg/kg-day	0.5	1.5E-04	mg/kg-day	CNS & liver	100/1	IRIS	10/01/89
gamma-BHC	Chronic	3.0E-04	mg/kg-day	0.5	1.5E-04	mg/kg-day	Liver & kidney	1000/1	IRIS	03/01/88
gamma-BHC	Subchronic	3.0E-03	mg/kg-day	0.5	1.5E-03	mg/kg-day	Liver & kidney	100	HEAST	07/01/97
gamma-Chlordane	Chronic	5.0E-04	mg/kg-day	0.5	2.5E-04	mg/kg-day	Liver	300/1	IRIS	02/07/98
gamma-Chlordane	Subchronic	6.0E-05	mg/kg-day	0.5	3.0E-05	mg/kg-day	Liver	1000	HEAST	07/01/97
1,2,4-Trichlorobenzene	Chronic	1.0E-02	mg/kg-day	0.5	5.0E-03	mg/kg-day	Nervous system	1000/1	IRIS	05/01/92
1,2,4-Trichlorobenzene	Subchronic	1.0E-02	mg/kg-day	0.5	5.0E-03	mg/kg-day	Adrenal	1000	HEAST	07/01/97

TABLE 58
NON-CANCER TOXICITY DATA -- ORAL/DERMAL
CEDAR CHEMICAL CORPORATION, WEST HELENA, ARKANSAS

Chemical of Potential Concern	Chronic/ Subchronic	Oral RfD Value	Oral RfD Units	Oral to Dermal Adjustment Factor (1)	Adjusted Dermal RfD (2)	Units	Primary Target Organ	Combined Uncertainty/Modifying Factors	Sources of RfD: Target Organ	Dates of RfD: Target Organ (3)
1,4-Dichlorobenzene	Chronic	3.0E-02	mg/kg-day	0.5	1.5E-02	mg/kg-day	ND	ND	Region 6	05/01/99
2-Chloronaphthalene	Chronic	8.0E-02	mg/kg-day	0.5	4.0E-02	mg/kg-day	Liver	3000/1	IRIS	11/01/90
2-Methylphenol (o-cresol)	Chronic	5.0E-02	mg/kg-day	0.5	2.5E-02	mg/kg-day	Whole body & nervous system	1000/1	IRIS	04/01/92
2-Methylphenol (o-cresol)	Subchronic	5.0E-01	mg/kg-day	0.5	2.5E-01	mg/kg-day	Whole body & nervous system	100	HEAST	07/01/97
2-Nitrophenol	N/A	8.0E-03	mg/kg-day	0.5	4.0E-03	mg/kg-day	N/A	N/A	Region 6	05/01/99
2,4-Dinitrophenol	Chronic	2.0E-03	mg/kg-day	0.5	1.0E-03	mg/kg-day	Eye	1000/1	IRIS	10/01/91
2,4-Dinitrophenol	Subchronic	2.0E-03	mg/kg-day	0.5	1.0E-03	mg/kg-day	Eye	1000	HEAST	07/01/97
4-Nitrophenol	N/A	8.0E-03	mg/kg-day	0.5	4.0E-03	mg/kg-day	N/A	ND	Region 6	05/01/99
Benzoic acid	Chronic	4.0E+00	mg/kg-day	0.5	2.0E+00	mg/kg-day	NOAEL	1/1	IRIS	06/01/91
Benzoic acid	Subchronic	4.0E+00	mg/kg-day	0.5	2.0E+00	mg/kg-day	NOAEL	1	HEAST	07/01/97
bis(2-Ethylhexyl)phthalate	Chronic	2.0E-02	mg/kg-day	0.5	1.0E-02	mg/kg-day	Liver	1000/1	IRIS	09/07/88
Dimethylphthalate	Chronic	1.0E+01	mg/kg-day	0.5	5.0E+00	mg/kg-day	N/A	ND	Region 6	05/01/99
Di-n-butylphthalate	Chronic	1.0E-01	mg/kg-day	0.5	5.0E-02	mg/kg-day	Whole body	1000/1	IRIS	10/01/90
Di-n-butylphthalate	Subchronic	1.0E+00	mg/kg-day	0.5	5.0E-01	mg/kg-day	Whole body	100	HEAST	07/01/97
Di-n-octylphthalate	Subchronic	2.0E-02	mg/kg-day	0.5	1.0E-02	mg/kg-day	Kidney & liver	1000	HEAST	07/01/97
Fluoranthene	Chronic	4.0E-02	mg/kg-day	0.5	2.0E-02	mg/kg-day	Kidney, liver & blood	3000/1	IRIS	12/01/90
Fluoranthene	Subchronic	4.0E-01	mg/kg-day	0.5	2.0E-01	mg/kg-day	Kidney, liver & blood	300	HEAST	07/01/97
Isophorone	Chronic	2.0E-01	mg/kg-day	0.5	1.0E-01	mg/kg-day	Kidney	1000/1	IRIS	10/01/92
Isophorone	Subchronic	2.0E+01	mg/kg-day	0.5	1.0E+01	mg/kg-day	Kidney	100	HEAST	07/01/97
Phenol	Chronic	6.0E-01	mg/kg-day	0.5	3.0E-01	mg/kg-day	Fetus	100/1	IRIS	03/01/91
Phenol	Subchronic	6.0E-01	mg/kg-day	0.5	3.0E-01	mg/kg-day	Fetus	100	HEAST	07/01/97
Pyrene	Chronic	3.0E-02	mg/kg-day	0.5	1.5E-02	mg/kg-day	Kidney	3000/1	IRIS	01/01/91
Pyrene	Subchronic	3.0E-01	mg/kg-day	0.5	1.5E-01	mg/kg-day	Kidney	300	HEAST	07/01/97
1,1-Dichloroethene	Chronic	9.0E-03	mg/kg-day	0.8	7.2E-03	mg/kg-day	Liver	1000/1	IRIS	02/01/98
1,1-Dichloroethene	Subchronic	9.0E-03	mg/kg-day	0.8	7.2E-03	mg/kg-day	Liver	1000	HEAST	07/01/97
1,2-Dichlorobenzene	Chronic	9.0E-02	mg/kg-day	0.8	7.2E-02	mg/kg-day	Whole body	1000/1	IRIS	11/01/90
1,2-Dichlorobenzene	Subchronic	ND	ND	ND	ND	ND	ND	ND	HEAST	07/01/97
1,2-Dichloropropane	Chronic	ND	ND	ND	ND	ND	ND	ND	IRIS	12/01/91
1,2-Dichloropropane	Subchronic	ND	ND	ND	ND	ND	ND	ND	HEAST	07/01/97
bis(2-Chloroethyl)ether	Chronic	ND	ND	ND	ND	ND	ND	ND	IRIS	10/01/91
Carbon disulfide	Chronic	1.0E-01	mg/kg-day	0.8	8.0E-02	mg/kg-day	Fetus & PNS	100/1	IRIS	08/01/95
Carbon disulfide	Subchronic	1.0E-01	mg/kg-day	0.8	8.0E-02	mg/kg-day	Fetus & PNS	100	HEAST	07/01/97
Chlorobenzene	Chronic	2.0E-02	mg/kg-day	0.8	1.6E-02	mg/kg-day	Liver	1000/1	IRIS	11/01/90
Ethylbenzene	Chronic	1.0E-01	mg/kg-day	0.8	8.0E-02	mg/kg-day	Liver & kidney	1000/1	IRIS	03/01/91
Ethylbenzene	Subchronic	1.1E-01	mg/kg-day	0.8	8.8E-02	mg/kg-day	ND	ND	DOE (NCEA)	07/01/00

TABLE 58
NON-CANCER TOXICITY DATA – ORAL/DERMAL
CEDAR CHEMICAL CORPORATION, WEST HELENA, ARKANSAS

Chemical of Potential Concern	Chronic/ Subchronic	Oral RfD Value	Oral RfD Units	Oral to Dermal Adjustment Factor (1)	Adjusted Dermal RfD (2)	Units	Primary Target Organ	Combined Uncertainty/Modifying Factors	Sources of RfD: Target Organ	Dates of RfD: Target Organ (3)
Methyl ethyl ketone	Chronic	6.0E-01	mg/kg-day	0.8	4.8E-01	mg/kg-day	Fetus	3000/1	IRIS	05/01/93
Methyl ethyl ketone	Subchronic	2.0E+00	mg/kg-day	0.8	1.6E+00	mg/kg-day	Fetus	1000	HEAST	07/01/97
Tetrachloroethene	Chronic	1.0E-02	mg/kg-day	0.8	8.0E-03	mg/kg-day	Liver	1000/1	IRIS	03/01/88
Tetrachloroethene	Subchronic	1.0E-01	mg/kg-day	0.8	8.0E-02	mg/kg-day	Liver	100	HEAST	07/01/97
Xylene (total)	Chronic	2.0E+00	mg/kg-day	0.8	1.6E+00	mg/kg-day	Whole body & CNS	100/1	IRIS	09/26/88
Xylene (total)	Subchronic	ND	ND	ND	ND	ND	ND	ND	HEAST	07/01/97
4,6-Dinitro-2-methylphenol	ND	1.0E-04	mg/kg-day	0.5	5.0E-05	mg/kg-day	ND	ND	Region 6	05/01/99

RfD = Reference dose
mg/kg-day = milligram per kilogram day
IRIS = Integrated Risk Information System
NOAEL = No Observed Adverse Effect Level
Region 6 = value presented is the route extrapolation value presented in Region 6 Human Health Medium-Specific Screening Levels (October, 1998).
HEAST = Health Effects Assessment Summary Tables
NCEA = National Center for Environmental Assessment
DOE(NCEA) = Department of Energy obtained value from NCEA. Value posted on DOE website at http://risk.lsd.ornl.gov/.
ND = No data
CNS = Central nervous system
PNS = Peripheral nervous system

(1) Oral to Dermal Adjustment Factors were obtained from the Existing Texas Risk Reduction Rule, (TNRCC, 1998).
(2) The dermal reference dose was calculated using the following equation:
RfDd = RfDo x DAF
(3) For IRIS values, this is the date IRIS was searched. For HEAST values this is the publication date.

TABLE 59
NON-CANCER TOXICITY DATA -- INHALATION
CEDAR CHEMICAL CORPORATION, WEST HELENA, ARKANSAS

Chemical of Potential Concern	Chronic/ Subchronic	Value Inhalation RfC	Units	Adjusted Inhalation RfD (1)	Units	Primary Target Organ	Combined Uncertainty/Modifying Factors	Sources of RfC:RfD: Target Organ	Dates (2) (MM/DD/YY)
Arsenic	ND	ND	ND	ND	ND	ND	ND	IRIS	06/01/95
Barium	Chronic	5.00E-04	mg/m^3	1.43E-04	mg/kg-day	Fetus	1000	HEAST	07/01/97
Barium	Subchronic	5.00E-03	mg/m^3	1.43E-03	mg/kg-day	Fetus	100	HEAST	07/01/97
Chromium	Chronic	1.00E-04	mg/m^3	2.86E-05	mg/kg-day	Lungs	300/1	IRIS	09/03/98
Mercury	Chronic	3.01E-04	mg/m^3	8.6E-05	mg/kg-day	Nervous system	30/1	IRIS	06/01/95
Dieldrin	ND	ND	ND	ND	ND	ND	ND	IRIS	01/01/91
Aldrin	ND	ND	ND	ND	ND	ND	ND	IRIS	01/01/91
Methoxychlor	ND	ND	ND	ND	ND	ND	ND	IRIS	04/01/92
Toxaphene	ND	ND	ND	ND	ND	ND	ND	IRIS	01/01/91
Heptachlor	ND	ND	ND	ND	ND	ND	ND	IRIS	01/01/91
Acetone	ND	ND	ND	ND	ND	ND	ND	IRIS	07/01/90
Bromoform	ND	ND	ND	ND	ND	ND	ND	IRIS	12/01/93
Chloroethane	ND	1.00E+01	mg/m^3	2.86E+00	mg/kg-day	Fetal skeleton	300/1	IRIS	04/01/91
4-Methyl-2-pentanone	Chronic	8.00E-02	mg/m^3	2.29E-02	mg/kg-day	Liver & kidney	3000	HEAST	07/01/97
4-Methyl-2-pentanone	Subchronic	8.00E-01	mg/m^3	2.29E-01	mg/kg-day	Liver & kidney	300	HEAST	07/01/97
Toluene	Chronic	4.00E-01	mg/m^3	1.14E-01	mg/kg-day	CNS	300/1	IRIS	08/01/92
1,2-Dichloroethane	ND	1.40E-03	mg/m^3	4.00E-04	mg/kg-day	ND	ND	Region 6	05/01/99
Carbon tetrachloride	ND	2.00E-03	mg/m^3	5.71E-04	mg/kg-day	ND	ND	Region 6	05/01/99
Chloroform	ND	3.01E-04	mg/m^3	8.60E-05	mg/kg-day	ND	ND	Region 6	05/01/99
Methylene chloride	Chronic	3.01E+00	mg/m^3	8.60E-01	mg/kg-day	Liver	100	HEAST	07/01/97
4-Chloroaniline	ND	ND	ND	ND	ND	ND	ND	IRIS	08/22/88
3,4-Dichloroaniline	ND	ND	ND	ND	ND	ND	ND	IRIS	08/22/88
Propanil	ND	ND	ND	ND	ND	ND	ND	IRIS	03/01/88
Pentachlorophenol	ND	ND	ND	ND	ND	ND	ND	IRIS	03/01/91
Cadmium	ND	2.00E-04	mg/m^3	5.71E-05	mg/kg-day	ND	ND	Region 6	05/01/99
Lead	ND	ND	ND	ND	ND	ND	ND	IRIS	03/01/88
Selenium	ND	ND	ND	ND	ND	ND	ND	IRIS	06/01/91
Silver	ND	ND	ND	ND	ND	ND	ND	IRIS	12/01/91
4,4'-DDD	ND	ND	ND	ND	ND	ND	ND	IRIS	08/22/88
4,4'-DDE	ND	ND	ND	ND	ND	ND	ND	IRIS	08/22/88
4,4-DDT	ND	ND	ND	ND	ND	ND	ND	IRIS	01/01/91
alpha-BHC	ND	ND	ND	ND	ND	ND	ND	IRIS	01/01/91
beta-BHC	ND	ND	ND	ND	ND	ND	ND	IRIS	01/01/91
delta-BHC	ND	ND	ND	ND	ND	ND	ND	IRIS	03/31/87
Endosulfan I	ND	ND	ND	ND	ND	ND	ND	IRIS	10/01/94
Endosulfan II	ND	ND	ND	ND	ND	ND	ND	IRIS	10/01/94
Endosulfan sulfate	ND	ND	ND	ND	ND	ND	ND	IRIS	10/01/94
Endrin	ND	ND	ND	ND	ND	ND	ND	IRIS	10/01/89
Endrin ketone	ND	ND	ND	ND	ND	ND	ND	IRIS	10/01/89
gamma-BHC	ND	ND	ND	ND	ND	ND	ND	IRIS	03/01/88
gamma-Chlordane	Subchronic	7.00E-04	mg/m^3	2.00E-04	mg/kg-day	Liver	1000/1	IRIS	02/07/98

TABLE 59
NON-CANCER TOXICITY DATA -- INHALATION
CEDAR CHEMICAL CORPORATION, WEST HELENA, ARKANSAS

Chemical of Potential Concern	Chronic/ Subchronic	Value Inhalation RfC	Units	Adjusted Inhalation RfD (1)	Units	Primary Target Organ	Combined Uncertainty/Modifying Factors	Sources of RfC:RfD: Target Organ	Dates (2) (MM/DD/YY)
1,2,4-Trichlorobenzene	Chronic	2.00E-01	mg/m^3	5.71E-02	mg/kg-day	Liver	1000	HEAST	07/01/97
1,2,4-Trichlorobenzene	Subchronic	2.00E+00	mg/m^3	5.71E-01	mg/kg-day	Liver	100	HEAST	07/01/97
1,4-Dichlorobenzene	ND	8.02E-01	mg/m^3	2.29E-01	mg/kg-day	Liver	100/1	IRIS	01/01/94
2-Chloronaphthalene	ND	ND	ND	ND	ND	ND	ND	IRIS	11/01/90
2-Methylphenol (o-cresol)	ND	ND	ND	ND	ND	ND	ND	IRIS	04/01/92
2-Nitrophenol	ND	ND	ND	ND	ND	ND	ND	IRIS	10/01/91
2,4-Dinitrophenol	ND	ND	ND	ND	ND	ND	ND	IRIS	10/01/91
4-Nitrophenol	ND	ND	ND	ND	ND	ND	ND	IRIS	10/01/91
Benzoic acid	ND	ND	ND	ND	ND	ND	ND	IRIS	06/01/91
bis(2-Ethylhexyl)phthalate	ND	ND	ND	ND	ND	ND	ND	IRIS	09/07/88
Dimethylphthalate	ND	ND	ND	ND	ND	ND	ND	IRIS	09/01/90
Di-n-butylphthalate	ND	ND	ND	ND	ND	ND	ND	IRIS	10/01/90
Di-n-octylphthalate	ND	ND	ND	ND	ND	ND	ND	HEAST	07/01/97
Dinoseb	ND	ND	ND	ND	ND	ND	ND	IRIS	08/01/89
Fluoranthene	ND	ND	ND	ND	ND	ND	ND	IRIS	12/01/90
Isophorone	ND	ND	ND	ND	ND	ND	ND	IRIS	10/01/92
Phenol	ND	ND	ND	ND	ND	ND	ND	IRIS	03/01/91
Pyrene	ND	ND	ND	ND	ND	ND	ND	IRIS	01/01/91
1,1-Dichloroethene	ND	ND	ND	ND	ND	ND	ND	IRIS	02/01/98
1,2-Dichlorobenzene	Chronic	2.00E-01	mg/m^3	5.71E-02	mg/kg-day	Whole body	1.00E+03	HEAST	07/01/97
1,2-Dichlorobenzene	Subchronic	2.00E+00	mg/m^3	5.71E-01	mg/kg-day	Whole body	1.00E+02	HEAST	07/01/97
1,2-Dichloropropane	Chronic	3.99E-03	mg/m^3	1.14E-03	mg/kg-day	Nasal mucosa	300/1	IRIS	12/01/91
1,2-Dichloropropane	Subchronic	1.30E-02	mg/m^3	3.71E-03	mg/kg-day	Nasal mucosa	100	HEAST	07/01/97
Benzene	ND	5.95E-03	mg/m^3	1.70E-03	mg/kg-day	ND	ND	Region 6	05/01/99
bis(2-Chloroethyl)ether	ND	ND	ND	ND	ND	ND	ND	IRIS	10/01/91
Carbon disulfide	ND	7.00E-01	mg/m^3	2.00E-01	mg/kg-day	PNS	30/1	IRIS	08/01/95
Chlorobenzene	ND	5.95E-02	mg/m^3	1.70E-02	mg/kg-day	ND	ND	Region 6	05/01/99
Chlorobenzene	Chronic	2.00E-02	mg/m^3	5.71E-03	mg/kg-day	Liver/kidney	10,000	HEAST	07/01/97
Ethylbenzene	ND	1.00E+00	mg/m^3	2.86E-01	mg/kg-day	ND	300/1	IRIS	03/01/91
Methyl ethyl ketone (2-Butanone)	Chronic	1.00E+00	mg/m^3	2.86E-01	mg/kg-day	Fetus	1000/3	IRIS	05/01/93
Methyl ethyl ketone (2-Butanone)	Subchronic	1.00E+00	mg/m^3	2.86E-01	mg/kg-day	Fetus	3000	HEAST	07/01/97
Tetrachloroethene	ND	4.90E-01	mg/m^3	1.40E-01	mg/kg-day	ND	ND	Region 6	05/01/99
Trichloroethene	ND	ND	ND	ND	ND	ND	ND	IRIS	07/01/89

TABLE 59
NON-CANCER TOXICITY DATA – INHALATION
CEDAR CHEMICAL CORPORATION, WEST HELENA, ARKANSAS

Chemical of Potential Concern	Chronic/ Subchronic	Value Inhalation RfC	Units	Adjusted Inhalation RfD (1)	Units	Primary Target Organ	Combined Uncertainty/Modifying Factors	Sources of RfC:RfD: Target Organ	Dates (2) (MM/DD/YY)
Xylene (total)	ND	ND	ND	ND	ND	ND	ND	IRIS	09/26/88
4,6-Dinitro-2-methylphenol	ND	ND	ND	ND	ND	ND	ND	Region 6	05/01/99

RfC = Reference concentration
RfD = Reference Dose
ND = No Data
IRIS = Integrated Risk Information System
NCEA = National Center for Environmental Assessment
PNS = Peripheral nervous system

(1) The inhalation RfD was calculated using the following equation:
Inhalation RfD = (RfC x 20 m^3/day) / 70 kg

(2) For IRIS values, date IRIS was searched. For HEAST values, date of publication. For NCEA values, date of provisional guidance paper. For Region 6 values, date of screening level table.

TABLE 60
CANCER TOXICITY DATA -- ORAL/DERMAL
CEDAR CHEMICAL CORPORATION, WEST HELENA, ARKANSAS

Chemical of Potential Concern	Oral Cancer Slope Factor (CSFo)	Oral to Dermal Adjustment Factor	Adjusted Dermal Cancer Slope Factor (1) (CSFd)	Units	Weight of Evidence/ Cancer Guideline Description	Source	Date (2) (MM/DD/YY)
Arsenic	1.5E+00	1	1.5E+00	$(mg/kg\text{-}day)^{-1}$	A	IRIS	06/01/95
Barium	N/A	N/A	N/A	N/A	N/A	IRIS	01/21/99
Chromium	N/A	N/A	N/A	N/A	N/A	IRIS	09/03/98
Mercury	N/A	N/A	N/A	N/A	N/A	IRIS	06/01/95
Dieldrin	1.6E+01	0.5	3.2E+01	$(mg/kg\text{-}day)^{-1}$	B2	IRIS	01/01/91
Aldrin	1.7E+01	0.5	3.4E+01	$(mg/kg\text{-}day)^{-1}$	B2	IRIS	01/01/91
Methoxychlor	N/A	N/A	N/A	N/A	N/A	IRIS	04/01/92
Toxaphene	1.10E+00	0.5	2.2E+00	$(mg/kg\text{-}day)^{-1}$	B2	IRIS	01/01/91
Heptachlor	4.5E+00	0.5	9.0E+00	$(mg/kg\text{-}day)^{-1}$	B2	IRIS	01/01/91
1,2-Dichloroethane	9.1E-02	0.8	1.1E-01	$(mg/kg\text{-}day)^{-1}$	B2	IRIS	01/01/91
Carbon tetrachloride	1.3E-01	0.8	1.6E-01	$(mg/kg\text{-}day)^{-1}$	B2	IRIS	01/01/91
Chloroform	6.0E-03	0.5	1.2E-02	$(mg/kg\text{-}day)^{-1}$	B2	IRIS	01/01/91
Methylene chloride	7.5E-03	0.8	9.4E-03	$(mg/kg\text{-}day)^{-1}$	B2	IRIS	01/01/91
Dinoseb	N/A	N/A	N/A	N/A	N/A	IRIS	08/01/89
4-Chloroaniline	N/A	N/A	N/A	N/A	N/A	IRIS	08/22/88
3,4-Dichloroaniline	N/A	N/A	N/A	N/A	N/A	IRIS	08/22/88
Propanil	N/A	N/A	N/A	N/A	N/A	IRIS	03/01/88
Pentachlorophenol	1.2E-01	0.5	2.4E-01	$(mg/kg\text{-}day)^{-1}$	B2	IRIS	03/01/91
Acetone	N/A	N/A	N/A	N/A	N/A	IRIS	07/01/90
Bromoform	7.9E-03	0.8	9.9E-03	$(mg/kg\text{-}day)^{-1}$	B2	IRIS	12/01/93
Chloroethane	2.9E-03	8.0E-01	3.6E-03	$(mg/kg\text{-}day)^{-1}$	N/A	Region 6	05/01/99
4-Methyl-2-pentanone	N/A	N/A	N/A	N/A	N/A	IRIS	03/01/91
Toluene	N/A	N/A	N/A	N/A	N/A	IRIS	08/01/92
Cadmium	N/A	N/A	N/A	N/A	N/A	IRIS	01/01/91
Lead	N/A	N/A	N/A	N/A	N/A	IRIS	03/01/88
Selenium	N/A	N/A	N/A	N/A	N/A	IRIS	06/01/91
Silver	N/A	N/A	N/A	N/A	N/A	IRIS	12/01/91
4,4'-DDD	2.4E-01	0.5	4.8E-01	$(mg/kg\text{-}day)^{-1}$	B2	IRIS	08/22/88
4,4'-DDE	3.4E-01	0.5	6.8E-01	$(mg/kg\text{-}day)^{-1}$	B2	IRIS	08/22/88
4,4'-DDT	3.4E-01	0.5	6.8E-01	$(mg/kg\text{-}day)^{-1}$	B2	IRIS	01/01/91
alpha-BHC	6.3E+00	0.5	1.3E+01	$(mg/kg\text{-}day)^{-1}$	B2	IRIS	01/01/91
beta-BHC	1.8E+00	0.5	3.6E+00	$(mg/kg\text{-}day)^{-1}$	C	IRIS	01/01/91
delta-BHC	N/A	N/A	N/A	N/A	N/A	IRIS	03/31/87

TABLE 60
CANCER TOXICITY DATA -- ORAL/DERMAL
CEDAR CHEMICAL CORPORATION, WEST HELENA, ARKANSAS

Chemical of Potential Concern	Oral Cancer Slope Factor (CSFo)	Oral to Dermal Adjustment Factor	Adjusted Dermal Cancer Slope Factor (1) (CSFd)	Units	Weight of Evidence/ Cancer Guideline Description	Source	Date (2) (MM/DD/YY)
Endosulfan I	N/A	N/A	N/A	N/A	N/A	IRIS	10/01/94
Endosulfan II	N/A	N/A	N/A	N/A	N/A	IRIS	10/01/94
Endosulfan sulfate	N/A	N/A	N/A	N/A	N/A	IRIS	10/01/94
Endrin	N/A	N/A	N/A	N/A	N/A	IRIS	10/01/89
Endrin ketone	N/A	N/A	N/A	N/A	N/A	IRIS	10/01/89
gamma-BHC	1.3E+00	0.5	2.6E+00	(mg/kg-day) $^{-1}$	B2-C	HEAST	07/01/97
gamma-Chlordane	3.5E-01	0.5	7.0E-01	(mg/kg-day) $^{-1}$	B2	IRIS	02/07/98
1,2,4-Trichlorobenzene	N/A	N/A	N/A	N/A	N/A	IRIS	05/01/92
1,4-Dichlorobenzene	2.4E-02	0.5	4.8E-02	(mg/kg-day) $^{-1}$	C	HEAST	07/01/97
2-Chloronaphthalene	N/A	N/A	N/A	N/A	N/A	IRIS	11/01/90
2-Methylphenol (o-cresol)	N/A	N/A	N/A	N/A	N/A	IRIS	04/01/92
2-Nitrophenol	N/A	N/A	N/A	N/A	N/A	IRIS	10/01/91
2,4-Dinitrophenol	N/A	N/A	N/A	N/A	N/A	IRIS	10/01/91
4-Nitrophenol	N/A	N/A	N/A	N/A	N/A	IRIS	10/01/91
Benzoic acid	N/A	N/A	N/A	N/A	N/A	IRIS	06/01/91
bis(2-Ethylhexyl)phthalate	1.4E-02	0.5	2.8E-02	(mg/kg-day) $^{-1}$	B2	IRIS	09/07/88
Dimethylphthalate	N/A	N/A	N/A	N/A	N/A	IRIS	09/01/90
Di-n-butylphthalate	N/A	N/A	N/A	N/A	N/A	IRIS	10/01/90
Di-n-octylphthalate	N/A	N/A	N/A	N/A	N/A	HEAST	07/01/97
Fluoranthene	N/A	N/A	N/A	N/A	N/A	IRIS	12/01/90
Isophorone	9.5E-04	0.5	1.9E-03	(mg/kg-day) $^{-1}$	C	IRIS	10/01/92
Phenol	N/A	N/A	N/A	N/A	N/A	IRIS	03/01/91
Pyrene	N/A	N/A	N/A	N/A	N/A	IRIS	01/01/91
1,1-Dichloroethene	6.0E-01	0.8	7.5E-01	(mg/kg-day) $^{-1}$	C	IRIS	02/01/98
1,2-Dichlorobenzene	N/A	N/A	N/A	N/A	N/A	IRIS	11/01/90
1,2-Dichloropropane	6.8E-02	0.8	8.5E-02	(mg/kg-day) $^{-1}$	B2	HEAST	07/01/97
Benzene	5.5E-02	0.8	6.9E-02	(mg/kg-day) $^{-1}$	A	IRIS	01/19/00
bis(2-Chloroethyl)ether	1.1E+00	0.8	1.4E+00	(mg/kg-day) $^{-1}$	B2	IRIS	10/01/91
Carbon disulfide	N/A	N/A	N/A	N/A	N/A	IRIS	08/01/95
Chlorobenzene	N/A	N/A	N/A	N/A	N/A	IRIS	11/01/90
Ethylbenzene	N/A	N/A	N/A	N/A	N/A	IRIS	03/01/91
Methyl ethyl ketone (2-Butanone)	N/A	N/A	N/A	N/A	N/A	IRIS	05/01/93
Tetrachloroethene	5.2E-02	0.8	6.5E-02	(mg/kg-day) $^{-1}$	N/A	Region 6	05/01/99

TABLE 60
CANCER TOXICITY DATA – ORAL/DERMAL
CEDAR CHEMICAL CORPORATION, WEST HELENA, ARKANSAS

Chemical of Potential Concern	Oral Cancer Slope Factor (CSFo)	Oral to Dermal Adjustment Factor	Adjusted Dermal Cancer Slope Factor (1) (CSFd)	Units	Weight of Evidence/ Cancer Guideline Description	Source	Date (2) (MM/DD/YY)
Trichloroethene	1.1E-02	0.8	1.4E-02	$(mg/kg\text{-}day)^{-1}$	N/A	Region 6	05/01/99
Xylene (total)	N/A	N/A	N/A	N/A	N/A	IRIS	09/26/88
4,6-Dinitro-2-methylphenol	N/A	N/A	N/A	N/A	N/A	Region 6	05/01/99

IRIS = Integrated Risk Information System
N/A = Not Applicable
mg/kg-day = milligram per kilogram day

(1) Dermal slope factor calculated using the following equation:
CSFd = CSFo / DAF
(2) Date IRIS was searched.

EPA Group:
A - Human carcinogen
B1 - Probable human carcinogen - indicates that limited human data are available
B2 - Probable human carcinogen - indicates sufficient evidence in animals and inadequate or no evidence in humans
C - Possible human carcinogen
D - Not classifiable as a human carcinogen
E - Evidence of noncarcinogenicity

TABLE 61
CANCER TOXICITY DATA – INHALATION
CEDAR CHEMICAL CORPORATION, WEST HELENA, ARKANSAS

Chemical of Potential Concern	Inhalation Cancer Slope Factor	Units	Inhalation Unit Risk	Weight of Evidence/ Cancer Guideline Description	Source	Date (1) (MM/DD/YY)
Arsenic	1.51E+01	mg/kg-day^{-1}	4.30E-03	$(ug/m^3)^{-1}$ A	IRIS	06/01/95
Chromium	4.10E+01	mg/kg-day^{-1}	N/A	A	HEAST	07/01/97
Mercury	N/A	N/A	N/A	N/A	IRIS	06/01/95
Dieldrin	1.60E+01	mg/kg-day^{-1}	4.60E-03	B2	IRIS	01/01/91
Aldrin	1.70E+01	mg/kg-day^{-1}	4.90E-03	B2	IRIS	01/01/91
Methoxychlor	N/A	N/A	N/A	N/A	IRIS	04/01/92
Toxaphene	1.12E+00	mg/kg-day^{-1}	3.20E-04	B2	IRIS	01/01/91
Heptachlor	4.55E+00	mg/kg-day^{-1}	1.30E-03	B2	IRIS	01/01/91
1,2-Dichloroethane	9.10E-02	mg/kg-day^{-1}	2.60E-05	B2	IRIS	01/01/91
Carbon tetrachloride	5.25E-02	mg/kg-day^{-1}	1.50E-05	B2	IRIS	01/01/91
Chloroform	8.05E-02	mg/kg-day^{-1}	2.30E-05	B2	IRIS	01/01/91
Methylene chloride	1.65E-03	mg/kg-day^{-1}	4.70E-07	B2	IRIS	01/01/91
Dinoseb	N/A	N/A	N/A	N/A	IRIS	08/01/89
4-Chloroaniline	N/A	N/A	N/A	N/A	IRIS	08/22/88
3,4-Dichloroaniline	N/A	N/A	N/A	N/A	IRIS	08/22/88
Propanil	N/A	N/A	N/A	N/A	IRIS	03/01/88
Pentachlorophenol	N/A	N/A	N/A	N/A	IRIS	03/01/91
Barium	N/A	N/A	N/A	N/A	IRIS	01/21/99
Cadmium	6.3E+00	mg/kg-day^{-1}	1.80E-03	B1	IRIS	01/01/91
Lead	N/A	N/A	N/A	N/A	IRIS	03/01/88
Selenium	N/A	N/A	N/A	N/A	IRIS	06/01/91
Silver	N/A	N/A	N/A	N/A	IRIS	12/01/91
4,4'-DDD	N/A	N/A	N/A	N/A	IRIS	08/22/88
4,4'-DDE	N/A	N/A	N/A	N/A	IRIS	08/22/88
4,4'-DDT	3.4E-01	mg/kg-day^{-1}	9.70E-05	B2	IRIS	01/01/91
alpha-BHC	6.3E+00	mg/kg-day^{-1}	1.80E-03	B2	IRIS	01/01/91
beta-BHC	1.8E+00	mg/kg-day^{-1}	5.30E-04	C	IRIS	01/01/91

TABLE 61
CANCER TOXICITY DATA -- INHALATION
CEDAR CHEMICAL CORPORATION, WEST HELENA, ARKANSAS

Chemical of Potential Concern	Inhalation Cancer Slope Factor	Units	Inhalation Unit Risk	Weight of Evidence/ Cancer Guideline Description	Source	Date (1) (MM/DD/YY)
delta-BHC	N/A	N/A	N/A	N/A	IRIS	03/31/87
Endosulfan I	N/A	N/A	N/A	N/A	IRIS	10/01/94
Endosulfan II	N/A	N/A	N/A	N/A	IRIS	10/01/94
Endosulfan sulfate	N/A	N/A	N/A	N/A	IRIS	10/01/94
Endrin	N/A	N/A	N/A	N/A	IRIS	10/01/89
Endrin ketone	N/A	N/A	N/A	N/A	IRIS	10/01/89
gamma-BHC	N/A	N/A	N/A	N/A	IRIS	03/01/88
gamma-Chlordane	3.5E-01	$mg/kg\text{-}day^{-1}$	N/A	B2	IRIS	02/07/98
1,2,4-Trichlorobenzene	N/A	N/A	N/A	N/A	IRIS	05/01/92
1,4-Dichlorobenzene	2.2E-02	$mg/kg\text{-}day^{-1}$	N/A	N/A	Region 6	05/01/99
2-Chloronaphthalene	N/A	N/A	N/A	N/A	IRIS	11/01/90
2-Methylphenol (o-cresol)	N/A	N/A	N/A	N/A	IRIS	04/01/92
2-Nitrophenol	N/A	N/A	N/A	N/A	IRIS	10/01/91
2,4-Dinitrophenol	N/A	N/A	N/A	N/A	IRIS	10/01/91
4-Nitrophenol	N/A	N/A	N/A	N/A	IRIS	10/01/91
Benzoic acid	N/A	N/A	N/A	N/A	IRIS	06/01/91
bis(2-Ethylhexyl)phthalate	1.4E-02	$mg/kg\text{-}day^{-1}$	N/A	B2	Region 6	05/01/99
Dimethylphthalate	N/A	N/A	N/A	N/A	IRIS	09/01/90
Di-n-buylphthalate	N/A	N/A	N/A	N/A	IRIS	10/01/90
Di-n-octylphthalate	N/A	N/A	N/A	N/A	HEAST	07/01/97
Fluoranthene	N/A	N/A	N/A	N/A	IRIS	12/01/90
Isophorone	N/A	N/A	N/A	N/A	IRIS	10/01/92
Phenol	N/A	N/A	N/A	N/A	IRIS	03/01/91
Pyrene	N/A	N/A	N/A	N/A	IRIS	01/01/91
1,1-Dichloroethene	1.8E-01	$mg/kg\text{-}day^{-1}$	5.00E-05	C	IRIS	02/01/98
1,2-Dichlorobenzene	N/A	N/A	N/A	N/A	IRIS	11/01/90
1,2-Dichloropropane	N/A	N/A	N/A	N/A	IRIS	12/01/91

TABLE 61
CANCER TOXICITY DATA – INHALATION
CEDAR CHEMICAL CORPORATION, WEST HELENA, ARKANSAS

Chemical of Potential Concern	Inhalation Cancer Slope Factor	Units	Inhalation Unit Risk	Weight of Evidence/ Cancer Guideline Description	Source	Date (1) (MM/DD/YY)
4-Methyl-2-pentanone (MIBK)	N/A	N/A	N/A	N/A	IRIS	03/01/91
Acetone	N/A	N/A	N/A	N/A	IRIS	07/01/90
Benzene	2.9E-02	$mg/kg\text{-}day^{-1}$	7.80E-06	A	IRIS	01/19/00
bis(2-Chloroethyl)ether	1.1E+00	$mg/kg\text{-}day^{-1}$	3.30E-04	B2	IRIS	10/01/91
Carbon disulfide	N/A	N/A	N/A	N/A	IRIS	08/01/95
Chlorobenzene	N/A	N/A	N/A	N/A	IRIS	11/01/90
Ethylbenzene	N/A	N/A	N/A	N/A	IRIS	03/01/91
Methyl ethyl ketone (2-Butanone)	N/A	N/A	N/A	N/A	IRIS	05/01/93
Tetrachloroethene	2.0E-03	$mg/kg\text{-}day^{-1}$	N/A	N/A	Region 6	05/01/99
Toluene	N/A	N/A	N/A	N/A	IRIS	08/01/92
Trichloroethene	6.0E-03	$mg/kg\text{-}day^{-1}$	N/A	N/A	Region 6	05/01/99
Xylene (total)	N/A	N/A	N/A	N/A	IRIS	09/26/88
Bromoform	3.9E-03	$mg/kg\text{-}day^{-1}$	1.10E-06	B2	IRIS	12/01/93
Chloroethane	N/A	N/A	N/A	N/A	IRIS	04/01/91
4,6-Dinitro-2-methylphenol	N/A	N/A	N/A	N/A	Region 6	05/01/99

IRIS = Integrated Risk Information System
mg/m^3 = micrograms per cubic meter
NA = Not Applicable

mg/kg-day = milligram per kilogram per day

(1) For IRIS, this is the date of search. For HEAST and Region 6, this is the date of publication.

EPA Group:
A - Human carcinogen
B1 - Probable human carcinogen - indicates that limited human data are available
B2 - Probable human carcinogen - indicates sufficient evidence in animals and inadequate or no evidence in humans
C - Possible human carcinogen
D - Not classifiable as a human carcinogen
E - Evidence of noncarcinogenicity

TABLE 62A
CALCULATION OF NON-CANCER HAZARDS
REASONABLE MAXIMUM EXPOSURE
CEDAR CHEMICAL CORPORATION, WEST HELENA, ARKANSAS

Scenario Timeframe:	Future
Medium:	Soil
Exposure Medium:	Subsurface Soil
Exposure Point:	Site 1
Receptor Population:	Construction Worker
Receptor Age:	Adult

Exposure Route	Chemical of Potential Concern	Medium EPC Value	Medium EPC Units	Route EPC Value	Route EPC Units	EPC Selected for Hazard Calculation	Intake (Non-Cancer)	Intake (Non-Cancer) Units	Reference Dose	Reference Dose Units	Reference Concentration	Reference Concentration Units	Hazard Quotient
Ingestion	Arsenic	10.6	mg/kg	N/A	N/A	M	1.13E-06	kg/kg-day	3.00E-04	mg/kg-day	N/A	N/A	0.04
	Dieldrin	0.6	mg/kg	N/A	N/A	M	1.13E-06	kg/kg-day	5.00E-05	mg/kg-day	N/A	N/A	0.013
	1,2-Dichlorethane	7.5	mg/kg	N/A	N/A	M	1.13E-06	kg/kg-day	N/A	mg/kg-day	N/A	N/A	N/A
Inhalation	Arsenic	10.6	mg/kg	N/A	N/A	M	3.56E-11	kg/kg-day	N/A	mg/kg-day	N/A	N/A	N/A
	Dieldrin	0.6	mg/kg	N/A	N/A	M	3.56E-11	kg/kg-day	N/A	mg/kg-day	N/A	N/A	N/A
	1,2-Dichlorethane	7.5	mg/kg	N/A	N/A	M	2.24E-05	kg/kg-day	2.86E-03	mg/kg-day	N/A	N/A	0.059
Dermal	Arsenic	10.6	mg/kg	N/A	N/A	M	2.89E-07	kg/kg-day	3.00E-04	mg/kg-day	N/A	N/A	0.01
	Dieldrin	0.6	mg/kg	N/A	N/A	M	9.63E-07	kg/kg-day	2.50E-05	mg/kg-day	N/A	N/A	0.02284
	1,2-Dichlorethane	7.5	mg/kg	N/A	N/A	M	9.63E-07	kg/kg-day	N/A	mg/kg-day	N/A	N/A	N/A
												Total Hazard Index Across All Exposure Routes/Pathways	<1

See Table 35 for definitions and sources of equation variables for pathway-specific intake factor calculations.

EPC = Exposure point concentration
mg/kg = milligram per kilogram
N/A = Not applicable
M = Media-specific concentration
mg/cu. M = milligram per cubic meter

TABLE 62B
CALCULATION OF CANCER RISKS
REASONABLE MAXIMUM EXPOSURE
CEDAR CHEMICAL CORPORATION, WEST HELENA, ARKANSAS

Scenario Timeframe:	Future
Medium:	Soil
Exposure Medium:	Subsurface Soil
Exposure Point:	Site 1
Receptor Population:	Construction Worker
Receptor Age:	Adult

Exposure Route	Chemical of Potential Concern	Medium EPC Value	Medium EPC Units	Route EPC Value	Route EPC Units	EPC Selected for Risk Calculation (1)	Intake (Cancer)	Intake (Cancer) Units	Cancer Slope Factor	Cancer Slope Factor Units	Cancer Risk
Ingestion	Arsenic	10.6	mg/kg	N/A	N/A	M	1.61E-08	kg/kg-day	1.50E+00	(mg/kg-day) $^{-1}$	3E-07
	Dieldrin	0.59	mg/kg	N/A	N/A	M	1.61E-08	kg/kg-day	1.60E+01	(mg/kg-day) $^{-1}$	2E-07
	1,2-Dichlorethane	7.5	mg/kg	N/A	N/A	M	1.61E-08	kg/kg-day	9.10E-02	(mg/kg-day) $^{-1}$	1E-08
Inhalation	Arsenic	10.6	mg/kg	N/A	N/A	M	5.08E-13	kg/kg-day	1.51E+01	(mg/kg-day) $^{-1}$	8E-11
	Dieldrin	0.59	mg/kg	N/A	N/A	M	5.08E-13	kg/kg-day	1.61E+01	(mg/kg-day) $^{-1}$	5E-12
	1,2-Dichlorethane	7.5	mg/kg	N/A	N/A	M	3.20E-07	kg/kg-day	9.10E-02	(mg/kg-day) $^{-1}$	2E-07
Dermal	Arsenic	10.6	mg/kg	N/A	N/A	M	4.13E-09	kg/kg-day	1.50E+00	(mg/kg-day) $^{-1}$	7E-08
	Dieldrin	0.59	mg/kg	N/A	N/A	M	1.38E-08	kg/kg-day	8.00E+00	(mg/kg-day) $^{-1}$	7E-08
	1,2-Dichlorethane	7.5	mg/kg	N/A	N/A	M	1.38E-08	kg/kg-day	7.28E-02	(mg/kg-day) $^{-1}$	8E-09
										Total Risk Across All Exposure Routes/Pathways	8E-07

See Table 35 for definitions and sources of equation variables for pathway-specific intake factor calculations.

EPC = Exposure point concentration
mg/kg = milligram per kilogram
N/A = Not applicable
M = Medium-specific concentration

TABLE 62C
CALCULATION OF NON-CANCER HAZARDS
REASONABLE MAXIMUM EXPOSURE
CEDAR CHEMICAL CORPORATION, WEST HELENA, ARKANSAS

Scenario Timeframe:	Future
Medium:	Sediment
Exposure Medium:	Sediment
Exposure Point:	Site 1
Receptor Population:	Construction Worker
Receptor Age:	Adult

Exposure Route	Chemical of Potential Concern	Medium EPC Value	Medium EPC Units	Route EPC Value	Route EPC Units	EPC Selected for Hazard Calculation (1)	Intake (Non-Cancer)	Intake (Non-Cancer) Units	Reference Dose (2)	Reference Dose Units	Reference Concentration	Reference Concentration Units	Hazard Quotient
Ingestion	Arsenic	123	mg/kg	N/A	N/A	M	1.2E-07	kg/kg-day	3.0E-04	mg/kg-day	N/A	N/A	0.048
	Chromium	82	mg/kg	N/A	N/A	M	1.2E-07	kg/kg-day	3.0E-03	mg/kg-day	N/A	N/A	0.0032
Dermal	Arsenic	123	mg/kg	N/A	N/A	M	2.9E-07	kg/kg-day	3.0E-04	mg/kg-day	N/A	N/A	0.12
	Chromium	82	mg/kg	N/A	N/A	M	9.6E-08	kg/kg-day	1.5E-03	mg/kg-day	N/A	N/A	0.0053
												Total Hazard Index Across All Exposure Routes/Pathways	<1

See Table 39 for definitions, sources of equation variables for pathway-specific intake factor calculations.

EPC = Exposure point concentration
mg/kg = milligram per kilogram
N/A = Not applicable
M = Media-specific concentration
mg/cu. M = milligram per cubic meter

TABLE 62D
CALCULATION OF CANCER RISKS
REASONABLE MAXIMUM EXPOSURE
CEDAR CHEMICAL CORPORATION, WEST HELENA, ARKANSAS

Scenario Timeframe:	Future
Medium:	Sediment
Exposure Medium:	Sediment
Exposure Point:	Site 1
Receptor Population:	Construction Worker
Receptor Age:	Adult

Exposure Route	Chemical of Potential Concern	Medium EPC Value	Medium EPC Units	Route EPC Value	Route EPC Units	Selected for Risk Calculation	Intake (Cancer)	Intake (Cancer) Units	Cancer Slop Factor	Cancer Slope Factor Units	Cancer Risk
Ingestion	Arsenic	123	mg/kg	N/A	N/A	M	1.68E-09	kg/kg-day	1.5	$(mg/kg\text{-}day)^{-1}$	3.09E-07
	Chromium	82	mg/kg	N/A	N/A	M	1.68E-09	kg/kg-day	N/A	$(mg/kg\text{-}day)^{-1}$	N/A
Dermal	Arsenic	123	mg/kg	N/A	N/A	M	4.1E-09	kg/kg-day	7.5	$(mg/kg\text{-}day)^{-1}$	3.81E-06
	Chromium	82	mg/kg	N/A	N/A	M	1.4E-09	kg/kg-day	N/A	$(mg/kg\text{-}day)^{-1}$	N/A
										Total Risk Across All Exposure Routes/Pathways	4.1E-06

See Table 39 for definitions, sources of equation variables for pathway-specific intake factor calculations.

EPC = Exposure point concentration
mg/kg = milligram per kilogram
N/A = Not applicable
M = Medium-specific concentration
ND = No data available

TABLE 62E
CALCULATION OF NON-CANCER HAZARDS
REASONABLE MAXIMUM EXPOSURE
CEDAR CHEMICAL CORPORATION, WEST HELENA, ARKANSAS

Scenario Timeframe:	Current/Future
Medium:	Groundwater
Exposure Medium:	Groundwater
Exposure Point:	Perched Groundwater
Receptor Population:	Construction Worker
Receptor Age:	Adult

Exposure Route	Chemical of Potential Concern	Medium EPC Value	Medium EPC Units	Route EPC Value	Route EPC Units	EPC Selected for Hazard Calculation (1)	Intake (Non-Cancer)	Intake (Non-Cancer) Units	Reference Dose (2)	Reference Dose Units	Reference Concentration	Reference Concentration Units	Hazard Quotient
Ingestion	Arsenic	0.05	mg/L	N/A	N/A	M	1.9E-04	L/kg-day	3.0E-04	mg/kg-day	N/A	N/A	0.031
	Barium	1.36	mg/L	N/A	N/A	M	1.9E-04	L/kg-day	7.0E-02	mg/kg-day	N/A	N/A	0.004
	Cadmium	0.009	mg/L	N/A	N/A	M	1.9E-04	L/kg-day	5.0E-04	mg/kg-day	N/A	N/A	0.003
	Chromium	0.15	mg/L	N/A	N/A	M	1.9E-04	L/kg-day	5.0E-03	mg/kg-day	N/A	N/A	0.006
	4,4'-DDT	0.00034	mg/L	N/A	N/A	M	1.9E-04	L/kg-day	5.0E-04	mg/kg-day	N/A	N/A	0.00013
	Alpha-BHC	0.00002	mg/L	N/A	N/A	M	1.9E-04	L/kg-day	N/A	mg/kg-day	N/A	N/A	N/A
	2,6-Dinitrotoluene	0.221	mg/L	N/A	N/A	M	1.9E-04	L/kg-day	1.0E-03	mg/kg-day	N/A	N/A	0.041
	3,4-Dichloroaniline	58	mg/L	N/A	N/A	M	1.9E-04	L/kg-day	4.0E-03	mg/kg-day	N/A	N/A	2.724
	4-Chloroaniline	5.9	mg/L	N/A	N/A	M	1.9E-04	L/kg-day	4.0E-03	mg/kg-day	N/A	N/A	0.277
	bis(2-Chloroethyl)ether	0.005	mg/L	N/A	N/A	M	1.9E-04	L/kg-day	1.0E-02	mg/kg-day	N/A	N/A	0.00009
	Dinoseb	0.042	mg/L	N/A	N/A	M	1.9E-04	L/kg-day	1.0E-03	mg/kg-day	N/A	N/A	0.0079
	1,2-Dichloroethane	29	mg/L	N/A	N/A	M	1.9E-04	L/kg-day	2.9E-03	mg/kg-day	N/A	N/A	1.9
	4-Methyl-2-Pentanone (MIBK)	2.2	mg/L	N/A	N/A	M	1.9E-04	L/kg-day	8.0E-02	mg/kg-day	N/A	N/A	0.005
	Acetone	4.8	mg/L	N/A	N/A	M	1.9E-04	L/kg-day	1.0E-01	mg/kg-day	N/A	N/A	0.009
	Benzene	0.017	mg/L	N/A	N/A	M	1.9E-04	L/kg-day	3.0E-03	mg/kg-day	N/A	N/A	0.0011
	Chloroform	0.7	mg/L	N/A	N/A	M	1.9E-04	L/kg-day	1.0E-02	mg/kg-day	N/A	N/A	0.0132
	Methylene chloride	600	mg/L	N/A	N/A	M	1.9E-04	L/kg-day	6.0E-02	mg/kg-day	N/A	N/A	1.9
	Trichloroethene	0.028	mg/L	N/A	N/A	M	1.9E-04	L/kg-day	6.0E-03	mg/kg-day	N/A	N/A	0.0009
Dermal	Arsenic	0.05	mg/L	N/A	N/A	M	7.7E-05	L/kg-day	3.0E-04	mg/kg-day	N/A	N/A	0.013
	Barium	1.36	mg/L	N/A	N/A	M	7.7E-05	L/kg-day	1.4E-02	mg/kg-day	N/A	N/A	0.007
	Cadmium	0.01	mg/L	N/A	N/A	M	7.7E-05	L/kg-day	1.0E-04	mg/kg-day	N/A	N/A	0.007
	Chromium	0.15	mg/L	N/A	N/A	M	7.7E-05	L/kg-day	1.0E-03	mg/kg-day	N/A	N/A	0.012
	4,4'-DDT	0.00034	mg/L	N/A	N/A	M	3.3E-02	L/kg-day	2.5E-04	mg/kg-day	N/A	N/A	0.045
	Alpha-BHC	0.00002	mg/L	N/A	N/A	M	1.5E-03	L/kg-day	N/A	mg/kg-day	N/A	N/A	N/A
	2,6-Dinitrotoluene	0.221	mg/L	N/A	N/A	M	1.9E-04	L/kg-day	5.0E-04	mg/kg-day	N/A	N/A	0.08
	3,4-Dichloroaniline	58	mg/L	N/A	N/A	M	2.4E-03	L/kg-day	2.0E-03	mg/kg-day	N/A	N/A	69

TABLE 62E
CALCULATION OF NON-CANCER HAZARDS
REASONABLE MAXIMUM EXPOSURE
CEDAR CHEMICAL CORPORATION, WEST HELENA, ARKANSAS

Scenario Timeframe:	Current/Future
Medium:	Groundwater
Exposure Medium:	Groundwater
Exposure Point:	Perched Groundwater
Receptor Population:	Construction Worker
Receptor Age:	Adult

Exposure Route	Chemical of Potential Concern	Medium EPC Value	Medium EPC Units	Route EPC Value	Route EPC Units	EPC Selected for Hazard Calculation (1)	Intake (Non-Cancer)	Intake (Non-Cancer) Units	Reference Dose (2)	Reference Dose Units	Reference Concentration	Reference Concentration Units	Hazard Quotient
	4-Chloroaniline	5.9	mg/L	N/A	N/A	M	2.4E-03	L/kg-day	2.0E-03	mg/kg-day	N/A	N/A	7
	bis(2-Chloroethyl)ether	0.005	mg/L	N/A	N/A	M	1.6E-04	L/kg-day	5.0E-03	mg/kg-day	N/A	N/A	0.00016
	Dinoseb	0.042	mg/L	N/A	N/A	M	2.2E-03	L/kg-day	5.0E-04	mg/kg-day	N/A	N/A	0.181
	1,2-Dichloroethane	29	mg/L	N/A	N/A	M	4.1E-04	L/kg-day	2.3E-03	mg/kg-day	N/A	N/A	5.2
	4-Methyl-2-Pentanone (MIBK)	2.2	mg/L	N/A	N/A	M	2.5E-04	L/kg-day	6.4E-02	mg/kg-day	N/A	N/A	0.009
	Acetone	4.8	mg/L	N/A	N/A	M	4.4E-05	L/kg-day	8.0E-02	mg/kg-day	N/A	N/A	0.003
	Benzene	0.017	mg/L	N/A	N/A	M	1.6E-03	L/kg-day	2.4E-03	mg/kg-day	N/A	N/A	0.011
	Chloroform	0.7	mg/L	N/A	N/A	M	6.9E-04	L/kg-day	8.0E-03	mg/kg-day	N/A	N/A	0.06
	Methylene chloride	600	mg/L	N/A	N/A	M	3.5E-04	L/kg-day	4.8E-02	mg/kg-day	N/A	N/A	4.3
	Trichloroethene	0.028	mg/L	N/A	N/A	M	1.2E-03	L/kg-day	4.8E-03	mg/kg-day	N/A	N/A	0.007
										Total Hazard Index Across All Exposure Routes/Pathways			93

(1) Route-Specific (M) EPC selected for hazard calculation.
(2) Subchronic

165

See Table 42 for definitions and sources of equation variables for pathway-specific intake factor calculations.

mg/L = milligram per liter
L/kg-day = liter per kilogram day
N/A = not applicable

TABLE 62F
CALCULATION OF CANCER RISKS
REASONABLE MAXIMUM EXPOSURE
CEDAR CHEMICAL CORPORATION, WEST HELENA, ARKANSAS

Scenario Timeframe:	Current/Future
Medium:	Groundwater
Exposure Medium:	Groundwater
Exposure Point:	Perched Groundwater
Receptor Population:	Construction Worker
Receptor Age:	Adult

Exposure Route	Chemical of Potential Concern	Medium EPC Value	Medium EPC Units	Route EPC Value	Route EPC Units	EPC for Risk Calculation	Intake (Cancer)	Intake (Cancer) Units	Cancer Slope Factor	Cancer Slope Factor Units	Cancer Risk
Ingestion	Arsenic	0.05	mg/L	N/A	N/A	M	2.7E-06	L/kg-day	1.50E+00	(mg/kg-day) $^{-1}$	2.01E-07
	Barium	1.36	mg/L	N/A	N/A	M	2.7E-06	L/kg-day	N/A	(mg/kg-day) $^{-1}$	N/A
	Cadmium	0.01	mg/L	N/A	N/A	M	2.7E-06	L/kg-day	N/A	(mg/kg-day) $^{-1}$	N/A
	Chromium	0.15	mg/L	N/A	N/A	M	2.7E-06	L/kg-day	N/A	(mg/kg-day) $^{-1}$	N/A
	4,4'-DDT	0.00034	mg/L	N/A	N/A	M	2.7E-06	L/kg-day	3.40E-01	(mg/kg-day) $^{-1}$	3.10E-10
	Alpha-BHC	0.00002	mg/L	N/A	N/A	M	2.7E-06	L/kg-day	6.30E+00	(mg/kg-day) $^{-1}$	3.38E-10
	2,6-Dinitrotoluene	0.22	mg/L	N/A	N/A	M	2.7E-06	L/kg-day	N/A	(mg/kg-day) $^{-1}$	N/A
	3,4-Dichloroaniline	58	mg/L	N/A	N/A	M	2.7E-06	L/kg-day	N/A	(mg/kg-day) $^{-1}$	N/A
	4-Chloroaniline	5.9	mg/L	N/A	N/A	M	2.7E-06	L/kg-day	N/A	(mg/kg-day) $^{-1}$	N/A
	bis(2-Chloroethyl)ether	0.005	mg/L	N/A	N/A	M	2.7E-06	L/kg-day	1.10E+00	(mg/kg-day) $^{-1}$	1.48E-08
	Dinoseb	0.04	mg/L	N/A	N/A	M	2.7E-06	L/kg-day	N/A	(mg/kg-day) $^{-1}$	N/A
	1,2-Dichloroethane	**29**	**mg/L**	**N/A**	**N/A**	**M**	**2.7E-06**	**L/kg-day**	**9.10E-02**	**(mg/kg-day) $^{-1}$**	**7.08E-06**
	4-Methyl-2-Pentanone (MIBK)	2.2	mg/L	N/A	N/A	M	2.7E-06	L/kg-day	N/A	(mg/kg-day) $^{-1}$	N/A
	Acetone	4.8	mg/L	N/A	N/A	M	2.7E-06	L/kg-day	N/A	(mg/kg-day) $^{-1}$	N/A
	Benzene	0.02	mg/L	N/A	N/A	M	2.7E-06	L/kg-day	2.90E-02	(mg/kg-day) $^{-1}$	1.32E-09
	Chloroform	0.7	mg/L	N/A	N/A	M	2.7E-06	L/kg-day	6.10E-03	(mg/kg-day) $^{-1}$	1.15E-08
	Methylene chloride	**600**	**mg/L**	**N/A**	**N/A**	**M**	**2.7E-06**	**L/kg-day**	**7.50E-03**	**(mg/kg-day) $^{-1}$**	**1.21E-05**
	Trichloroethene	0.028	mg/L	N/A	N/A	M	2.7E-06	L/kg-day	1.10E-02	(mg/kg-day) $^{-1}$	8.27E-10
Dermal	Arsenic	0.05	mg/L	N/A	N/A	M	1.1E-06	L/kg-day	1.50E+00	(mg/kg-day) $^{-1}$	8.24E-08
	Barium	1.36	mg/L	N/A	N/A	M	4.7E-04	L/kg-day	N/A	(mg/kg-day) $^{-1}$	N/A
	Cadmium	0.01	mg/L	N/A	N/A	M	2.1E-05	L/kg-day	N/A	(mg/kg-day) $^{-1}$	N/A
	Chromium	0.15	mg/L	N/A	N/A	M	6.8E-05	L/kg-day	N/A	(mg/kg-day) $^{-1}$	N/A
	4,4'-DDT	0.00034	mg/L	N/A	N/A	M	4.7E-04	L/kg-day	1.70E-02	(mg/kg-day) $^{-1}$	2.73E-09
	Alpha-BHC	0.000020	mg/L	N/A	N/A	M	2.1E-05	L/kg-day	3.15E-01	(mg/kg-day) $^{-1}$	1.32E-10
	2,6-Dinitrotoluene	0.22	mg/L	N/A	N/A	M	2.8E-06	L/kg-day	N/A	(mg/kg-day) $^{-1}$	N/A
	3,4-Dichloroaniline	58	mg/L	N/A	N/A	M	3.4E-05	L/kg-day	N/A	(mg/kg-day) $^{-1}$	N/A
	4-Chloroaniline	5.90	mg/L	N/A	N/A	M	3.4E-05	L/kg-day	N/A	(mg/kg-day) $^{-1}$	N/A
	bis(2-Chloroethyl)ether	0.005	mg/L	N/A	N/A	M	2.3E-06	L/kg-day	5.50E-02	(mg/kg-day) $^{-1}$	6.35E-10

TABLE 62F
CALCULATION OF CANCER RISKS
REASONABLE MAXIMUM EXPOSURE
CEDAR CHEMICAL CORPORATION, WEST HELENA, ARKANSAS

Scenario Timeframe:	Current/Future
Medium:	Groundwater
Exposure Medium:	Groundwater
Exposure Point:	Perched Groundwater
Receptor Population:	Construction Worker
Receptor Age:	Adult

Exposure Route	Chemical of Potential Concern	Medium EPC Value	Medium EPC Units	Route EPC Value	Route EPC Units	EPC for Risk Calculation	Intake (Cancer)	Intake (Cancer) Units	Cancer Slope Factor	Cancer Slope Factor Units	Cancer Risk
	Dinoseb	0.04	mg/L	N/A	N/A	M	3.1E-05	L/kg-day	N/A	(mg/kg-day) $^{-1}$	N/A
	1,2-Dichloroethane	**29**	**mg/L**	**N/A**	**N/A**	**M**	**5.8E-06**	**L/kg-day**	**7.28E-02**	**(mg/kg-day) $^{-1}$**	**1.23E-05**
	4-Methyl-2-Pentanone (MIBK)	2.2	mg/L	N/A	N/A	M	3.6E-06	L/kg-day	N/A	(mg/kg-day) $^{-1}$	N/A
	Acetone	4.8	mg/L	N/A	N/A	M	6.3E-07	L/kg-day	N/A	(mg/kg-day) $^{-1}$	N/A
	Benzene	0.02	mg/L	N/A	N/A	M	2.3E-05	L/kg-day	2.32E-02	(mg/kg-day) $^{-1}$	9.11E-09
	Chloroform	0.7	mg/L	N/A	N/A	M	9.8E-06	L/kg-day	4.88E-03	(mg/kg-day) $^{-1}$	3.35E-08
	Methylene chloride	**600**	**mg/L**	**N/A**	**N/A**	**M**	**5.0E-06**	**L/kg-day**	**6.00E-03**	**(mg/kg-day) $^{-1}$**	**1.78E-05**
	Trichloroethene	0.028	mg/L	N/A	N/A	M	1.8E-05	L/kg-day	8.80E-03	(mg/kg-day) $^{-1}$	4.34E-09
										Total Risk Across All Exposure Routes/Pathways	5E-05

(1) Route-Specific (M) EPC selected for hazard calculation.

See Table 42 for definitions and sources of equation variables for pathway-specific intake factor calculations.
Risks presented in boldfaced type were calculated using the one -hit equation for high carcinogenic risk levels in RAGS Part A (USEPA, 1989). The equation is :
Risk = 1-exp(-CDI x SF).

mg/L = milligram per liter
L/kg-day = liter per kilogram day
N/A = not applicable

TABLE 62G
SUMMARY OF RECEPTOR RISKS AND HAZARDS FOR COPCs
REASONABLE MAXIMUM EXPOSURE
CEDAR CHEMICAL CORPORATION, WEST HELENA, ARKANSAS

Scenario Timeframe: Future
Receptor Population: Construction Worker
Receptor Age: Adult

Medium	Exposure Medium	Exposure Point	Chemical	Carcinogenic Risk				Chemical				
				Ingestion	Inhalation	Dermal	Exposure Routes Total		Ingestion	Inhalation	Dermal	Exposure Routes Total
Soil	Surface and Subsurface Soil	Site 1	Arsenic	2.6E-07	8.1E-11	6.56E-08	3.2E-07	Arsenic	0.0399	N/A	0.01	0.047
			Dieldrin	1.5E-07	4.9E-12	6.55E-08	2.2E-07	Dieldrin	0.013	N/A	0.023	0.036
			1,2-Dichlorethane	1.1E-08	2.2E-07	7.53E-09	2.4E-07	1,2-Dichlorethane	N/A	0.059	N/A	0.059
Soil	Sediment	Site 1	Arsenic	3.1E-07	N/A	3.8E-06	4.1E-06	Arsenic	0.05	N/A	0.12	0.167
			Chromium	N/A	N/A	N/A	N/A		0.0032	N/A	0.0053	0.009
Groundwater	Perched Groundwater	Site Wide	Arsenic	2.01E-07	N/A	8.2E-08	2.8E-07	Arsenic	0.03	N/A	0.013	0.044
			Barium	N/A	N/A	N/A	N/A	Barium	0.0037	N/A	0.0075	0.011
			Cadmium	N/A	N/A	N/A	N/A	Cadmium	0.0033	N/A	0.0067	0.01
			Chromium	N/A	N/A	N/A	N/A	Chromium	0.0057	N/A	0.012	0.017
			4,4'-DDT	3.10E-10	N/A	2.7E-09	3.0E-09	4,4'-DDT	0.00013	N/A	0.045	0.045
			Alpha-BHC	3.38E-10	N/A	1.3E-10	4.7E-10	Alpha-BHC	N/A	N/A	N/A	N/A
			2,6-Dinitrotoluene	N/A	N/A	N/A	N/A	2,6-Dinitrotoluene	0.04	N/A	0.085	0.126
			3,4-Dichloroaniline	N/A	N/A	N/A	N/A	3,4-Dichloroaniline	3	N/A	69.246	72
			4-Chloroaniline	N/A	N/A	N/A	N/A	4-Chloroaniline	0.28	N/A	7	7
			bis(2-Chloroethyl)ether	1.48E-08	N/A	6.4E-10	1.5E-08	bis(2-Chloroethyl)ether	0.000094	N/A	0.00016	0.00026
			Dinoseb	N/A	N/A	N/A	N/A	Dinoseb	0.0079	N/A	0.181	0.19
			1,2-Dichloroethane	7.08E-06	N/A	1.2E-05	1.9E-05	1,2-Dichloroethane	2	N/A	5	7
			4-Methyl-2-Pentanone (MIBK)	N/A	N/A	N/A	N/A	4-Methyl-2-Pentanone (MIBK)	0.0052	N/A	0.0087	0.014
			Acetone	N/A	N/A	N/A	N/A	Acetone	0.009	N/A	0.0026	0.012
			Benzene	1.32E-09	N/A	9.1E-09	1.0E-08	Benzene	0.0011	N/A	0.011	0.013
			Chloroform	1.15E-08	N/A	3.3E-08	4.5E-08	Chloroform	0.0132	N/A	0.06	0.073
			Methylene chloride	1.21E-05	N/A	1.8E-05	3.0E-05	Methylene chloride	2	N/A	4	6
			Trichloroethene	8.27E-10	N/A	4.3E-09	5.2E-09	Trichloroethene	0.00088	N/A	0.0072	0.008

Total Risk Across[Soil]	7.8E-07
Total Risk Across[Sediment]	4.1E-06
Total Risk Across[Groundwater]	5E-05
Total Risk Across All Media and All Exposure Routes	5.5E-05

Total Hazard Index Across All Media and All Exposure Routes	93

N/A = Not Applicable

TABLE 63A
CALCULATION OF NON-CANCER HAZARDS
REASONABLE MAXIMUM EXPOSURE
CEDAR CHEMICAL CORPORATION, WEST HELENA, ARKANSAS

Scenario Timeframe:	Current/Future
Medium:	Soil
Exposure Medium:	Surface Soil
Exposure Point:	Site 1 Surface Soil
Receptor Population:	Adult Worker
Receptor Age:	Adult

Exposure Route	Chemical of Potential Concern	Medium EPC Value	Medium EPC Units	Route EPC Value	Route EPC Units	EPC Selected for Hazard Calculation (1)	Intake (Non-Cancer)	Intake (Non-Cancer) Units	Reference Dose (2)	Reference Dose Units	Reference Concentration	Reference Concentration Units	Hazard Quotient
Ingestion	Arsenic	14.4	mg/kg	N/A	N/A	M	4.89E-07	kg/kg-day	3.00E-04	mg/kg-day	N/A	N/A	0.023
	Dieldrin	0.593	mg/kg	N/A	N/A	M	4.89E-07	kg/kg-day	5.00E-05	mg/kg-day	N/A	N/A	0.006
	1,2-Dichloroethane	7.5	mg/kg	N/A	N/A	M	4.89E-07	kg/kg-day	2.86E-03	mg/kg-day	N/A	N/A	0.0013
Inhalation	Arsenic	14.4	mg/kg	N/A	N/A	M	1.48E-10	kg/kg-day	N/A	mg/kg-day	N/A	N/A	N/A
	Dieldrin	0.593	mg/kg	N/A	N/A	M	1.48E-10	kg/kg-day	N/A	mg/kg-day	N/A	N/A	N/A
	1,2-Dichloroethane	7.5	mg/kg	N/A	N/A	M	9.32E-05	kg/kg-day	1.43E-03	mg/kg-day	N/A	N/A	0.49
Dermal	Arsenic	14.4	mg/kg	N/A	N/A	M	1.20E-06	kg/kg-day	6.00E-05	mg/kg-day	N/A	N/A	0.289
	Dieldrin	1	mg/kg	N/A	N/A	M	4.01E-06	kg/kg-day	2.50E-05	mg/kg-day	N/A	N/A	0.095
	1,2-Dichloroethane	7.5	mg/kg	N/A	N/A	M	4.01E-06	kg/kg-day	2.29E-03	mg/kg-day	N/A	N/A	0.013
												Total Hazard Index Across All Exposure Routes/Pathways	<1

See Table 45 for definitions and sources of equation variables for pathway-specific intake factor calculations.

EPC = Exposure point concentration
mg/kg = milligram per kilogram
N/A = Not applicable
M = Media-specific concentration
mg/cu. M = milligram per cubic meter

TABLE 63B
CALCULATION OF CANCER RISKS
REASONABLE MAXIMUM EXPOSURE
CEDAR CHEMICAL CORPORATION, WEST HELENA, ARKANSAS

Scenario Timeframe:	Future
Medium:	Soil
Exposure Medium:	Surface Soil
Exposure Point:	Site 1 Surface Soil
Receptor Population:	Adult Worker
Receptor Age:	Adult

Exposure Route	Chemical of Potential Concern	Medium EPC Value	Medium EPC Units	Route EPC Value	Route EPC Units	EPC for Risk Calculation	Intake (Cancer)	Intake (Cancer) Units	Cancer Slope Factor	Cancer Slope Factor Units	Cancer Risk
Ingestion	Arsenic	14.35	mg/kg	N/A	N/A	M	1.75E-07	kg/kg-day	1.50E+00	(mg/kg-day $^{-1}$	3.8E-06
	Dieldrin	0.593	mg/kg	N/A	N/A	M	1.75E-07	kg/kg-day	1.60E+01	(mg/kg-day $^{-1}$	1.7E-06
	1,2-Dichloroethane	7.5	mg/kg	N/A	N/A	M	1.75E-07	kg/kg-day	9.10E-02	(mg/kg-day $^{-1}$	1.2E-07
Inhalation	Arsenic	14.4	mg/kg	N/A	N/A	M	5.29E-11	kg/kg-day	1.51E+01	(mg/kg-day $^{-1}$	1.1E-08
	Dieldrin	0.593	mg/kg	N/A	N/A	M	5.29E-11	kg/kg-day	1.60E+01	(mg/kg-day $^{-1}$	5.0E-10
	1,2-Dichloroethane	7.5	mg/kg	N/A	N/A	M	3.33E-05	kg/kg-day	9.10E-02	(mg/kg-day $^{-1}$	2.3E-05
Dermal	Arsenic	14.4	mg/kg	N/A	N/A	M	4.30E-07	kg/kg-day	7.50E+00	(mg/kg-day $^{-1}$	4.6E-05
	Dieldrin	0.593	mg/kg	N/A	N/A	M	1.43E-06	kg/kg-day	3.20E+01	(mg/kg-day $^{-1}$	2.7E-05
	1,2-Dichloroethane	7.5	mg/kg	N/A	N/A	M	1.43E-06	kg/kg-day	1.14E-01	(mg/kg-day $^{-1}$	1.2E-06
										Total Risk Across All Exposure Routes/Pathways	1E-04

See Table 45 for definitions and sources of equation variables for pathway-specific intake factor calculations.

EPC = Exposure point concentration
mg/kg = milligram per kilogram
N/A = Not applicable
M = Medium-specific concentration

TABLE 63C
SUMMARY OF RECEPTOR RISKS AND HAZARDS FOR COPCs
REASONABLE MAXIMUM EXPOSURE
CEDAR CHEMICAL CORPORATION, WEST HELENA, ARKANSAS

Scenario Timeframe: Future
Receptor Population: Adult Worker
Receptor Age: Adult

Medium	Exposure Medium	Exposure Point	Chemical	Carcinogenic Risk				Chemical	Non-Carcinogenic Hazard Quotient			
				Ingestion	Inhalation	Dermal	Exposure Routes Total		Ingestion	Inhalation	Dermal	Exposure Routes Total
Soil	Surface Soil	Site 1	Arsenic	4E-06	1E-08	5E-05	5E-05	Arsenic	0.023	N/A	0.289	0.31
			Dieldrin	2E-06	5E-10	3E-05	3E-05	Dieldrin	0.006	N/A	0.095	0.101
			1,2-Dichloroethane	1E-07	2E-05	1E-06	2E-05	1,2-Dichloroethane	0.001	0.489	0.013	N/A
							Total Risk Across[Soil]					tal Hazard Index Across All Media and All Exposure Routes
							Total Risk Across[Groundwater]					
							Total Risk Across All Media and All Exposure Routes					

Total Risk Across[Soil]	1.0E-04
Total Risk Across[Groundwater]	N/A
Total Risk Across All Media and All Exposure Routes	1E-04

tal Hazard Index Across All Media and All Exposure Routes	0.413

.916

N/A = Not Applicable

.101
.489
.013
.503

Why NA

.503
.413
.916

TABLE 64A
CALCULATION OF NON-CANCER HAZARDS
REASONABLE MAXIMUM EXPOSURE
CEDAR CHEMICAL CORPORATION, WEST HELENA, ARKANSAS

Scenario Timeframe:	Future
Medium:	Soil
Exposure Medium:	Surface Soil
Exposure Point:	Site 1 Surface Soil
Receptor Population:	Trespasser
Receptor Age:	Adolescent

Exposure Route	Chemical of Potential Concern	Medium EPC Value	Medium EPC Units	Route EPC Value	Route EPC Units	EPC Selected for Hazard Calculation (1)	Intake (Non-Cancer)	Intake (Non-Cancer) Units	Reference Dose (2)	Reference Dose Units	Reference Concentration	Reference Concentration Units	Hazard Quotient
Ingestion	Arsenic	14.4	mg/kg	N/A	N/A	M	1.58E-07	kg/kg-day	3.00E-04	mg/kg-day	N/A	N/A	0.008
	Dieldrin	0.593	mg/kg	N/A	N/A	M	1.58E-07	kg/kg-day	5.00E-05	mg/kg-day	N/A	N/A	0.0019
	1,2-Dichloroethane	7.5	mg/kg	N/A	N/A	M	1.58E-07	kg/kg-day	2.86E-03	mg/kg-day	N/A	N/A	0.00042
Inhalation	Arsenic	14.4	mg/kg	N/A	N/A	M	3.08E-11	kg/kg-day	N/A	mg/kg-day	N/A	N/A	N/A
	Dieldrin	0.593	mg/kg	N/A	N/A	M	3.08E-11	kg/kg-day	N/A	mg/kg-day	N/A	N/A	N/A
	1,2-Dichloroethane	7.5	mg/kg	N/A	N/A	M	1.94E-05	kg/kg-day	1.43E-03	mg/kg-day	N/A	N/A	0.102
Dermal	Arsenic	14.4	mg/kg	N/A	N/A	M	3.89E-07	kg/kg-day	6.00E-05	mg/kg-day	N/A	N/A	0.093
	Dieldrin	0.593	mg/kg	N/A	N/A	M	1.30E-06	kg/kg-day	2.50E-05	mg/kg-day	N/A	N/A	0.031
	1,2-Dichloroethane	7.5	mg/kg	N/A	N/A	M	1.30E-06	kg/kg-day	2.29E-03	mg/kg-day	N/A	N/A	0.0043
												Total Hazard Index Across All Exposure Routes/Pathways	<1

See Table 49 for definitions and sources of equation variables for pathway-specific intake factor calculations.

EPC = Exposure point concentration
mg/kg = milligram per kilogram
N/A = Not applicable
M = Media-specific concentration
mg/cu. M = milligram per cubic meter

TABLE 64B
CALCULATION OF CANCER RISKS
REASONABLE MAXIMUM EXPOSURE
CEDAR CHEMICAL CORPORATION, WEST HELENA, ARKANSAS

Scenario Timeframe:	Future
Medium:	Soil
Exposure Medium:	Surface Soil
Exposure Point:	Site 1 Surface Soil
Receptor Population:	Trespasser
Receptor Age:	Adolescent

Exposure Route	Chemical of Potential Concern	Medium EPC Value	Medium EPC Units	Route EPC Value	Route EPC Units	EPC Selected for Risk Calculation (1)	Intake (Cancer)	Intake (Cancer) Units	Cancer Slope Factor	Cancer Slope Factor Units	Cancer Risk
Ingestion	Arsenic	14.35	mg/kg	N/A	N/A	M	2.26E-08	kg/kg-day	1.50E+00	(mg/kg-day)$^{-1}$	4.9E-07
	Dieldrin	0.593	mg/kg	N/A	N/A	M	2.26E-08	kg/kg-day	1.60E+01	(mg/kg-day)$^{-1}$	2.1E-07
	1,2-Dichloroethane	7.5	mg/kg	N/A	N/A	M	2.26E-08	kg/kg-day	9.10E-02	(mg/kg-day)$^{-1}$	1.5E-08
Inhalation	Arsenic	14.4	mg/kg	N/A	N/A	M	4.41E-12	kg/kg-day	1.51E+01	(mg/kg-day)$^{-1}$	9.5E-10
	Dieldrin	0.593	mg/kg	N/A	N/A	M	4.41E-12	kg/kg-day	1.60E+01	(mg/kg-day)$^{-1}$	4.2E-11
	1,2-Dichloroethane	7.5	mg/kg	N/A	N/A	M	2.77E-08	kg/kg-day	9.10E-02	(mg/kg-day)$^{-1}$	1.9E-06
Dermal	Arsenic	14.4	mg/kg	N/A	N/A	M	5.56E-08	kg/kg-day	7.50E+00	(mg/kg-day)$^{-1}$	6.0E-06
	Dieldrin	0.593	mg/kg	N/A	N/A	M	1.85E-07	kg/kg-day	3.20E+01	(mg/kg-day)$^{-1}$	3.5E-06
	1,2-Dichloroethane	7.5	mg/kg	N/A	N/A	M	1.85E-07	kg/kg-day	1.14E-01	(mg/kg-day)$^{-1}$	1.6E-07
										Total Risk Across All Exposure Routes/Pathways	1E-05

See Table 49 for definitions and sources of equation variables for pathway-specific intake factor calculations.

EPC = Exposure point concentration
mg/kg = milligram per kilogram
N/A = Not applicable
M = Medium-specific concentration

TABLE 64C
CALCULATION OF NON-CANCER HAZARDS
REASONABLE MAXIMUM EXPOSURE
CEDAR CHEMICAL CORPORATION, WEST HELENA, ARKANSAS

Scenario Timeframe:	Future
Medium:	Sediment
Exposure Medium:	Sediment
Exposure Point:	Site 1
Receptor Population:	Trespasser
Receptor Age:	Adolescent

Exposure Route	Chemical of Potential Concern	Medium EPC Value	Medium EPC Units	Route EPC Value	Route EPC Units	EPC Selected for Hazard Calculation (1)	Intake (Non-Cancer)	Intake (Non-Cancer) Units	Reference Dose (2)	Reference Dose Unit	Reference Concentration	Reference Concentration Units	Hazard Quotient
Ingestion	Arsenic	123	mg/kg	N/A	N/A	M	3.2E-07	kg/kg-day	3.0E-04	mg/kg-day	N/A	N/A	0.13
	Chromium	82	mg/kg	N/A	N/A	M	3.2E-07	kg/kg-day	3.0E-03	mg/kg-day	N/A	N/A	0.0087
Dermal	Arsenic	123	mg/kg	N/A	N/A	M	3.9E-07	kg/kg-day	3.0E-04	mg/kg-day	N/A	N/A	0.160
	Chromium	82	mg/kg	N/A	N/A	M	1.3E-07	kg/kg-day	1.5E-03	mg/kg-day	N/A	N/A	0.0071
												Total Hazard Index Across All Exposure Routes/Pathways	<1

See Table 53 for definitions and sources of equation variables for pathway-specific intake factor calculations.

EPC = Exposure point concentration
mg/kg = milligram per kilogram
N/A = Not applicable
M = Media-specific concentration
mg/cu. M = milligram per cubic meter

TABLE 64D
CALCULATION OF CANCER RISKS
REASONABLE MAXIMUM EXPOSURE
CEDAR CHEMICAL CORPORATION, WEST HELENA, ARKANSAS

Scenario Timeframe	Future
Medium:	Sediment
Exposure Medium:	Sediment
Exposure Point:	Site 1
Receptor Population	Trespasser
Receptor Age:	Adolescent

xposure Route	Chemical of Potential Concern	Medium EPC Value	Medium EPC Units	Route EPC Value	Route EPC Units	EPC for Risk Calculatio	Intake (Cancer)	Intake (Cancer) Units	Cancer Slope Factor	ancer Slop Factor Units	Cancer Risk
Ingestion	Arsenic	123	mg/kg	N/A	N/A	M	4.52E-08	kg/kg-day	1.5	g/kg-day)$^{-1}$	8.34E-06
	Chromium	82	mg/kg	N/A	N/A	M	4.52E-08	kg/kg-day	N/A	g/kg-day)$^{-1}$	N/A
Dermal	Arsenic	123	mg/kg	N/A	N/A	M	5.6E-08	kg/kg-day	7.50E+00	g/kg-day)$^{-1}$	5.13E-05
	Chromium	82.0	mg/kg	N/A	N/A	M	1.9E-08	kg/kg-day	N/A	g/kg-day)$^{-1}$	N/A
										tal Risk Across All Exposure Routes/Pathways	6.0E-05

See Table 53 for definitions and sources of equation variables. See Table 53 for pathway-specific intake factor calculations.

EPC = Exposure point concentration
mg/kg = milligram per kilogram
N/A = Not applicable
M = Medium-specific concentration
ND = No data available

TABLE 64E
SUMMARY OF RECEPTOR RISKS AND HAZARDS FOR COPCs
REASONABLE MAXIMUM EXPOSURE
CEDAR CHEMICAL CORPORATION, WEST HELENA, ARKANSAS

Scenario Timeframe: Future
Receptor Population: Trespasser
Receptor Age: Adolescent

Medium	Exposure Medium	Exposure Point	Chemical	Carcinogenic Risk				Chemical	Non-Carcinogenic Hazard Quotient			
				Ingestion	Inhalation	Dermal	Exposure Routes Total		Ingestion	Inhalation	Dermal	Exposure Routes Total
Soil	Surface Soil	Site 1	Arsenic	5E-07	1E-09	6E-06	6E-06	Arsenic	0.008	N/A	0.093	0.1
			Dieldrin	2E-07	4E-11	4E-06	4E-06	Dieldrin	0.002	N/A	0.031	0.033
			1,2-Dichloroethane	2E-08	2E-06	2E-07	2E-06	1,2-Dichloroethane	0.0004	0.102	0.004	0.11
Sediment	Sediment	Site 1	Arsenic	8E-06	N/A	5E-05	6E-05	Arsenic	0.13	N/A	0.16	0.29
			Chromium	N/A	N/A	N/A	N/A	Chromium	0.0087	N/A	0.0071	0.016
							Total Risk Across[Soil]					
							1E-05	Total Hazard Index Across All Media and All Exposure Routes				<1
							Total Risk Across[Sediment]					
							6E-05					
							Total Risk Across All Media and All Exposure Routes					
							7E-05					

TABLE 65A
CALCULATION OF NON-CANCER HAZARDS
REASONABLE MAXIMUM EXPOSURE
CEDAR CHEMICAL CORPORATION, WEST HELENA, ARKANSAS

Scenario Timeframe:	Future
Medium:	Soil
Exposure Medium:	Surface and Subsurface Soil
Exposure Point:	Site 2 Subsurface Soil
Receptor Population:	Construction Worker
Receptor Age:	Adult

Exposure Route	Chemical of Potential Concern	Medium EPC Value	Medium EPC Units	Route EPC Value	Route EPC Units	EPC Selected for Hazard Calculation	Intake (Non-Cancer)	Intake (Non-Cancer) Units	Reference Dose	Reference Dose Units	Reference Concentration	Reference Concentration Units	Hazard Quotient
Ingestion	Arsenic	17.9	mg/kg	N/A	N/A	M	1.13E-06	kg/kg-day	3.00E-04	mg/kg-day	N/A	N/A	0.067
	Chromium	25.2	mg/kg	N/A	N/A	M	1.13E-06	kg/kg-day	3.00E-03	mg/kg-day	N/A	N/A	0.009
	Aldrin	0.420	mg/kg	N/A	N/A	M	1.13E-06	kg/kg-day	3.00E-05	mg/kg-day	N/A	N/A	0.0158
	Dieldrin	0.06	mg/kg	N/A	N/A	M	1.13E-06	kg/kg-day	5.00E-05	mg/kg-day	N/A	N/A	0.0079
	1,2-Dichloroethane	0.81	mg/kg	N/A	N/A	M	1.13E-06	kg/kg-day	N/A	mg/kg-day	N/A	N/A	N/A
	Chloroform	0.002	mg/kg	N/A	N/A	M	1.13E-06	kg/kg-day	1.00E-02	mg/kg-day	N/A	N/A	2E-07
	Methylene chloride	4	mg/kg	N/A	N/A	M	1.13E-06	kg/kg-day	6.00E-02	mg/kg-day	N/A	N/A	8E-05
Inhalation	Arsenic	17.9	mg/kg	N/A	N/A	M	3.56E-11	kg/kg-day	N/A	mg/kg-day	N/A	N/A	N/A
	Chromium	25.2	mg/kg	N/A	N/A	M	3.56E-11	kg/kg-day	2.86E-05	mg/kg-day	N/A	N/A	3E-05
	Aldrin	0.420	mg/kg	N/A	N/A	M	3.56E-11	kg/kg-day	3.00E-05	mg/kg-day	N/A	N/A	5E-07
	Dieldrin	0.35	mg/kg	N/A	N/A	M	3.56E-11	kg/kg-day	N/A	mg/kg-day	N/A	N/A	N/A
	1,2-Dichloroethane	0.81	mg/kg	N/A	N/A	M	2.24E-05	kg/kg-day	2.86E-03	mg/kg-day	N/A	N/A	1
	Chloroform	0.002	mg/kg	N/A	N/A	M	3.35E-05	kg/kg-day	N/A	mg/kg-day	N/A	N/A	N/A
	Methylene chloride	4	mg/kg	N/A	N/A	M	3.61E-05	kg/kg-day	8.57E-01	mg/kg-day	N/A	N/A	2E-04
Dermal	Arsenic	17.9	mg/kg	N/A	N/A	M	2.89E-07	kg/kg-day	3.00E-04	mg/kg-day	N/A	N/A	0.017
	Chromium	25.2	mg/kg	N/A	N/A	M	2.89E-07	kg/kg-day	6.00E-04	mg/kg-day	N/A	N/A	0.012
	Aldrin	0.420	mg/kg	N/A	N/A	M	9.63E-07	kg/kg-day	1.50E-05	mg/kg-day	N/A	N/A	0.027
	Dieldrin	0.35	mg/kg	N/A	N/A	M	9.63E-07	kg/kg-day	2.50E-05	mg/kg-day	N/A	N/A	0.013
	1,2-Dichloroethane	0.81	mg/kg	N/A	N/A	M	9.63E-07	kg/kg-day	N/A	mg/kg-day	N/A	N/A	N/A
	Chloroform	0.002	mg/kg	N/A	N/A	M	9.63E-07	kg/kg-day	8.00E-03	mg/kg-day	N/A	N/A	2E-07
	Methylene chloride	4	mg/kg	N/A	N/A	M	9.63E-07	kg/kg-day	4.80E-02	mg/kg-day	N/A	N/A	8E-05
												Total Hazard Index Across All Exposure Routes/Pathways	1

See Table 35 for pathway-specific intake factor calculations.

EPC = Exposure point concentration
mg/kg = milligram per kilogram
N/A = Not applicable
M = Media-specific concentration
mg/cu. M = milligram per cubic meter

TABLE 65B
CALCULATION OF CANCER RISKS
REASONABLE MAXIMUM EXPOSURE
CEDAR CHEMICAL CORPORATION, WEST HELENA, ARKANSAS

Scenario Timeframe:	Future
Medium:	Soil
Exposure Medium:	Surface and Subsurface Soil
Exposure Point:	Site 2 Subsurface Soil
Receptor Population:	Construction Worker
Receptor Age:	Adult

Exposure Route	Chemical of Potential Concern	Medium EPC Value	Medium EPC Units	Route EPC Value	Route EPC Units	EPC Selected for Risk Calculation (1)	Intake (Cancer)	Intake (Cancer) Units	Cancer Slope Factor	Cancer Slope Factor Units	Cancer Risk
Ingestion	Arsenic	17.9	mg/kg	N/A	N/A	M	1.61E-08	kg/kg-day	1.50E+00	(mg/kg-day)$^{-1}$	4.32E-07
	Chromium	25.2	mg/kg	N/A	N/A	M	1.61E-08	kg/kg-day	N/A	(mg/kg-day)$^{-1}$	N/A
	Aldrin	0.420	mg/kg	N/A	N/A	M	1.61E-08	kg/kg-day	1.70E+01	(mg/kg-day)$^{-1}$	1.15E-07
	Dieldrin	0.06	mg/kg	N/A	N/A	M	1.61E-08	kg/kg-day	1.60E+01	(mg/kg-day)$^{-1}$	1.44E-08
	1,2-Dichloroethane	0.81	mg/kg	N/A	N/A	M	1.61E-08	kg/kg-day	9.10E-02	(mg/kg-day)$^{-1}$	1.19E-09
	Chloroform	0.002	mg/kg	N/A	N/A	M	1.61E-08	kg/kg-day	6.10E-03	(mg/kg-day)$^{-1}$	1.96E-13
	Methylene chloride	4	mg/kg	N/A	N/A	M	1.61E-08	kg/kg-day	7.50E-03	(mg/kg-day)$^{-1}$	4.83E-10
Inhalation	Arsenic	17.9	mg/kg	N/A	N/A	M	5.08E-13	kg/kg-day	1.51E+01	(mg/kg-day)$^{-1}$	1.37E-10
	Chromium	25.2	mg/kg	N/A	N/A	M	5.08E-13	kg/kg-day	4.10E+01	(mg/kg-day)$^{-1}$	5.24E-10
	Aldrin	0.420	mg/kg	N/A	N/A	M	5.08E-13	kg/kg-day	1.72E+01	(mg/kg-day)$^{-1}$	3.67E-12
	Dieldrin	0.06	mg/kg	N/A	N/A	M	5.08E-13	kg/kg-day	1.61E+01	(mg/kg-day)$^{-1}$	4.58E-13
	1,2-Dichloroethane	0.81	mg/kg	N/A	N/A	M	3.20E-07	kg/kg-day	9.10E-02	(mg/kg-day)$^{-1}$	2.36E-08
	Chloroform	0.002	mg/kg	N/A	N/A	M	4.79E-07	kg/kg-day	8.05E-02	(mg/kg-day)$^{-1}$	7.71E-11
	Methylene chloride	4	mg/kg	N/A	N/A	M	5.16E-07	kg/kg-day	1.65E-03	(mg/kg-day)$^{-1}$	3.41E-09
Dermal	Arsenic	17.9	mg/kg	N/A	N/A	M	4.13E-09	kg/kg-day	1.50E+00	(mg/kg-day)$^{-1}$	1.11E-07
	Chromium	25.2	mg/kg	N/A	N/A	M	4.13E-09	kg/kg-day	N/A	(mg/kg-day)$^{-1}$	N/A
	Aldrin	0.420	mg/kg	N/A	N/A	M	1.38E-09	kg/kg-day	8.50E+00	(mg/kg-day)$^{-1}$	4.93E-09
	Dieldrin	0.06	mg/kg	N/A	N/A	M	1.38E-09	kg/kg-day	8.00E+00	(mg/kg-day)$^{-1}$	6.18E-10
	1,2-Dichloroethane	0.81	mg/kg	N/A	N/A	M	1.38E-09	kg/kg-day	7.28E-02	(mg/kg-day)$^{-1}$	8.14E-11
	Chloroform	0.002	mg/kg	N/A	N/A	M	1.38E-09	kg/kg-day	4.88E-03	(mg/kg-day)$^{-1}$	1.35E-14
	Methylene chloride	4	mg/kg	N/A	N/A	M	1.38E-09	kg/kg-day	6.00E-03	(mg/kg-day)$^{-1}$	3.31E-11
										Total Risk Across All Exposure Routes/Pathways	7.1E-07

See Table 35 for pathway-specific intake factor calculations.

EPC = Exposure point concentration
mg/kg = milligram per kilogram
N/A = Not applicable
M = Medium-specific concentration

TABLE 65C
SUMMARY OF RECEPTOR RISKS AND HAZARDS FOR COPCs
REASONABLE MAXIMUM EXPOSURE
CEDAR CHEMICAL CORPORATION, WEST HELENA, ARKANSAS

Scenario Timeframe: Future
Receptor Population: Construction Worker
Receptor Age: Adult

Medium	Exposure Medium	Exposure Point	Chemical	Carcinogenic Risk				Chemical	Non-Carcinogenic Hazard Quotient			
				Ingestion	Inhalation	Dermal	Exposure Routes Total		Ingestion	Inhalation	Dermal	Exposure Routes Total
Soil	Surface and Subsurface Soil	Site 2	Arsenic	4E-07	1E-10	1E-07	5E-07	Arsenic	0.067	N/A	2E-02	0.08
			Chromium	N/A	5E-10	N/A	5E-10	Chromium	0.009	3E-05	1E-02	0.0216
			Aldrin	1E-07	4E-12	5E-09	1E-07	Aldrin	0.018	5E-07	3E-02	0.043
			Dieldrin	1E-08	5E-13	6E-10	2E-08	Dieldrin	0.008	N/A	1E-02	0.021
			1,2-Dichloroethane	1E-09	2E-08	8E-11	2E-08	1,2-Dichloroethane	N/A	1.33	N/A	1.33
			Chloroform	2E-13	8E-11	1E-14	8E-11	Chloroform	2E-07	N/A	2E-07	5E-07
			Methylene chloride	5E-10	3E-09	3E-11	4E-09	Methylene chloride	8E-05	2E-04	8E-05	3E-04
Groundwater	Perched Groundwater	Site 2	Arsenic	2E-07	N/A	6E-08	3E-07	Arsenic	0.031	N/A	0.013	0.044
			Barium	N/A	N/A	N/A	N/A	Barium	0.004	N/A	0.007	0.011
			Cadmium	N/A	N/A	N/A	N/A	Cadmium	0.003	N/A	0.007	0.010
			Chromium	N/A	N/A	N/A	N/A	Chromium	0.008	N/A	0.012	0.017
			4,4'-DDT	3E-10	N/A	3E-09	3E-09	4,4'-DDT	0.00013	N/A	0.045	0.045
			Alpha-BHC	3E-10	N/A	1E-10	5E-10	Alpha-BHC	N/A	N/A	N/A	N/A
			2,6-Dinitrotoluene	N/A	N/A	N/A	N/A	2,6-Dinitrotoluene	0.041	N/A	0.085	0.126
			3,4-Dichloroaniline	N/A	N/A	N/A	N/A	3,4-Dichloroaniline	3	N/A	69.246	72
			4-Chloroaniline	N/A	N/A	N/A	N/A	4-Chloroaniline	0.277	N/A	7	7
			bis(2-Chloroethyl)ether	1E-08	N/A	6E-10	2E-08	bis(2-Chloroethyl)ether	0.000094	N/A	0.00016	0.00026
			Dinoseb	N/A	N/A	N/A	N/A	Dinoseb	0.008	N/A	0.181	0.189
			1,2-Dichloroethane	7E-06	N/A	1E-05	2E-05	1,2-Dichloroethane	2	N/A	5	7
			4-Methyl-2-Pentanone (MIBK)	N/A	N/A	N/A	N/A	4-Methyl-2-Pentanone (MIBK)	0.005	N/A	0.009	0.014
			Acetone	N/A	N/A	N/A	N/A	Acetone	0.009	N/A	0.003	0.012
			Benzene	1E-09	N/A	9E-09	1E-08	Benzene	0.0011	N/A	0.011	0.013
			Chloroform	1E-08	N/A	3E-08	4E-08	Chloroform	0.013	N/A	0.060	0.073
			Methylene chloride	1E-05	N/A	2E-05	3E-05	Methylene chloride	2	N/A	4	6
			Trichloroethene	8E-10	N/A	4E-09	5E-09	Trichloroethene	0.001	N/A	0.007	0.008
							Total Risk Across[Soil]	7E-07	Total Hazard Index Across All Media and All Exposure Routes			95
							Total Risk Across[Groundwater]	5E-05				
							Total Risk Across All Media and All Exposure Routes	5E-05				

N/A = Not Applicable

TABLE 66A
CALCULATION OF NON-CANCER HAZARDS
REASONABLE MAXIMUM EXPOSURE
CEDAR CHEMICAL CORPORATION, WEST HELENA, ARKANSAS

Scenario Timeframe:	Current/Future
Medium:	Soil
Exposure Medium:	Surface Soil
Exposure Point:	Site 2 Surface Soil
Receptor Population:	Adult Worker
Receptor Age:	Adult

Exposure Route	Chemical of Potential Concern	Medium EPC Value	Medium EPC Units	Route EPC Value	Route EPC Units	EPC Selected for Hazard Calculation (1)	Intake (Non-Cancer)	Intake (Non-Cancer) Units	Reference Dose (2)	Reference Dose Units	Reference Concentration	Reference Concentration Units	Hazard Quotient
Ingestion	Aldrin	0.058	mg/kg	N/A	N/A	M	4.89E-07	kg/kg-day	3.00E-05	mg/kg-day	N/A	N/A	0.001
	Dinoseb	100	mg/kg	N/A	N/A	M	4.89E-07	kg/kg-day	1.00E-03	mg/kg-day	N/A	N/A	0.049
Inhalation	Aldrin	0.058	mg/kg	N/A	N/A	M	1.48E-10	kg/kg-day	N/A	mg/kg-day	N/A	N/A	N/A
	Dinoseb	100	mg/kg	N/A	N/A	M	1.48E-10	kg/kg-day	N/A	mg/kg-day	N/A	N/A	N/A
Dermal	Aldrin	0.058	mg/kg	N/A	N/A	M	4.01E-06	kg/kg-day	1.50E-05	mg/kg-day	N/A	N/A	0.016
	Dinoseb	100	mg/kg	N/A	N/A	M	4.01E-06	kg/kg-day	5.00E-04	mg/kg-day	N/A	N/A	0.802
												Total Hazard Index Across All Exposure Routes/Pathways	<1

See Table 45 for definitions and sources of equation variables for pathway-specific intake factor calculations.

EPC = Exposure point concentration
mg/kg = milligram per kilogram
N/A = Not applicable
M = Media-specific concentration
mg/cu. M = milligram per cubic meter

TABLE 66B
CALCULATION OF CANCER RISKS
REASONABLE MAXIMUM EXPOSURE
CEDAR CHEMICAL CORPORATION, WEST HELENA, ARKANSAS

Scenario Timeframe:	Future
Medium:	Soil
Exposure Medium:	Surface Soil
Exposure Point:	Site 2 Surface Soil
Receptor Population:	Adult Worker
Receptor Age:	Adult

Exposure Route	Chemical of Potential Concern	Medium EPC Value	Medium EPC Units	Route EPC Value	Route EPC Units	EPC Selected for Risk Calculation (1)	Intake (Cancer)	Intake (Cancer) Units	Cancer Slope Factor	Cancer Slope Factor Units	Cancer Risk
Ingestion	Aldrin	0.058	mg/kg	N/A	N/A	M	1.75E-07	kg/kg-day	1.70E+01	$(mg/kg\text{-}day)^{-1}$	1.72E-07
	Dinoseb	100	mg/kg	N/A	N/A	M	1.75E-07	kg/kg-day	N/A	$(mg/kg\text{-}day)^{-1}$	N/A
Inhalation	Aldrin	0.058	mg/kg	N/A	N/A	M	5.29E-11	kg/kg-day	1.72E+01	$(mg/kg\text{-}day)^{-1}$	5.27E-11
	Dinoseb	100	mg/kg	N/A	N/A	M	5.29E-11	kg/kg-day	N/A	$(mg/kg\text{-}day)^{-1}$	N/A
Dermal	Aldrin	0.058	mg/kg	N/A	N/A	M	1.43E-06	kg/kg-day	3.40E+01	$(mg/kg\text{-}day)^{-1}$	2.83E-06
	Dinoseb	100	mg/kg	N/A	N/A	M	1.43E-06	kg/kg-day	N/A	$(mg/kg\text{-}day)^{-1}$	N/A
										Total Risk Across All Exposure Routes/Pathways	3.0E-06

See Table 45 for definitions and sources of equation variables for pathway-specific intake factor calculations.

EPC = Exposure point concentration
mg/kg = milligram per kilogram
N/A = Not applicable
M = Medium-specific concentration

TABLE 66C
SUMMARY OF RECEPTOR RISKS AND HAZARDS FOR COPCs
REASONABLE MAXIMUM EXPOSURE
CEDAR CHEMICAL CORPORATION, WEST HELENA, ARKANSAS

Scenario Timeframe: Future
Receptor Population: Adult Worker
Receptor Age: Adult

Medium	Exposure Medium	Exposure Point	Chemical	Carcinogenic Risk				Chemical	Non-Carcinogenic Hazard Quotient			
				Ingestion	Inhalation	Dermal	Exposure Routes Total		Ingestion	Inhalation	Dermal	Exposure Routes Total
Soil	Surface Soil	Site 2	Aldrin	2E-07	5E-11	2.83E-06	3.0E-06	Aldrin	0.0009	N/A	0.02	0.016
			Dinoseb	N/A	N/A	N/A	N/A	Dinoseb	0.05	N/A	0.8	0.9
						Total Risk Across[Soil]	3.0E-06	Total Hazard Index Across All Media and All Exposure Routes				<1
						Total Risk Across All Media and All Exposure Routes	3.0E-06					

N/A = Not Applicable

TABLE 67A
CALCULATION OF NON-CANCER HAZARDS
REASONABLE MAXIMUM EXPOSURE
CEDAR CHEMICAL CORPORATION, WEST HELENA, ARKANSAS

Scenario Timeframe:	Future
Medium:	Soil
Exposure Medium:	Surface Soil
Exposure Point:	Site 2 Surface Soil
Receptor Population:	Trespasser
Receptor Age:	Adolescent

Exposure Route	Chemical of Potential Concern	Medium EPC Value	Medium EPC Units	Route EPC Value	Route EPC Units	EPC Selected for Hazard Calculation (1)	Intake (Non-Cancer)	Intake (Non-Cancer) Units	Reference Dose (2)	Reference Dose Units	Reference Concentration	Reference Concentration Units	Hazard Quotient
Ingestion	Aldrin	0.058	mg/kg	N/A	N/A	M	1.58E-07	kg/kg-day	3.00E-05	mg/kg-day	N/A	N/A	0.00031
	Dinoseb	100	mg/kg	N/A	N/A	M	1.58E-07	kg/kg-day	1.00E-03	mg/kg-day	N/A	N/A	0.016
Inhalation	Aldrin	0.058	mg/kg	N/A	N/A	M	3.08E-11	kg/kg-day	N/A	mg/kg-day	N/A	N/A	N/A
	Dinoseb	100	mg/kg	N/A	N/A	M	3.08E-11	kg/kg-day	N/A	mg/kg-day	N/A	N/A	N/A
Dermal	Aldrin	0.058	mg/kg	N/A	N/A	M	1.30E-06	kg/kg-day	1.50E-05	mg/kg-day	N/A	N/A	0.005
	Dinoseb	100	mg/kg	N/A	N/A	M	1.30E-06	kg/kg-day	5.00E-04	mg/kg-day	N/A	N/A	0.26
												Total Hazard Index Across All Exposure Routes/Pathways	<1

See Table 49 for definitions and sources of equation variables for pathway-specific intake factor calculations.

EPC = Exposure point concentration
mg/kg = milligram per kilogram
N/A = Not applicable
M = Media-specific concentration
mg/cu. M = milligram per cubic meter

TABLE 67B
CALCULATION OF CANCER RISKS
REASONABLE MAXIMUM EXPOSURE
CEDAR CHEMICAL CORPORATION, WEST HELENA, ARKANSAS

Scenario Timeframe:	Future
Medium:	Soil
Exposure Medium:	Surface Soil
Exposure Point:	Site 2 Surface Soil
Receptor Population:	Trespasser
Receptor Age:	Adolescent

Exposure Route	Chemical of Potential Concern	Medium EPC Value	Medium EPC Units	Route EPC Value	Route EPC Units	EPC Selected for Risk Calculation (1)	Intake (Cancer)	Intake (Cancer) Units	Cancer Slope Factor	Cancer Slope Factor Units	Cancer Risk
Ingestion	Aldrin	0.058	mg/kg	N/A	N/A	M	2.26E-08	kg/kg-day	1.70E+01	$(mg/kg\text{-}day)^{-1}$	2.23E-08
	Dinoseb	100	mg/kg	N/A	N/A	M	2.26E-08	kg/kg-day	N/A	$(mg/kg\text{-}day)^{-1}$	N/A
Inhalation	Aldrin	0.1	mg/kg	N/A	N/A	M	4.41E-12	kg/kg-day	1.72E+01	$(mg/kg\text{-}day)^{-1}$	4.38E-12
	Dinoseb	100.0	mg/kg	N/A	N/A	M	4.41E-12	kg/kg-day	N/A	$(mg/kg\text{-}day)^{-1}$	N/A
Dermal	Aldrin	0.058	mg/kg	N/A	N/A	M	1.85E-07	kg/kg-day	3.40E+01	$(mg/kg\text{-}day)^{-1}$	3.66E-07
	Dinoseb	100	mg/kg	N/A	N/A	M	1.85E-07	kg/kg-day	N/A	$(mg/kg\text{-}day)^{-1}$	N/A
										Total Risk Across All Exposure Routes/Pathways	3.9E-07

See Table 49 for definitions and sources of equation variables for pathway-specific intake factor calculations.

EPC = Exposure point concentration
mg/kg = milligram per kilogram
N/A = Not applicable
M = Medium-specific concentration

TABLE 67C
SUMMARY OF RECEPTOR RISKS AND HAZARDS FOR COPCs
REASONABLE MAXIMUM EXPOSURE
CEDAR CHEMICAL CORPORATION, WEST HELENA, ARKANSAS

Scenario Timeframe: Future
Receptor Population: Trespasser
Receptor Age: Adolescent

Medium	Exposure Medium	Exposure Point	Chemical	Carcinogenic Risk				Chemical	Non-Carcinogenic Hazard Quotient			
				Ingestion	Inhalation	Dermal	Exposure Routes Total		Ingestion	Inhalation	Dermal	Exposure Routes Total
Soil	Surface Soil	Site 2	Aldrin	2E-08	4E-12	4E-07	4E-07	Aldrin	0.0003	N/A	0.005	0.0053
			Dinoseb	N/A	N/A	N/A	N/A	Dinoseb	0.02	N/A	0.3	0.3
							Total Risk Across[Soil]	4E-07	Total Hazard Index Across All Media and All Exposure Routes			<1
							Total Risk Across All Media and All Exposure Routes	4E-07				

N/A = Not Applicable

TABLE 68A
CALCULATION OF NON-CANCER HAZARDS
REASONABLE MAXIMUM EXPOSURE
CEDAR CHEMICAL CORPORATION, WEST HELENA, ARKANSAS

Scenario Timeframe:	Future
Medium:	Soil
Exposure Medium:	Subsurface Soil
Exposure Point:	Site 3 Subsurface Soil
Receptor Population:	Construction Worker
Receptor Age:	Adult

Exposure Route	Chemical of Potential Concern	Medium EPC Value	Medium EPC Units	Route EPC Value	Route EPC Units	EPC Selected for Hazard Calculation	Intake (Non-Cancer)	Intake (Non-Cancer) Units	Reference Dose	Reference Dose Units	Reference Concentration	Reference Concentration Units	Hazard Quotient
Ingestion	Dinoseb	13000	mg/kg	N/A	N/A	M	1.13E-06	kg/kg-day	1.00E-03	mg/kg-day	N/A	N/A	15
Inhalation	Dinoseb	13000	mg/kg	N/A	N/A	M	3.56E-11	kg/kg-day	N/A	mg/kg-day	N/A	N/A	N/A
Dermal	Dinoseb	13000	mg/kg	N/A	N/A	M	9.63E-07	kg/kg-day	5.00E-04	mg/kg-day	N/A	N/A	25
												Total Hazard Index Across All Exposure Routes/Pathways	40

See Table 35 for definitions and sources of equation variables for pathway-specific intake factor calculations.

EPC = Exposure point concentration
mg/kg = milligram per kilogram
N/A = Not applicable
M = Media-specific concentration
mg/cu. M = milligram per cubic meter

TABLE 68B
CALCULATION OF CANCER RISKS
REASONABLE MAXIMUM EXPOSURE
CEDAR CHEMICAL CORPORATION, WEST HELENA, ARKANSAS

Scenario Timeframe:	Future
Medium:	Soil
Exposure Medium:	Subsurface Soil
Exposure Point:	Site 3 Subsurface Soil
Receptor Population:	Construction Worker
Receptor Age:	Adult

Exposure Route	Chemical of Potential Concern	Medium EPC Value	Medium EPC Units	Route EPC Value	Route EPC Units	EPC Selected for Risk Calculation (1)	Intake (Cancer)	Intake (Cancer) Units	Cancer Slope Factor	Cancer Slope Factor Units	Cancer Risk
Ingestion	Dinoseb	13000	mg/kg	N/A	N/A	M	1.61E-08	kg/kg-day	N/A	$(mg/kg\text{-}day)^{-1}$	N/A
Inhalation	Dinoseb	13000	mg/kg	N/A	N/A	M	5.08E-13	kg/kg-day	N/A	$(mg/kg\text{-}day)^{-1}$	N/A
Dermal	Dinoseb	13000	mg/kg	N/A	N/A	M	1.38E-08	kg/kg-day	N/A	$(mg/kg\text{-}day)^{-1}$	N/A
										Total Risk Across All Exposure Routes/Pathways	N/A

See Table 35 for definitions and sources of equation variables for pathway-specific intake factor calculations.

EPC = Exposure point concentration
mg/kg = milligram per kilogram
N/A = Not applicable
M = Medium-specific concentration

TABLE 68C
CALCULATION OF NON-CANCER HAZARDS
REASONABLE MAXIMUM EXPOSURE
CEDAR CHEMICAL CORPORATION, WEST HELENA, ARKANSAS

Scenario Timeframe:	Future
Medium:	Sediment
Exposure Medium:	Sediment
Exposure Point:	Site 3
Receptor Population:	Construction Worker
Receptor Age:	Adult

Exposure Route	Chemical of Potential Concern	Medium EPC Value	Medium EPC Units	Route EPC Value	Route EPC Units	EPC Selected for Hazard Calculation (1)	Intake (Non-Cancer)	Intake (Non-Cancer) Units	Reference Dose (2)	Reference Dose Units	Reference Concentration	Reference Concentration Units	Hazard Quotient
Ingestion	Arsenic	8.36	mg/kg	N/A	N/A	M	1.2E-07	kg/kg-day	3.0E-04	mg/kg-day	N/A	N/A	0.0033
	Aldrin	0.011	mg/kg	N/A	N/A	M	1.2E-07	kg/kg-day	5.0E-05	mg/kg-day	N/A	N/A	0.000026
	Dieldrin	0.25	mg/kg	N/A	N/A	M	1.2E-07	kg/kg-day	5.0E-05	mg/kg-day	N/A	N/A	0.00058
	Toxaphene	1.6	mg/kg	N/A	N/A	M	1.2E-07	kg/kg-day	N/A	mg/kg-day	N/A	N/A	N/A
	Pentachlorophenol	5.3	mg/kg	N/A	N/A	M	1.2E-07	kg/kg-day	3.0E-02	mg/kg-day	N/A	N/A	0.000021
Dermal	Arsenic	8	mg/kg	N/A	N/A	M	2.9E-07	kg/kg-day	6.0E-05	mg/kg-day	N/A	N/A	0.04
	Aldrin	0.011	mg/kg	N/A	N/A	M	9.6E-07	kg/kg-day	1.5E-05	mg/kg-day	N/A	N/A	0.0007
	Dieldrin	0.25	mg/kg	N/A	N/A	M	9.6E-07	kg/kg-day	2.5E-05	mg/kg-day	N/A	N/A	0.0094
	Toxaphene	1.6	mg/kg	N/A	N/A	M	9.6E-07	kg/kg-day	N/A	mg/kg-day	N/A	N/A	N/A
	Pentachlorophenol	5.3	mg/kg	N/A	N/A	M	2.4E-06	kg/kg-day	1.5E-02	mg/kg-day	N/A	N/A	0.00085
													<1

See Table 39 for definitions, sources of equation variables for pathway-specific intake factor calculations.

EPC = Exposure point concentration
mg/kg = milligram per kilogram
N/A = Not applicable
M = Media-specific concentration
mg/cu. M = milligram per cubic meter

TABLE 68D
CALCULATION OF CANCER RISKS
REASONABLE MAXIMUM EXPOSURE
CEDAR CHEMICAL CORPORATION, WEST HELENA, ARKANSAS

Scenario Timeframe:	Future
Medium:	Sediment
Exposure Medium:	Sediment
Exposure Point:	Site 3
Receptor Population:	Construction Worker
Receptor Age:	Adult

Exposure Route	Chemical of Potential Concern	Medium EPC Value	Medium EPC Units	Route EPC Value	Route EPC Units	Selected for Risk Calculation	Intake (Cancer)	Intake (Cancer) Units	Cancer Slop Factor	Cancer Slope Factor Units	Cancer Risk
Ingestion	Arsenic	8.36	mg/kg	N/A	N/A	M	1.7E-09	kg/kg-day	1.5E+00	$(mg/kg\text{-}day)^{-1}$	2.10E-08
	Aldrin	0.011	mg/kg	N/A	N/A	M	1.7E-09	kg/kg-day	1.7E+01	$(mg/kg\text{-}day)^{-1}$	3.10E-10
	Dieldrin	0.25	mg/kg	N/A	N/A	M	1.7E-09	kg/kg-day	1.6E+01	$(mg/kg\text{-}day)^{-1}$	6.58E-09
	Toxaphene	1.6	mg/kg	N/A	N/A	M	1.7E-09	kg/kg-day	1.1E+00	$(mg/kg\text{-}day)^{-1}$	2.95E-09
	Pentachlorophenol	5.3	mg/kg	N/A	N/A	M	1.7E-09	kg/kg-day	1.2E-01	$(mg/kg\text{-}day)^{-1}$	1.07E-09
Dermal	Arsenic	8	mg/kg	N/A	N/A	M	4.1E-09	kg/kg-day	7.5E+00	$(mg/kg\text{-}day)^{-1}$	2.59E-07
	Aldrin	0.011	mg/kg	N/A	N/A	M	1.4E-08	kg/kg-day	3.4E+01	$(mg/kg\text{-}day)^{-1}$	5.08E-09
	Dieldrin	0.25	mg/kg	N/A	N/A	M	1.4E-08	kg/kg-day	3.2E+01	$(mg/kg\text{-}day)^{-1}$	1.08E-07
	Toxaphene	1.6	mg/kg	N/A	N/A	M	1.4E-08	kg/kg-day	2.2E+00	$(mg/kg\text{-}day)^{-1}$	4.84E-08
	Pentachlorophenol	5.3	mg/kg	N/A	N/A	M	3.4E-08	kg/kg-day	2.4E-01	$(mg/kg\text{-}day)^{-1}$	4.37E-08
										Total Risk Across All Exposure Routes/Pathways	5E-07

See Table 39 for definitions, sources of equation variables for pathway-specific intake factor calculations.

EPC = Exposure point concentration
mg/kg = milligram per kilogram
N/A = Not applicable
M = Medium-specific concentration
ND = No data available

TABLE 68E
SUMMARY OF RECEPTOR RISKS AND HAZARDS FOR COPCs
REASONABLE MAXIMUM EXPOSURE
CEDAR CHEMICAL CORPORATION, WEST HELENA, ARKANSAS

Scenario Timeframe: Future
Receptor Population: Construction Worker
Receptor Age: Adult

Medium	Exposure Medium	Exposure Point	Chemical	Carcinogenic Risk				Chemical	Non-Carcinogenic Hazard Quotient			
				Ingestion	Inhalation	Dermal	Exposure Routes Total		Ingestion	Inhalation	Dermal	Exposure Routes Total
Soil	Subsurface Soil	Site 3	Dinoseb	N/A	N/A	N/A	N/A	Dinoseb	15	N/A	25	40
Sediment	Sediment	Site 3	Arsenic	2E-08	N/A	3E-07	3E-07	Arsenic	0.0033	N/A	0.04	0.044
			Aldrin	3E-10	N/A	5E-09	N/A	Aldrin	0.000026	N/A	0.0007	0.00073
			Dieldrin	7E-09	N/A	1E-07	1E-07	Dieldrin	0.0006	N/A	0.0094	0.01
			Toxaphene	3E-09	N/A	5E-08	5E-08	Toxaphene	N/A	N/A	N/A	N/A
			Pentachlorophenol	1E-09	N/A	4E-08	N/A	Pentachlorophenol	0.000021	N/A	0.00085	0.00087
						Total Risk Across[Soil]	N/A	tal Hazard Index Across All Media and All Exposure Routes				40
						Total Risk Across All Media and All Exposure Routes	5E-07					

N/A = Not Applicable

TABLE 69A
CALCULATION OF NON-CANCER HAZARDS
REASONABLE MAXIMUM EXPOSURE
CEDAR CHEMICAL CORPORATION, WEST HELENA, ARKANSAS

Scenario Timefram	Future
Medium:	Sediment
Exposure Medium:	Sediment
Exposure Point:	Site 3
Receptor Populatio	Trespasser
Receptor Age:	Adolescent

Exposure Route	Chemical of Potential Concern	Medium EPC Value	Medium EPC Units	Route EPC Value	Route EPC Units	EPC Selected for Hazard Calculation (1)	Intake (Non-Cancer)	Intake Non-Cancer Units	Reference Dose (2)	Reference Dose Units	Reference Concentration	Reference Concentration Units	Hazard Quotient
Ingestion	Arsenic	8.36	mg/kg	N/A	N/A	M	3.2E-07	kg/kg-day	3.0E-04	mg/kg-day	N/A	N/A	0.009
	Aldrin	0.011	mg/kg	N/A	N/A	M	3.2E-07	kg/kg-day	5.0E-05	mg/kg-day	N/A	N/A	0.000069
	Dieldrin	0.25	mg/kg	N/A	N/A	M	3.2E-07	kg/kg-day	5.0E-05	mg/kg-day	N/A	N/A	0.002
	Toxaphene	1.6	mg/kg	N/A	N/A	M	3.2E-07	kg/kg-day	N/A	mg/kg-day	N/A	N/A	N/A
	Pentachlorophenol	5.3	mg/kg	N/A	N/A	M	3.2E-07	kg/kg-day	3.0E-02	mg/kg-day	N/A	N/A	0.000056
Dermal	Arsenic	8	mg/kg	N/A	N/A	M	3.9E-07	kg/kg-day	6.0E-05	mg/kg-day	N/A	N/A	0.054
	Aldrin	0.011	mg/kg	N/A	N/A	M	1.3E-06	kg/kg-day	1.5E-05	mg/kg-day	N/A	N/A	0.00094
	Dieldrin	0.25	mg/kg	N/A	N/A	M	1.3E-06	kg/kg-day	2.5E-05	mg/kg-day	N/A	N/A	0.013
	Toxaphene	1.6	mg/kg	N/A	N/A	M	1.3E-06	kg/kg-day	N/A	mg/kg-day	N/A	N/A	N/A
	Pentachlorophenol	5.3	mg/kg	N/A	N/A	M	3.2E-06	kg/kg-day	1.5E-02	mg/kg-day	N/A	N/A	0.0011
												Total Hazard Index Across All Exposure Routes/Pathways	<1

See Table 53 for definitions, sources of equation variables for pathway-specific intake factor calculations.

EPC = Exposure point concentration
mg/kg = milligram per kilogram
N/A = Not applicable
M = Media-specific concentration
mg/cu. M = milligram per cubic meter

TABLE 69B
CALCULATION OF CANCER RISKS
REASONABLE MAXIMUM EXPOSURE
CEDAR CHEMICAL CORPORATION, WEST HELENA, ARKANSAS

Scenario Timeframe	Future
Medium:	Sediment
Exposure Medium:	Sediment
Exposure Point:	Site 3
Receptor Population	Trespasser
Receptor Age:	Adolescent

Exposure Route	Chemical of Potential Concern	Medium EPC Value	Medium EPC Units	Route EPC Value	Route EPC Units	EPC Selected for Risk Calculation (1)	Intake (Cancer)	Intake (Cancer) Units	Cancer Slop Factor	Cancer Slope Factor Units	Cancer Risk
Ingestion	Arsenic	8.36	mg/kg	N/A	N/A	M	4.5E-08	kg/kg-day	1.50E+00	$(mg/kg-day)^{-1}$	5.67E-07
	Aldrin	0.011	mg/kg	N/A	N/A	M	4.5E-08	kg/kg-day	1.70E+01	$(mg/kg-day)^{-1}$	8.46E-09
	Dieldrin	0.25	mg/kg	N/A	N/A	M	4.5E-08	kg/kg-day	1.60E+01	$(mg/kg-day)^{-1}$	1.81E-07
	Toxaphene	1.6	mg/kg	N/A	N/A	M	4.5E-08	kg/kg-day	1.10E+00	$(mg/kg-day)^{-1}$	7.96E-08
	Pentachlorophenol	5.3	mg/kg	N/A	N/A	M	4.5E-08	kg/kg-day	1.20E-01	$(mg/kg-day)^{-1}$	2.88E-08
Dermal	Arsenic	8	mg/kg	N/A	N/A	M	5.6E-08	kg/kg-day	7.50E+00	$(mg/kg-day)^{-1}$	3.49E-06
	Aldrin	0.011	mg/kg	N/A	N/A	M	1.9E-07	kg/kg-day	3.40E+01	$(mg/kg-day)^{-1}$	6.92E-08
	Dieldrin	0.25	mg/kg	N/A	N/A	M	4.6E-07	kg/kg-day	3.20E+01	$(mg/kg-day)^{-1}$	3.68E-06
	Toxaphene	1.6	mg/kg	N/A	N/A	M	4.6E-07	kg/kg-day	2.20E+00	$(mg/kg-day)^{-1}$	1.62E-06
	Pentachlorophenol	5.3	mg/kg	N/A	N/A	M	4.6E-07	kg/kg-day	2.40E-01	$(mg/kg-day)^{-1}$	5.90E-07
											1.0E-05

See Table 53 for definitions, sources of equation variables for pathway-specific intake factor calculations.

EPC = Exposure point concentration
mg/kg = milligram per kilogram
N/A = Not applicable
M = Medium-specific concentration
ND = No data available

TABLE 69C
SUMMARY OF RECEPTOR RISKS AND HAZARDS FOR COPCs
REASONABLE MAXIMUM EXPOSURE
CEDAR CHEMICAL CORPORATION, WEST HELENA, ARKANSAS

Scenario Timeframe: Future
Receptor Population: Trespasser
Receptor Age: Adult

Medium	Exposure Medium	Exposure Point	Chemical	Carcinogenic Risk				Chemical	Non-Carcinogenic Hazard Quotient			
				Ingestion	Inhalation	Dermal	Exposure Routes Total		Ingestion	Inhalation	Dermal	Exposure Routes Total
Sediment	Sediment	Site 3	Arsenic	6E-07	N/A	3E-06	4E-06	Arsenic	0.0088	N/A	0.05	0.063
			Aldrin	8E-09	N/A	7E-08	N/A	Aldrin	0.000069	N/A	0.0009	0.00101
			Dieldrin	2E-07	N/A	4E-06	4E-06 1E-07	Dieldrin	0.0020	N/A	0.0130	0.02
			Toxaphene	8E-08	N/A	2E-06	2E-06 5E-08	Toxaphene	N/A	N/A	N/A	N/A
			Pentachlorophenol	3E-08	N/A	6E-07	N/A	Pentachlorophenol	0.000056	N/A	0.00115	0.00120
							Total Risk Across[Soil] N/A					Total Hazard Index Across All Media and All Exposure Routes <1
							Total Risk Across All Media and All Exposure Routes ~~4E-06~~					

10E-06
1E-05

N/A = Not Applicable

4E-06
7E-08
1E-07
2E-06
6E-07

4 E-06
0.07 E-06
0.1
2
0.6
6.7

TABLE 70A
CALCULATION OF NON-CANCER HAZARDS
REASONABLE MAXIMUM EXPOSURE
CEDAR CHEMICAL CORPORATION, WEST HELENA, ARKANSAS

Scenario Timeframe:	Future
Medium:	Soil
Exposure Medium:	Surface and Subsurface Soil
Exposure Point:	Site 4 Subsurface Soil
Receptor Population:	Construction Worker
Receptor Age:	Adult

Exposure Route	Chemical of Potential Concern	Medium EPC Value	Medium EPC Units	Route EPC Value	Route EPC Units	EPC Selected for Hazard Calculation	Intake (Non-Cancer)	Intake (Non-Cancer) Units	Reference Dose	Reference Dose Units	Reference Concentration	Reference Concentration Units	Hazard Quotient
Ingestion	Arsenic	6.1	mg/kg	N/A	N/A	M	1.13E-06	kg/kg-day	3.00E-04	mg/kg-day	N/A	N/A	0.023
	Dieldrin	0.037	mg/kg	N/A	N/A	M	1.13E-06	kg/kg-day	5.00E-05	mg/kg-day	N/A	N/A	0.00083
	3,4- Dichloroaniline	12000	mg/kg	N/A	N/A	M	1.13E-06	kg/kg-day	4.00E-03	mg/kg-day	N/A	N/A	3.4
	Dinoseb	1100	mg/kg	N/A	N/A	M	1.13E-06	kg/kg-day	1.00E-03	mg/kg-day	N/A	N/A	1.2
	1,2-Dichloroethane	0.34	mg/kg	N/A	N/A	M	1.13E-06	kg/kg-day	N/A	mg/kg-day	N/A	N/A	N/A
Inhalation	Arsenic	6.1	mg/kg	N/A	N/A	M	3.56E-11	kg/kg-day	N/A	mg/kg-day	N/A	N/A	N/A
	Dieldrin	0.037	mg/kg	N/A	N/A	M	3.56E-11	kg/kg-day	N/A	mg/kg-day	N/A	N/A	N/A
	3,4- Dichloroaniline	12000	mg/kg	N/A	N/A	M	3.56E-11	kg/kg-day	N/A	mg/kg-day	N/A	N/A	N/A
	Dinoseb	1100	mg/kg	N/A	N/A	M	3.56E-11	kg/kg-day	N/A	mg/kg-day	N/A	N/A	N/A
	1,2-Dichloroethane	0.34	mg/kg	N/A	N/A	M	2.24E-05	kg/kg-day	2.86E-03	mg/kg-day	N/A	N/A	0.00262
Dermal	Arsenic	6.1	mg/kg	N/A	N/A	M	2.89E-07	kg/kg-day	3.00E-04	mg/kg-day	N/A	N/A	0.0059
	Dieldrin	0.037	mg/kg	N/A	N/A	M	9.63E-07	kg/kg-day	2.50E-05	mg/kg-day	N/A	N/A	0.0014
	3,4- Dichloroaniline	12000	mg/kg	N/A	N/A	M	9.63E-07	kg/kg-day	2.00E-03	mg/kg-day	N/A	N/A	5.8
	Dinoseb	1100	mg/kg	N/A	N/A	M	9.63E-07	kg/kg-day	5.00E-04	mg/kg-day	N/A	N/A	2.1
	1,2-Dichloroethane	0.34	mg/kg	N/A	N/A	M	9.63E-07	kg/kg-day	N/A	mg/kg-day	N/A	N/A	N/A
												Total Hazard Index Across All Exposure Routes/Pathways	13

See Table 35 for definitions and sources of equation variables for pathway-specific intake factor calculations.

EPC = Exposure point concentration
mg/kg = milligram per kilogram
N/A = Not applicable
M = Media-specific concentration
mg/cu. M = milligram per cubic meter

TABLE 70B
CALCULATION OF CANCER RISKS
REASONABLE MAXIMUM EXPOSURE
CEDAR CHEMICAL CORPORATION, WEST HELENA, ARKANSAS

Scenario Timeframe:	Future
Medium:	Soil
Exposure Medium:	Surface and Subsurface Soil
Exposure Point:	Site 4 Subsurface Soil
Receptor Population:	Construction Worker
Receptor Age:	Adult

Exposure Route	Chemical of Potential Concern	Medium EPC Value	Medium EPC Units	Route EPC Value	Route EPC Units	EPC Selected for Risk Calculation (1)	Intake (Cancer)	Intake (Cancer) Units	Cancer Slope Factor	Cancer Slope Factor Units	Cancer Risk
Ingestion	Arsenic	6.11	mg/kg	N/A	N/A	M	1.61E-08	kg/kg-day	1.50E+00	(mg/kg-day) $^{-1}$	1.48E-07
	Dieldrin	0.037	mg/kg	N/A	N/A	M	1.61E-08	kg/kg-day	1.60E+01	(mg/kg-day) $^{-1}$	9.52E-09
	3,4-Dichloroethane	12000	mg/kg	N/A	N/A	M	1.61E-08	kg/kg-day	N/A	(mg/kg-day) $^{-1}$	N/A
	Dinoseb	1100	mg/kg	N/A	N/A	M	1.61E-08	kg/kg-day	N/A	(mg/kg-day) $^{-1}$	N/A
	1,2-Dichloroethane	0.34	mg/kg	N/A	N/A	M	1.61E-08	kg/kg-day	9.10E-02	(mg/kg-day) $^{-1}$	4.91E-10
Inhalation	Arsenic	6.1	mg/kg	N/A	N/A	M	5.08E-13	kg/kg-day	1.51E+01	(mg/kg-day) $^{-1}$	4.67E-11
	Dieldrin	0.037	mg/kg	N/A	N/A	M	5.08E-13	kg/kg-day	1.61E+01	(mg/kg-day) $^{-1}$	3.02E-13
	3,4-Dichloroethane	12000	mg/kg	N/A	N/A	M	5.08E-13	kg/kg-day	N/A	(mg/kg-day) $^{-1}$	N/A
	Dinoseb	1100	mg/kg	N/A	N/A	M	5.08E-13	kg/kg-day	N/A	(mg/kg-day) $^{-1}$	N/A
	1,2-Dichloroethane	0.34	mg/kg	N/A	N/A	M	3.20E-07	kg/kg-day	9.10E-02	(mg/kg-day) $^{-1}$	9.76E-09
Dermal	Arsenic	6.1	mg/kg	N/A	N/A	M	4.13E-09	kg/kg-day	1.5	(mg/kg-day) $^{-1}$	3.79E-08
	Dieldrin	0.037	mg/kg	N/A	N/A	M	1.38E-08	kg/kg-day	8	(mg/kg-day) $^{-1}$	4.08E-09
	3,4-Dichloroethane	12000	mg/kg	N/A	N/A	M	1.38E-08	kg/kg-day	N/A	(mg/kg-day) $^{-1}$	N/A
	Dinoseb	1100	mg/kg	N/A	N/A	M	1.38E-08	kg/kg-day	N/A	(mg/kg-day) $^{-1}$	N/A
	1,2-Dichloroethane	0.34	mg/kg	N/A	N/A	M	1.38E-08	kg/kg-day	7.28E-02	(mg/kg-day) $^{-1}$	3.37E-10
										Total Risk Across All Exposure Routes/Pathways	2.1E-07

See Table 35 for definitions and sources of equation variables for pathway-specific intake factor calculations.

EPC = Exposure point concentration
mg/kg = milligram per kilogram
N/A = Not applicable
M = Medium-specific concentration

TABLE 70C
SUMMARY OF RECEPTOR RISKS AND HAZARDS FOR COPCs
REASONABLE MAXIMUM EXPOSURE
CEDAR CHEMICAL CORPORATION, WEST HELENA, ARKANSAS

Scenario Timeframe: Future
Receptor Population: Construction Worker
Receptor Age: Adult

Medium	Exposure Medium	Exposure Point	Chemical	Carcinogenic Risk				Chemical	Non-Carcinogenic Hazard Quotient			
				Ingestion	Inhalation	Dermal	Exposure Routes Total		Ingestion	Inhalation	Dermal	Exposure Routes Total
Soil	Surface and Subsurface Soil	Site 4	Arsenic	1.5E-07	4.7E-11	3.8E-08	2E-07	Arsenic	0.023	N/A	0.006	0.03
			Dieldrin	9.5E-09	3.0E-13	4.1E-09	1E-08	Dieldrin	0.001	N/A	0.001	0.002
			3,4-Dichloroaniline	N/A	N/A	N/A	N/A	3,4- Dichloroaniline	3.4	N/A	5.8	9.2
			Dinoseb	N/A	N/A	N/A	N/A	Dinoseb	1.2	N/A	2.1	3.30
			1,2-Dichloroethane	4.9E-10	9.8E-09	3.4E-10	1E-08	1,2-Dichloroethane	N/A	0.003	N/A	0.003
						Total Risk Across[Soil]	2E-07	otal Hazard Index Across All Media and All Exposure Routes				13
						Total Risk Across All Media and All Exposure Routes	2E-07					

TABLE 71A
CALCULATION OF NON-CANCER HAZARDS
REASONABLE MAXIMUM EXPOSURE
CEDAR CHEMICAL CORPORATION, WEST HELENA, ARKANSAS

Scenario Timeframe:	Current/Future
Medium:	Soil
Exposure Medium:	Surface Soil
Exposure Point:	Site 4 Surface Soil
Receptor Population:	Adult Worker
Receptor Age:	Adult

Exposure Route	Chemical of Potential Concern	Medium EPC Value	Medium EPC Units	Route EPC Value	Route EPC Units	EPC Selected for Hazard Calculation (1)	Intake (Non-Cancer)	Intake (Non-Cancer) Units	Reference Dose (2)	Reference Dose Units	Reference Concentration	Reference Concentration Units	Hazard Quotient
Ingestion	Dieldrin	0.46	mg/kg	N/A	N/A	M	1.83E-07	kg/kg-day	2.86E-03	mg/kg-day	N/A	N/A	0.00003
	Dinoseb	248	mg/kg	N/A	N/A	M	1.83E-07	kg/kg-day	1.00E-03	mg/kg-day	N/A	N/A	0.05
Inhalation	Dieldrin	0.46	mg/kg	N/A	N/A	M	5.56E-11	kg/kg-day	N/A	mg/kg-day	N/A	N/A	N/A
	Dinoseb	248	mg/kg	N/A	N/A	M	5.56E-11	kg/kg-day	N/A	mg/kg-day	N/A	N/A	N/A
Dermal	Dieldrin	0.46	mg/kg	N/A	N/A	M	1.50E-06	kg/kg-day	2.50E-05	mg/kg-day	N/A	N/A	0.027
	Dinoseb	248	mg/kg	N/A	N/A	M	1.50E-06	kg/kg-day	5.00E-04	mg/kg-day	N/A	N/A	0.747
												Total Hazard Index Across All Exposure Routes/Pathways	<1

See Table 45 for definitions and sources of equation variables for pathway-specific intake factor calculations.

EPC = Exposure point concentration
mg/kg = milligram per kilogram
N/A = Not applicable
M = Media-specific concentration
mg/cu. M = milligram per cubic meter

TABLE 71B
CALCULATION OF CANCER RISKS
REASONABLE MAXIMUM EXPOSURE
CEDAR CHEMICAL CORPORATION, WEST HELENA, ARKANSAS

Scenario Timeframe:	Future
Medium:	Soil
Exposure Medium:	Surface Soil
Exposure Point:	Site 4 Surface Soil
Receptor Population:	Adult Worker
Receptor Age:	Adult

Exposure Route	Chemical of Potential Concern	Medium EPC Value	Medium EPC Units	Route EPC Value	Route EPC Units	EPC Selected for Risk Calculation (1)	Intake (Cancer)	Intake (Cancer) Units	Cancer Slope Factor	Cancer Slope Factor Units	Cancer Risk
Ingestion	Dieldrin	0.46	mg/kg	N/A	N/A	M	6.55E-08	kg/kg-day	1.60E+01	$(mg/kg\text{-}day)^{-1}$	4.77E-07
	Dinoseb	248	mg/kg	N/A	N/A	M	6.55E-08	kg/kg-day	N/A	$(mg/kg\text{-}day)^{-1}$	N/A
Inhalation	Dieldrin	0.46	mg/kg	N/A	N/A	M	1.99E-11	kg/kg-day	1.60E+01	$(mg/kg\text{-}day)^{-1}$	1.45E-10
	Dinoseb	248	mg/kg	N/A	N/A	M	1.99E-11	kg/kg-day	N/A	$(mg/kg\text{-}day)^{-1}$	N/A
Dermal	Dieldrin	0.46	mg/kg	N/A	N/A	M	5.37E-07	kg/kg-day	3.20E+01	$(mg/kg\text{-}day)^{-1}$	7.82E-06
	Dinoseb	248	mg/kg	N/A	N/A	M	5.37E-07	kg/kg-day	N/A	$(mg/kg\text{-}day)^{-1}$	N/A
										Total Risk Across All Exposure Routes/Pathways	8.3E-06

See Table 45 for definitions and sources of equation variables for pathway-specific intake factor calculations.

EPC = Exposure point concentration
mg/kg = milligram per kilogram
N/A = Not applicable
M = Medium-specific concentration
ND = No data available

TABLE 71C
SUMMARY OF RECEPTOR RISKS AND HAZARDS FOR COPCs
REASONABLE MAXIMUM EXPOSURE
CEDAR CHEMICAL CORPORATION, WEST HELENA, ARKANSAS

Scenario Timeframe: Future
Receptor Population: Adult Worker
Receptor Age: Adult

Medium	Exposure Medium	Exposure Point	Chemical	Carcinogenic Risk				Chemical	Non-Carcinogenic Hazard Quotient			
				Ingestion	Inhalation	Dermal	Exposure Routes Total		Ingestion	Inhalation	Dermal	Exposure Routes Total
Soil	Surface Soil	Site 4	Dieldrin	5E-07	1E-10	8E-06	8E-06	Dieldrin	0.00003	N/A	0.03	0.03
			Dinoseb	N/A	N/A	N/A	N/A	Dinoseb	0.05	N/A	1	1
							Total Risk Across[Soil]	8E-06				Total Hazard Index Across All Media and All Exposure Routes	<1
							Total Risk Across All Media and All Exposure Routes	8E-06					

N/A = Not Applicable

TABLE 72A
CALCULATION OF NON-CANCER HAZARDS
REASONABLE MAXIMUM EXPOSURE
CEDAR CHEMICAL CORPORATION, WEST HELENA, ARKANSAS

Scenario Timeframe:	Future
Medium:	Soil
Exposure Medium:	Surface Soil
Exposure Point:	Site 4 Surface Soil
Receptor Population:	Trespasser
Receptor Age:	Adolescent

Exposure Route	Chemical of Potential Concern	Medium EPC Value	Medium EPC Units	Route EPC Value	Route EPC Units	EPC Selected for Hazard Calculation (1)	Intake (Non-Cancer)	Intake (Non-Cancer) Units	Reference Dose (2)	Reference Dose Units	Reference Concentration	Reference Concentration Units	Hazard Quotient
Ingestion	Dieldrin	0.46	mg/kg	N/A	N/A	M	1.58E-07	kg/kg-day	5.00E-05	mg/kg-day	N/A	N/A	0.0014
	Dinoseb	248	mg/kg	N/A	N/A	M	1.58E-07	kg/kg-day	1.00E-03	mg/kg-day	N/A	N/A	0.039
Inhalation	Dieldrin	0.46	mg/kg	N/A	N/A	M	3.08E-11	kg/kg-day	N/A	mg/kg-day	N/A	N/A	N/A
	Dinoseb	248	mg/kg	N/A	N/A	M	3.08E-11	kg/kg-day	N/A	mg/kg-day	N/A	N/A	N/A
Dermal	Dieldrin	0.46	mg/kg	N/A	N/A	M	1.30E-06	kg/kg-day	2.50E-05	mg/kg-day	N/A	N/A	0.024
	Dinoseb	248	mg/kg	N/A	N/A	M	1.30E-06	kg/kg-day	5.00E-04	mg/kg-day	N/A	N/A	0.645
												Total Hazard Index Across All Exposure Routes/Pathways	<1

See Table 49 for definitions and sources of equation variables for pathway-specific intake factor calculations.

EPC = Exposure point concentration
mg/kg = milligram per kilogram
N/A = Not applicable
M = Media-specific concentration
mg/cu. M = milligram per cubic meter

TABLE 72B
CALCULATION OF CANCER RISKS
REASONABLE MAXIMUM EXPOSURE
CEDAR CHEMICAL CORPORATION, WEST HELENA, ARKANSAS

Scenario Timeframe:	Future
Medium:	Soil
Exposure Medium:	Surface Soil
Exposure Point:	Site 4 Surface Soil
Receptor Population:	Trespasser
Receptor Age:	Adolescent

Exposure Route	Chemical of Potential Concern	Medium EPC Value	Medium EPC Units	Route EPC Value	Route EPC Units	EPC Selected for Risk Calculation (1)	Intake (Cancer)	Intake (Cancer) Units	Cancer Slope Factor	Cancer Slope Factor Units	Cancer Risk
Ingestion	Dieldrin	0.46	mg/kg	N/A	N/A	M	2.26E-08	kg/kg-day	1.60E+01	$(mg/kg\text{-}day)^{-1}$	1.65E-07
	Dinoseb	248	mg/kg	N/A	N/A	M	2.26E-08	kg/kg-day	N/A	$(mg/kg\text{-}day)^{-1}$	N/A
Inhalation	Dieldrin	0.46	mg/kg	N/A	N/A	M	4.41E-12	kg/kg-day	1.60E+01	$(mg/kg\text{-}day)^{-1}$	3.21E-11
	Dinoseb	248	mg/kg	N/A	N/A	M	4.41E-12	kg/kg-day	N/A	$(mg/kg\text{-}day)^{-1}$	N/A
Dermal	Dieldrin	0.46	mg/kg	N/A	N/A	M	1.85E-07	kg/kg-day	3.20E+01	$(mg/kg\text{-}day)^{-1}$	2.70E-06
	Dinoseb	248	mg/kg	N/A	N/A	M	1.85E-07	kg/kg-day	N/A	$(mg/kg\text{-}day)^{-1}$	N/A
										Total Risk Across All Exposure Routes/Pathways	2.9E-06

See Table 49 for definitions and sources of equation variables for pathway-specific intake factor calculations.

EPC = Exposure point concentration
mg/kg = milligram per kilogram
N/A = Not applicable
M = Medium-specific concentration
ND = No data available

TABLE 72C
SUMMARY OF RECEPTOR RISKS AND HAZARDS FOR COPCs
REASONABLE MAXIMUM EXPOSURE
CEDAR CHEMICAL CORPORATION, WEST HELENA, ARKANSAS

Scenario Timeframe: Future
Receptor Population: Trespasser/Visitor
Receptor Age: Adolescent

Medium	Exposure Medium	Exposure Point	Chemical	Carcinogenic Risk				Chemical	Non-Carcinogenic Hazard Quotient			
				Ingestion	Inhalation	Dermal	Exposure Routes Total		Ingestion	Inhalation	Dermal	Exposure Routes Total
Soil	Surface Soil	Site 4	Dieldrin	2E-07	3E-11	3E-06	3E-06	Dieldrin	0.0014	N/A	0.024	0.0251
			Dinoseb	N/A	N/A	N/A		Dinoseb	0.039	N/A	0.64	0.684
							Total Risk Across[Soil]					
							3E-06					<1
							Total Risk Across All Media and All Exposure Routes					
							3E-06					

N/A = Not Applicable

TABLE 73A
CALCULATION OF NON-CANCER HAZARDS
REASONABLE MAXIMUM EXPOSURE
CEDAR CHEMICAL CORPORATION, WEST HELENA, ARKANSAS

Scenario Timeframe:	Future
Medium:	Soil
Exposure Medium:	Surface Soil
Exposure Point:	Site 6 Surface Soil
Receptor Population:	Construction Worker
Receptor Age:	Adult

Exposure Route	Chemical of Potential Concern	Medium EPC Value	Medium EPC Units	Route EPC Value	Route EPC Units	EPC Selected for Hazard Calculation	Intake (Non-Cancer)	Intake (Non-Cancer) Units	Reference Dose	Reference Dose Units	Reference Concentration	Reference Concentration Units	Hazard Quotient
Ingestion	Arsenic	7.90	mg/kg	N/A	N/A	M	1.13E-06	kg/kg-day	3.00E-04	mg/kg-day	N/A	N/A	0.030
	Aldrin	0.017	mg/kg	N/A	N/A	M	1.13E-06	kg/kg-day	3.00E-05	mg/kg-day	N/A	N/A	0.0007
	Dieldrin	0.031	mg/kg	N/A	N/A	M	1.13E-06	kg/kg-day	5.00E-05	mg/kg-day	N/A	N/A	0.001
	Methoxychlor	20.06	mg/kg	N/A	N/A	M	1.13E-06	kg/kg-day	5.00E-03	mg/kg-day	N/A	N/A	0.005
	Toxaphene	0.78	mg/kg	N/A	N/A	M	1.13E-06	kg/kg-day	ND	mg/kg-day	N/A	N/A	N/A
	Dinoseb	37.97	mg/kg	N/A	N/A	M	1.13E-06	kg/kg-day	1.00E-03	mg/kg-day	N/A	N/A	0.043
Inhalation	Arsenic	7.90	mg/kg	N/A	N/A	M	3.56E-11	kg/kg-day	N/A	mg/kg-day	N/A	N/A	N/A
	Aldrin	0.017	mg/kg	N/A	N/A	M	3.56E-11	kg/kg-day	N/A	mg/kg-day	N/A	N/A	N/A
	Dieldrin	0.031	mg/kg	N/A	N/A	M	3.56E-11	kg/kg-day	N/A	mg/kg-day	N/A	N/A	N/A
	Methoxychlor	20.06	mg/kg	N/A	N/A	M	3.56E-11	kg/kg-day	N/A	mg/kg-day	N/A	N/A	N/A
	Toxaphene	0.78	mg/kg	N/A	N/A	M	3.56E-11	kg/kg-day	N/A	mg/kg-day	N/A	N/A	N/A
	Dinoseb	37.97	mg/kg	N/A	N/A	M	3.56E-11	kg/kg-day	N/A	mg/kg-day	N/A	N/A	N/A
Dermal	Arsenic	7.90	mg/kg	N/A	N/A	M	2.89E-07	kg/kg-day	3.00E-04	mg/kg-day	N/A	N/A	0.008
	Aldrin	0.017	mg/kg	N/A	N/A	M	9.63E-07	kg/kg-day	1.50E-05	mg/kg-day	N/A	N/A	0.00112
	Dieldrin	0.031	mg/kg	N/A	N/A	M	9.63E-07	kg/kg-day	2.50E-05	mg/kg-day	N/A	N/A	0.001
	Methoxychlor	20.06	mg/kg	N/A	N/A	M	9.63E-07	kg/kg-day	2.50E-03	mg/kg-day	N/A	N/A	0.008
	Toxaphene	0.78	mg/kg	N/A	N/A	M	9.63E-07	kg/kg-day	ND	mg/kg-day	N/A	N/A	N/A
	Dinoseb	37.97	mg/kg	N/A	N/A	M	9.63E-07	kg/kg-day	5.00E-04	mg/kg-day	N/A	N/A	0.073
												Total Hazard Index Across All Exposure Routes/Pathways	<1

See Table 35 for definitions and sources of equation variables for pathway-specific intake factor calculations.

EPC = Exposure point concentration
mg/kg = milligram per kilogram
N/A = Not applicable
M = Media-specific concentration
mg/cu. M = milligram per cubic meter

TABLE 73B
CALCULATION OF CANCER RISKS
REASONABLE MAXIMUM EXPOSURE
CEDAR CHEMICAL CORPORATION, WEST HELENA, ARKANSAS

Scenario Timeframe:	Future
Medium:	Soil
Exposure Medium:	Surface Soil
Exposure Point:	Site 6 Surface Soil
Receptor Population:	Construction Worker
Receptor Age:	Adult

Exposure Route	Chemical of Potential Concern	Medium EPC Value	Medium EPC Units	Route EPC Value	Route EPC Units	EPC Selected for Risk Calculation (1)	Intake (Cancer)	Intake (Cancer) Units	Cancer Slope Factor	Cancer Slope Factor Units	Cancer Risk
Ingestion	Arsenic	7.9	mg/kg	N/A	N/A	M	1.61E-08	kg/kg-day	1.50E+00	(mg/kg-day) $^{-1}$	1.91E-07
	Aldrin	0.017	mg/kg	N/A	N/A	M	1.61E-08	kg/kg-day	1.70E+01	(mg/kg-day) $^{-1}$	4.78E-09
	Dieldrin	0.031	mg/kg	N/A	N/A	M	1.61E-08	kg/kg-day	1.60E+01	(mg/kg-day) $^{-1}$	7.91E-09
	Methoxychlor	20.06	mg/kg	N/A	N/A	M	1.61E-08	kg/kg-day	N/A	(mg/kg-day) $^{-1}$	N/A
	Toxaphene	0.78	mg/kg	N/A	N/A	M	1.61E-08	kg/kg-day	1.10E+00	(mg/kg-day) $^{-1}$	1.38E-08
	Dinoseb	37.97	mg/kg	N/A	N/A	M	1.61E-08	kg/kg-day	N/A	(mg/kg-day) $^{-1}$	N/A
Inhalation	Arsenic	7.9	mg/kg	N/A	N/A	M	5.08E-13	kg/kg-day	1.51E+01	(mg/kg-day) $^{-1}$	6.04E-11
	Aldrin	0.017	mg/kg	N/A	N/A	M	5.08E-13	kg/kg-day	1.72E+01	(mg/kg-day) $^{-1}$	1.52E-13
	Dieldrin	0.031	mg/kg	N/A	N/A	M	5.08E-13	kg/kg-day	1.60E+01	(mg/kg-day) $^{-1}$	2.50E-13
	Methoxychlor	20.06	mg/kg	N/A	N/A	M	5.08E-13	kg/kg-day	ND	(mg/kg-day) $^{-1}$	N/A
	Toxaphene	0.78	mg/kg	N/A	N/A	M	5.08E-13	kg/kg-day	1.12E+00	(mg/kg-day) $^{-1}$	4.43E-13
	Dinoseb	37.97	mg/kg	N/A	N/A	M	5.08E-13	kg/kg-day	N/A	(mg/kg-day) $^{-1}$	N/A
Dermal	Arsenic	7.9	mg/kg	N/A	N/A	M	4.13E-09	kg/kg-day	7.50E+00	(mg/kg-day) $^{-1}$	2.44E-07
	Aldrin	0.017	mg/kg	N/A	N/A	M	1.38E-08	kg/kg-day	3.40E+01	(mg/kg-day) $^{-1}$	8.16E-09
	Dieldrin	0.031	mg/kg	N/A	N/A	M	1.38E-08	kg/kg-day	3.20E+01	(mg/kg-day) $^{-1}$	1.35E-08
	Methoxychlor	20.06	mg/kg	N/A	N/A	M	1.38E-08	kg/kg-day	N/A	(mg/kg-day) $^{-1}$	N/A
	Toxaphene	0.78	mg/kg	N/A	N/A	M	1.38E-08	kg/kg-day	2.20E+00	(mg/kg-day) $^{-1}$	2.35E-08
	Dinoseb	37.97	mg/kg	N/A	N/A	M	1.38E-08	kg/kg-day	N/A	(mg/kg-day) $^{-1}$	N/A
										Total Risk Across All Exposure Routes/Pathways	5E-07

See Table 35 for definitions and sources of equation variables for pathway-specific intake factor calculations.

EPC = Exposure point concentration
mg/kg = milligram per kilogram
N/A = Not applicable
M = Medium-specific concentration
ND = No data available

TABLE 73C
SUMMARY OF RECEPTOR RISKS AND HAZARDS FOR COPCs
REASONABLE MAXIMUM EXPOSURE
CEDAR CHEMICAL CORPORATION, WEST HELENA, ARKANSAS

Scenario Timeframe: Future
Receptor Population: Construction Worker
Receptor Age: Adult

Medium	Exposure Medium	Exposure Point	Chemical	Carcinogenic Risk				Chemical	Non-Carcinogenic Hazard Quotient			
				Ingestion	Inhalation	Dermal	Exposure Routes Total		Ingestion	Inhalation	Dermal	Exposure Routes Total
Soil	Surface Soil	Site 6	Arsenic	5E-09	2E-13	8E-09	1E-08	Arsenic	0.0007	N/A	0.0011	0.002
			Dieldrin	8E-09	2E-13	1E-08	2E-08	Dieldrin	0.00069	N/A	0.001	0.0019
			Methoxychlor	N/A	N/A	N/A	N/A	Methoxychlor	0.005	N/A	0.008	0.012
			Toxaphene	1E-08	4E-13	4E-08	4E-08	Toxaphene	N/A	N/A	N/A	N/A
			Dinoseb	N/A	N/A	N/A	N/A	Dinoseb	0.043	N/A	0.0731	0.116
						Total Risk Across[Soil]	7E-08	Total Hazard Index Across All Media and All Exposure Routes				<1
						Total Risk Across All Media and All Exposure Routes	7E-08					

N/A = Not Applicable

TABLE 74A
CALCULATION OF NON-CANCER HAZARDS
REASONABLE MAXIMUM EXPOSURE
CEDAR CHEMICAL CORPORATION, WEST HELENA, ARKANSAS

Scenario Timeframe:	Current/Future
Medium:	Soil
Exposure Medium:	Surface Soil
Exposure Point:	Site 6 Surface Soil
Receptor Population:	Adult Worker
Receptor Age:	Adult

Exposure Route	Chemical of Potential Concern	Medium EPC Value	Medium EPC Units	Route EPC Value	Route EPC Units	EPC Selected for Hazard Calculation (1)	Intake (Non-Cancer)	Intake (Non-Cancer) Units	Reference Dose (2)	Reference Dose Units	Reference Concentration	Reference Concentration Units	Hazard Quotient
Ingestion	Aldrin	0.017	mg/kg	N/A	N/A	M	4.89E-07	kg/kg-day	3.00E-05	mg/kg-day	N/A	N/A	0.00028
	Dieldrin	0.031	mg/kg	N/A	N/A	M	4.89E-07	kg/kg-day	5.00E-05	mg/kg-day	N/A	N/A	0.0003
	Methoxychlor	20.06	mg/kg	N/A	N/A	M	4.89E-07	kg/kg-day	5.00E-03	mg/kg-day	N/A	N/A	0.00196
	Toxaphene	0.78	mg/kg	N/A	N/A	M	4.89E-07	kg/kg-day	ND	mg/kg-day	N/A	N/A	N/A
	Dinoseb	37.97	mg/kg	N/A	N/A	M	4.89E-07	kg/kg-day	1.00E-03	mg/kg-day	N/A	N/A	0.019
Inhalation	Aldrin	0.017	mg/kg	N/A	N/A	M	1.48E-10	kg/kg-day	N/A	mg/kg-day	N/A	N/A	N/A
	Dieldrin	0.031	mg/kg	N/A	N/A	M	1.48E-10	kg/kg-day	N/A	mg/kg-day	N/A	N/A	N/A
	Methoxychlor	20.06	mg/kg	N/A	N/A	M	1.48E-10	kg/kg-day	N/A	mg/kg-day	N/A	N/A	N/A
	Toxaphene	0.78	mg/kg	N/A	N/A	M	1.48E-10	kg/kg-day	N/A	mg/kg-day	N/A	N/A	N/A
	Dinoseb	37.97	mg/kg	N/A	N/A	M	1.48E-10	kg/kg-day	N/A	mg/kg-day	N/A	N/A	N/A
Dermal	Aldrin	0.017	mg/kg	N/A	N/A	M	4.01E-06	kg/kg-day	1.50E-05	mg/kg-day	N/A	N/A	0.00467
	Dieldrin	0.031	mg/kg	N/A	N/A	M	4.01E-06	kg/kg-day	2.50E-05	mg/kg-day	N/A	N/A	0.0049
	Methoxychlor	20.06	mg/kg	N/A	N/A	M	4.01E-06	kg/kg-day	2.50E-03	mg/kg-day	N/A	N/A	0.032
	Toxaphene	0.78	mg/kg	N/A	N/A	M	4.01E-06	kg/kg-day	ND	mg/kg-day	N/A	N/A	N/A
	Dinoseb	37.97	mg/kg	N/A	N/A	M	4.01E-06	kg/kg-day	5.00E-04	mg/kg-day	N/A	N/A	0.3
												Total Hazard Index Across All Exposure Routes/Pathways	<1

See Table 45 for definitions and sources of equation variables for pathway-specific intake factor calculations.

EPC = Exposure point concentration
mg/kg = milligram per kilogram
N/A = Not applicable
M = Media-specific concentration
mg/cu. M = milligram per cubic meter

TABLE 74B
CALCULATION OF CANCER RISKS
REASONABLE MAXIMUM EXPOSURE
CEDAR CHEMICAL CORPORATION, WEST HELENA, ARKANSAS

Scenario Timeframe:	Future
Medium:	Soil
Exposure Medium:	Surface Soil
Exposure Point:	Site 6 Surface Soil
Receptor Population:	Adult Worker
Receptor Age:	Adult

Exposure Route	Chemical of Potential Concern	Medium EPC Value	Medium EPC Units	Route EPC Value	Route EPC Units	EPC Selected for Risk Calculation (1)	Intake (Cancer)	Intake (Cancer) Units	Cancer Slope Factor	Cancer Slope Factor Units	Cancer Risk
Ingestion	Arsenic	7.9	mg/kg	N/A	N/A	M	1.75E-07	kg/kg-day	1.50E+00	(mg/kg-day) $^{-1}$	2.07E-06
	Aldrin	0.017	mg/kg	N/A	N/A	M	1.75E-07	kg/kg-day	1.70E+01	(mg/kg-day) $^{-1}$	5.18E-08
	Dieldrin	0.031	mg/kg	N/A	N/A	M	1.75E-07	kg/kg-day	1.60E+01	(mg/kg-day) $^{-1}$	8.58E-08
	Methoxychlor	20.06	mg/kg	N/A	N/A	M	1.75E-07	kg/kg-day	N/A	(mg/kg-day) $^{-1}$	N/A
	Toxaphene	0.78	mg/kg	N/A	N/A	M	1.75E-07	kg/kg-day	1.10E+00	(mg/kg-day) $^{-1}$	1.49E-07
	Dinoseb	37.97	mg/kg	N/A	N/A	M	1.75E-07	kg/kg-day	N/A	(mg/kg-day) $^{-1}$	N/A
Inhalation	Arsenic	7.9	mg/kg	N/A	N/A	M	5.29E-11	kg/kg-day	1.51E+01	(mg/kg-day) $^{-1}$	6.30E-09
	Aldrin	0.017	mg/kg	N/A	N/A	M	5.29E-11	kg/kg-day	1.72E+01	(mg/kg-day) $^{-1}$	1.58E-11
	Dieldrin	0.031	mg/kg	N/A	N/A	M	5.29E-11	kg/kg-day	1.60E+01	(mg/kg-day) $^{-1}$	2.60E-11
	Methoxychlor	20.06	mg/kg	N/A	N/A	M	5.29E-11	kg/kg-day	ND	(mg/kg-day) $^{-1}$	N/A
	Toxaphene	0.78	mg/kg	N/A	N/A	M	5.29E-11	kg/kg-day	1.12E+00	(mg/kg-day) $^{-1}$	4.61E-11
	Dinoseb	37.97	mg/kg	N/A	N/A	M	5.29E-11	kg/kg-day	N/A	(mg/kg-day) $^{-1}$	N/A
Dermal	Arsenic	7.9	mg/kg	N/A	N/A	M	4.30E-07	kg/kg-day	7.50E+00	(mg/kg-day) $^{-1}$	2.55E-05
	Aldrin	0.017	mg/kg	N/A	N/A	M	1.43E-06	kg/kg-day	3.40E+01	(mg/kg-day) $^{-1}$	8.50E-07
	Dieldrin	0.031	mg/kg	N/A	N/A	M	1.43E-06	kg/kg-day	3.20E+01	(mg/kg-day) $^{-1}$	1.41E-06
	Methoxychlor	20.06	mg/kg	N/A	N/A	M	1.43E-06	kg/kg-day	N/A	(mg/kg-day) $^{-1}$	N/A
	Toxaphene	0.78	mg/kg	N/A	N/A	M	1.43E-06	kg/kg-day	2.20E+00	(mg/kg-day) $^{-1}$	2.45E-06
	Dinoseb	37.97	mg/kg	N/A	N/A	M	1.43E-06	kg/kg-day	N/A	(mg/kg-day) $^{-1}$	N/A
										Total Risk Across All Exposure Routes/Pathways	3E-05

See Table 45 for definitions and sources of equation variables for pathway-specific intake factor calculations.

EPC = Exposure point concentration
mg/kg = milligram per kilogram
N/A = Not applicable
M = Medium-specific concentration
ND = No data available

TABLE 74C
SUMMARY OF RECEPTOR RISKS AND HAZARDS FOR COPCs
REASONABLE MAXIMUM EXPOSURE
CEDAR CHEMICAL CORPORATION, WEST HELENA, ARKANSAS

Scenario Timeframe: Future
Receptor Population: Adult Worker
Receptor Age: Adult

Medium	Exposure Medium	Exposure Point	Chemical	Carcinogenic Risk				Chemical	Non-Carcinogenic Hazard Quotient			
				Ingestion	Inhalation	Dermal	Exposure Routes Total		Ingestion	Inhalation	Dermal	Exposure Routes Total
Soil	Surface Soil	Site 6	Aldrin	5E-08	2E-11	9E-07	9E-07	Aldrin	0.00028	N/A	0.0047	0.005
			Dieldrin	9E-08	3E-11	1E-06	1E-06	Dieldrin	0.0003	N/A	0.0049	0.0052
			Methoxychlor	N/A	N/A	N/A	N/A	Methoxychlor	0.00196	N/A	0.032	0.034
			Toxaphene	1E-07	5E-11	2E-06	3E-06	Toxaphene	N/A	N/A	N/A	N/A
			Dinoseb	N/A	N/A	N/A	N/A	Dinoseb	0.019	N/A	0.3047	0.323
						Total Risk Across[Soil]	5E-06				Total Hazard Index Across All Media and All Exposure Routes	<1
						Total Risk Across All Media and All Exposure Routes	5E-06					

N/A = Not Applicable

TABLE 75A
CALCULATION OF NON-CANCER HAZARDS
REASONABLE MAXIMUM EXPOSURE
CEDAR CHEMICAL CORPORATION, WEST HELENA, ARKANSAS

Scenario Timeframe:	Future
Medium:	Soil
Exposure Medium:	Surface Soil
Exposure Point:	Site 6 Surface Soil
Receptor Population:	Trespasser
Receptor Age:	Adolescent

Exposure Route	Chemical of Potential Concern	Medium EPC Value	Medium EPC Units	Route EPC Value	Route EPC Units	EPC Selected for Hazard Calculation (1)	Intake (Non-Cancer)	Intake (Non-Cancer) Units	Reference Dose (2)	Reference Dose Units	Reference Concentration	Reference Concentration Units	Hazard Quotient
Ingestion	Aldrin	0.017	mg/kg	N/A	N/A	M	1.58E-07	kg/kg-day	3.00E-05	mg/kg-day	N/A	N/A	0.00009
	Dieldrin	0.031	mg/kg	N/A	N/A	M	1.58E-07	kg/kg-day	5.00E-05	mg/kg-day	N/A	N/A	0.000
	Methoxychlor	20.06	mg/kg	N/A	N/A	M	1.58E-07	kg/kg-day	5.00E-03	mg/kg-day	N/A	N/A	0.001
	Toxaphene	0.78	mg/kg	N/A	N/A	M	1.58E-07	kg/kg-day	ND	mg/kg-day	N/A	N/A	N/A
	Dinoseb	37.97	mg/kg	N/A	N/A	M	1.58E-07	kg/kg-day	1.00E-03	mg/kg-day	N/A	N/A	0.006
Inhalation	Aldrin	0.017	mg/kg	N/A	N/A	M	3.08E-11	kg/kg-day	N/A	mg/kg-day	N/A	N/A	N/A
	Dieldrin	0.031	mg/kg	N/A	N/A	M	3.08E-11	kg/kg-day	N/A	mg/kg-day	N/A	N/A	N/A
	Methoxychlor	20.06	mg/kg	N/A	N/A	M	3.08E-11	kg/kg-day	N/A	mg/kg-day	N/A	N/A	N/A
	Toxaphene	0.78	mg/kg	N/A	N/A	M	3.08E-11	kg/kg-day	N/A	mg/kg-day	N/A	N/A	N/A
	Dinoseb	37.97	mg/kg	N/A	N/A	M	3.08E-11	kg/kg-day	N/A	mg/kg-day	N/A	N/A	N/A
Dermal	Aldrin	0.017	mg/kg	N/A	N/A	M	1.30E-06	kg/kg-day	1.50E-05	mg/kg-day	N/A	N/A	0.00151
	Dieldrin	0.031	mg/kg	N/A	N/A	M	1.30E-06	kg/kg-day	2.50E-05	mg/kg-day	N/A	N/A	0.002
	Methoxychlor	20.06	mg/kg	N/A	N/A	M	1.30E-06	kg/kg-day	2.50E-03	mg/kg-day	N/A	N/A	0.010
	Toxaphene	0.78	mg/kg	N/A	N/A	M	1.30E-06	kg/kg-day	ND	mg/kg-day	N/A	N/A	N/A
	Dinoseb	37.97	mg/kg	N/A	N/A	M	1.30E-06	kg/kg-day	5.00E-04	mg/kg-day	N/A	N/A	0.099
												Total Hazard Index Across All Exposure Routes/Pathways	<1

See Table 49 for definitions and sources of equation variables for pathway-specific intake factor calculations.

EPC = Exposure point concentration
mg/kg = milligram per kilogram
N/A = Not applicable
M = Media-specific concentration
mg/cu. M = milligram per cubic meter

TABLE 75B
CALCULATION OF CANCER RISKS
REASONABLE MAXIMUM EXPOSURE
CEDAR CHEMICAL CORPORATION, WEST HELENA, ARKANSAS

Scenario Timeframe:	Future
Medium:	Soil
Exposure Medium:	Surface Soil
Exposure Point:	Site 6 Surface Soil
Receptor Population:	Trespasser
Receptor Age:	Adolescent

Exposure Route	Chemical of Potential Concern	Medium EPC Value	Medium EPC Units	Route EPC Value	Route EPC Units	EPC Selected for Risk Calculation (1)	Intake (Cancer)	Intake (Cancer) Units	Cancer Slope Factor	Cancer Slope Factor Units	Cancer Risk
Ingestion	Aldrin	0.017	mg/kg	N/A	N/A	M	2.26E-08	kg/kg-day	1.70E+01	$(mg/kg-day)^{-1}$	6.71E-09
	Dieldrin	0.031	mg/kg	N/A	N/A	M	2.26E-08	kg/kg-day	1.60E+01	$(mg/kg-day)^{-1}$	1.11E-08
	Methoxychlor	20.06	mg/kg	N/A	N/A	M	2.26E-08	kg/kg-day	N/A	$(mg/kg-day)^{-1}$	N/A
	Toxaphene	0.78	mg/kg	N/A	N/A	M	2.26E-08	kg/kg-day	1.10E+00	$(mg/kg-day)^{-1}$	1.93E-08
	Dinoseb	37.97	mg/kg	N/A	N/A	M	2.26E-08	kg/kg-day	N/A	$(mg/kg-day)^{-1}$	N/A
Inhalation	Aldrin	0.017	mg/kg	N/A	N/A	M	4.41E-12	kg/kg-day	1.72E+01	$(mg/kg-day)^{-1}$	1.32E-12
	Dieldrin	0.031	mg/kg	N/A	N/A	M	4.41E-12	kg/kg-day	1.60E+01	$(mg/kg-day)^{-1}$	2.16E-12
	Methoxychlor	20.06	mg/kg	N/A	N/A	M	4.41E-12	kg/kg-day	ND	$(mg/kg-day)^{-1}$	N/A
	Toxaphene	0.78	mg/kg	N/A	N/A	M	4.41E-12	kg/kg-day	1.12E+00	$(mg/kg-day)^{-1}$	3.84E-12
	Dinoseb	37.97	mg/kg	N/A	N/A	M	4.41E-12	kg/kg-day	N/A	$(mg/kg-day)^{-1}$	N/A
Dermal	Aldrin	0.017	mg/kg	N/A	N/A	M	1.85E-07	kg/kg-day	3.40E+01	$(mg/kg-day)^{-1}$	1.10E-07
	Dieldrin	0.031	mg/kg	N/A	N/A	M	1.85E-07	kg/kg-day	3.20E+01	$(mg/kg-day)^{-1}$	1.82E-07
	Methoxychlor	20.06	mg/kg	N/A	N/A	M	1.85E-07	kg/kg-day	N/A	$(mg/kg-day)^{-1}$	N/A
	Toxaphene	0.78	mg/kg	N/A	N/A	M	1.85E-07	kg/kg-day	2.20E+00	$(mg/kg-day)^{-1}$	3.17E-07
	Dinoseb	37.97	mg/kg	N/A	N/A	M	1.85E-07	kg/kg-day	N/A	$(mg/kg-day)^{-1}$	N/A
									Total Risk Across All Exposure Routes/Pathways		6E-07

See Table 49 for definitions and sources of equation variables for pathway-specific intake factor calculations.

EPC = Exposure point concentration
mg/kg = milligram per kilogram
N/A = Not applicable
M = Medium-specific concentration
ND = No data available

TABLE 75C
SUMMARY OF RECEPTOR RISKS AND HAZARDS FOR COPCs
REASONABLE MAXIMUM EXPOSURE
CEDAR CHEMICAL CORPORATION, WEST HELENA, ARKANSAS

Scenario Timeframe: Future
Receptor Population: Trespasser
Receptor Age: Adolescent

Medium	Exposure Medium	Exposure Point	Chemical	Carcinogenic Risk				Chemical	Non-Carcinogenic Hazard Quotient			
				Ingestion	Inhalation	Dermal	Exposure Routes Total		Ingestion	Inhalation	Dermal	Exposure Routes Total
Soil	Surface Soil	Site 6	Aldrin	7E-09	1E-12	1E-07	1E-07	Aldrin	0.0001	N/A	0.0015	0.002
			Dieldrin	1E-08	2E-12	2E-07	2E-07	Dieldrin	0.00010	N/A	0.002	0.0017
			Methoxychlor	N/A	N/A	N/A	N/A	Methoxychlor	0.001	N/A	0.010	0.011
			Toxaphene	2E-08	4E-12	3E-07	3E-07	Toxaphene	N/A	N/A	N/A	N/A
			Dinoseb	N/A	N/A	N/A	N/A	Dinoseb	0.006	N/A	0.0986	0.105
						Total Risk Across[Soil]	6E-07	Total Hazard Index Across All Media and All Exposure Routes				<1
						Total Risk Across All Media and All Exposure Routes	6E-07					

N/A = Not Applicable

TABLE 76A
CALCULATION OF NON-CANCER HAZARDS
REASONABLE MAXIMUM EXPOSURE
CEDAR CHEMICAL CORPORATION, WEST HELENA, ARKANSAS

Scenario Timeframe:	Future
Medium:	Soil
Exposure Medium:	Subsurface Soil
Exposure Point:	Site 9 Subsurface Soil
Receptor Population:	Construction Worker
Receptor Age:	Adult

Exposure Route	Chemical of Potential Concern	Medium EPC Value	Medium EPC Units	Route EPC Value	Route EPC Units	EPC Selected for Hazard Calculation	Intake (Non-Cancer)	Intake (Non-Cancer) Units	Reference Dose	Reference Dose Units	Reference Concentration	Reference Concentration Units	Hazard Quotient
Ingestion	Arsenic	7.3	mg/kg	N/A	N/A	M	1.13E-06	kg/kg-day	3.00E-04	mg/kg-day	N/A	N/A	0.027
	3,4-Dichloroaniline	450	mg/kg	N/A	N/A	M	1.13E-06	kg/kg-day	4.00E-03	mg/kg-day	N/A	N/A	0.130
	Dinoseb	29000	mg/kg	N/A	N/A	M	1.13E-06	kg/kg-day	1.00E-03	mg/kg-day	N/A	N/A	33
	Propanil	4000	mg/kg	N/A	N/A	M	1.13E-06	kg/kg-day	5.00E-03	mg/kg-day	N/A	N/A	0.9
Inhalation	Arsenic	7.3	mg/kg	N/A	N/A	M	3.56E-11	kg/kg-day	N/A	mg/kg-day	N/A	N/A	N/A
	3,4-Dichloroaniline	450	mg/kg	N/A	N/A	M	3.56E-11	kg/kg-day	N/A	mg/kg-day	N/A	N/A	N/A
	Dinoseb	29000	mg/kg	N/A	N/A	M	3.56E-11	kg/kg-day	N/A	mg/kg-day	N/A	N/A	N/A
	Propanil	4000	mg/kg	N/A	N/A	M	3.56E-11	kg/kg-day	N/A	mg/kg-day	N/A	N/A	N/A
Dermal	Arsenic	7.3	mg/kg	N/A	N/A	M	2.89E-07	kg/kg-day	3.00E-04	mg/kg-day	N/A	N/A	0.007
	3,4-Dichloroaniline	450	mg/kg	N/A	N/A	M	9.63E-07	kg/kg-day	2.00E-03	mg/kg-day	N/A	N/A	0.22
	Dinoseb	29000	mg/kg	N/A	N/A	M	9.63E-07	kg/kg-day	5.00E-04	mg/kg-day	N/A	N/A	56
	Propanil	4000	mg/kg	N/A	N/A	M	9.63E-07	kg/kg-day	2.50E-03	mg/kg-day	N/A	N/A	1.5
												Total Hazard Index Across All Exposure Routes/Pathways	91

See Table 35 for definitions and sources of equation variables for pathway-specific intake factor calculations.

EPC = Exposure point concentration
mg/kg = milligram per kilogram
N/A = Not applicable
M = Media-specific concentration

TABLE 76B
CALCULATION OF CANCER RISKS
REASONABLE MAXIMUM EXPOSURE
CEDAR CHEMICAL CORPORATION, WEST HELENA, ARKANSAS

Scenario Timeframe:	Future
Medium:	Soil
Exposure Medium:	Subsurface Soil
Exposure Point:	Site 9 Subsurface Soil
Receptor Population:	Construction Worker
Receptor Age:	Adult

Exposure Route	Chemical of Potential Concern	Medium EPC Value	Medium EPC Units	Route EPC Value	Route EPC Units	EPC Selected for Risk Calculation (1)	Intake (Cancer)	Intake (Cancer) Units	Cancer Slope Factor	Cancer Slope Factor Units	Cancer Risk
Ingestion	Arsenic	7.3	mg/kg	N/A	N/A	M	1.61E-08	kg/kg-day	1.50E+00	(mg/kg-day)$^{-1}$	1.76E-07
	3,4-Dichloroaniline	450	mg/kg	N/A	N/A	M	1.61E-08	kg/kg-day	N/A	(mg/kg-day)$^{-1}$	N/A
	Dinoseb	29000	mg/kg	N/A	N/A	M	1.61E-08	kg/kg-day	N/A	(mg/kg-day)$^{-1}$	N/A
	Propanil	4000	mg/kg	N/A	N/A	M	1.61E-08	kg/kg-day	N/A	(mg/kg-day)$^{-1}$	N/A
Inhalation	Arsenic	7.3	mg/kg	N/A	N/A	M	5.08E-13	kg/kg-day	1.51E+01	(mg/kg-day)$^{-1}$	5.58E-11
	3,4-Dichloroaniline	450	mg/kg	N/A	N/A	M	5.08E-13	kg/kg-day	N/A	(mg/kg-day)$^{-1}$	N/A
	Dinoseb	29000	mg/kg	N/A	N/A	M	5.08E-13	kg/kg-day	N/A	(mg/kg-day)$^{-1}$	N/A
	Propanil	4000	mg/kg	N/A	N/A	M	5.08E-13	kg/kg-day	N/A	(mg/kg-day)$^{-1}$	N/A
Dermal	Arsenic	7.3	mg/kg	N/A	N/A	M	4.13E-09	kg/kg-day	1.50E+00	(mg/kg-day)$^{-1}$	4.52E-08
	3,4-Dichloroaniline	450		N/A	N/A	M	1.38E-08	kg/kg-day	N/A	(mg/kg-day)$^{-1}$	N/A
	Dinoseb	29000	mg/kg	N/A	N/A	M	1.38E-08	kg/kg-day	N/A	(mg/kg-day)$^{-1}$	N/A
	Propanil	4000	mg/kg	N/A	N/A	M	1.38E-08	kg/kg-day	N/A	(mg/kg-day)$^{-1}$	N/A
										Total Risk Across All Exposure Routes/Pathways	2.2E-07

See Table 35 for definitions and sources of equation variables for pathway-specific intake factor calculations.

EPC = Exposure point concentration
mg/kg = milligram per kilogram
N/A = Not applicable
M = Medium-specific concentration

TABLE 76C

SUMMARY OF RECEPTOR RISKS AND HAZARDS FOR COPCs

REASONABLE MAXIMUM EXPOSURE

CEDAR CHEMICAL CORPORATION, WEST HELENA, ARKANSAS

Scenario Timeframe: Future
Receptor Population: Construction Worker
Receptor Age: Adult

Medium	Exposure Medium	Exposure Point	Chemical	Carcinogenic Risk				Chemical	Non-Carcinogenic Hazard Quotient			
				Ingestion	Inhalation	Dermal	Exposure Routes Total		Ingestion	Inhalation	Dermal	Exposure Routes Total
Soil	Surface and Subsurface Soil	Site 9	Arsenic	2E-07	6E-11	5E-08	2E-07	Arsenic	0.03	N/A	0.01	0.03
			3,4-Dichloroaniline	N/A	N/A	N/A	N/A	3,4-Dichloroaniline	0.13	N/A	0.22	0.35
			Dinoseb	N/A	N/A	N/A	N/A	Dinoseb	32.77	N/A	55.85	89
			Propanil	N/A	N/A	N/A	N/A	Propanil	0.90	N/A	1.54	2.44
						Total Risk Across[Soil]	2E-07	Total Hazard Index Across All Media and All Exposure Routes				91

8/14/00

TABLE 77A
CALCULATION OF NON-CANCER HAZARDS
REASONABLE MAXIMUM EXPOSURE
CEDAR CHEMICAL CORPORATION, WEST HELENA, ARKANSAS

Scenario Timeframe:	Current/Future
Medium:	Soil
Exposure Medium:	Surface Soil
Exposure Point:	Site 9 Surface Soil
Receptor Population:	Adult Worker
Receptor Age:	Adult

Exposure Route	Chemical of Potential Concern	Medium EPC Value	Medium EPC Units	Route EPC Value	Route EPC Units	EPC Selected for Hazard Calculation (1)	Intake (Non-Cancer)	Intake (Non-Cancer) Units	Reference Dose (2)	Reference Dose Units	Reference Concentration	Reference Concentration Units	Hazard Quotient
Ingestion	Heptachlor	1.5	mg/kg	N/A	N/A	M	4.89E-07	kg/kg-day	5.00E-04	mg/kg-day	N/A	N/A	0.0015
	Dinoseb	29000	mg/kg	N/A	N/A	M	4.89E-07	kg/kg-day	1.00E-03	mg/kg-day	N/A	N/A	14.2
	Propanil	4000	mg/kg	N/A	N/A	M	4.89E-07	kg/kg-day	5.00E-03	mg/kg-day	N/A	N/A	0.391
Inhalation	Heptachlor	1.5	mg/kg	N/A	N/A	M	1.48E-10	kg/kg-day	N/A	mg/kg-day	N/A	N/A	N/A
	Dinoseb	29000	mg/kg	N/A	N/A	M	1.48E-10	kg/kg-day	N/A	mg/kg-day	N/A	N/A	N/A
	Propanil	4000	mg/kg	N/A	N/A	M	1.48E-10	kg/kg-day	N/A	mg/kg-day	N/A	N/A	N/A
Dermal	Heptachlor	1.5	mg/kg	N/A	N/A	M	4.01E-06	kg/kg-day	2.50E-04	mg/kg-day	N/A	N/A	0.024
	Dinoseb	29000	mg/kg	N/A	N/A	M	4.01E-06	kg/kg-day	5.00E-04	mg/kg-day	N/A	N/A	233
	Propanil	4000	mg/kg	N/A	N/A	M	4.01E-06	kg/kg-day	2.50E-03	mg/kg-day	N/A	N/A	6.4
												Total Hazard Index Across All Exposure Routes/Pathways	247

See Table 45 for definitions and sources of equation variables for pathway-specific intake factor calculations.

254

EPC = Exposure point concentration
mg/kg = milligram per kilogram
N/A = Not applicable
M = Media-specific concentration
mg/cu. M = milligram per cubic meter

TABLE 77B
CALCULATION OF CANCER RISKS
REASONABLE MAXIMUM EXPOSURE
CEDAR CHEMICAL CORPORATION, WEST HELENA, ARKANSAS

Scenario Timeframe:	Future
Medium:	Soil
Exposure Medium:	Surface Soil
Exposure Point:	Site 9 Surface Soil
Receptor Population:	Adult Worker
Receptor Age:	Adult

Exposure Route	Chemical of Potential Concern	Medium EPC Value	Medium EPC Units	Route EPC Value	Route EPC Units	EPC Selected for Risk Calculation (1)	Intake (Cancer)	Intake (Cancer) Units	Cancer Slope Factor	Cancer Slope Factor Units	Cancer Risk
Ingestion	Heptachlor	1.5	mg/kg	N/A	N/A	M	1.75E-07	kg/kg-day	4.50E+00	$(mg/kg\text{-}day)^{-1}$	1.18E-06
	Dinoseb	29000	mg/kg	N/A	N/A	M	1.75E-07	kg/kg-day	N/A	$(mg/kg\text{-}day)^{-1}$	N/A
	Propanil	4000	mg/kg	N/A	N/A	M	1.75E-07	kg/kg-day	N/A	$(mg/kg\text{-}day)^{-1}$	N/A
Inhalation	Heptachlor	1.5	mg/kg	N/A	N/A	M	5.29E-11	kg/kg-day	4.55E+00	$(mg/kg\text{-}day)^{-1}$	3.61E-10
	Dinoseb	29000	mg/kg	N/A	N/A	M	5.29E-11	kg/kg-day	N/A	$(mg/kg\text{-}day)^{-1}$	N/A
	Propanil	4000	mg/kg	N/A	N/A	M	5.29E-11	kg/kg-day	ND	$(mg/kg\text{-}day)^{-1}$	N/A
Dermal	Heptachlor	1.5	mg/kg	N/A	N/A	M	1.43E-06	kg/kg-day	9.00E+00	$(mg/kg\text{-}day)^{-1}$	1.93E-05
	Dinoseb	29000	mg/kg	N/A	N/A	M	1.43E-06	kg/kg-day	N/A	$(mg/kg\text{-}day)^{-1}$	N/A
	Propanil	4000	mg/kg	N/A	N/A	M	1.43E-06	kg/kg-day	N/A	$(mg/kg\text{-}day)^{-1}$	N/A
										Total Risk Across All Exposure Routes/Pathways	2.1E-05

See Table 45 for definitions and sources of equation variables for pathway-specific intake factor calculations.

EPC = Exposure point concentration
mg/kg = milligram per kilogram
N/A = Not applicable
M = Medium-specific concentration
ND = No data available

TABLE 77C
SUMMARY OF RECEPTOR RISKS AND HAZARDS FOR COPCs
REASONABLE MAXIMUM EXPOSURE
CEDAR CHEMICAL CORPORATION, WEST HELENA, ARKANSAS

Scenario Timeframe: Future
Receptor Population: Adult Worker
Receptor Age: Adult

Medium	Exposure Medium	Exposure Point	Chemical	Carcinogenic Risk				Chemical	Non-Carcinogenic Hazard Quotient			
				Ingestion	Inhalation	Dermal	Exposure Routes Total		Ingestion	Inhalation	Dermal	Exposure Routes Total
Soil	Surface Soil	Site 9	Heptachlor	1E-06	4E-10	2E-05	2E-05	Heptachlor	0.0015	N/A	0.0241	0.026
			Dinoseb	N/A	N/A	N/A	N/A	Dinoseb	14	N/A	233	247
			Propanil	N/A	N/A	N/A	N/A	Propanil	0.39	N/A	6	7
						Total Risk Across[Soil]	2E-05				Total Hazard Index Across All Media and All Exposure Routes	254
						Total Risk Across All Media and All Exposure Routes	2E-05					

N/A = Not Applicable

TABLE 78B
CALCULATION OF CANCER RISKS
REASONABLE MAXIMUM EXPOSURE
CEDAR CHEMICAL CORPORATION, WEST HELENA, ARKANSAS

Scenario Timeframe:	Future
Medium:	Soil
Exposure Medium:	Surface Soil
Exposure Point:	Site 9 Surface Soil
Receptor Population:	Trespasser
Receptor Age:	Adolescent

Exposure Route	Chemical of Potential Concern	Medium EPC Value	Medium EPC Units	Route EPC Value	Route EPC Units	EPC Selected for Risk Calculation (1)	Intake (Cancer)	Intake (Cancer) Units	Cancer Slope Factor	Cancer Slope Factor Units	Cancer Risk
Ingestion	Heptachlor	1.5	mg/kg	N/A	N/A	M	2.26E-08	kg/kg-day	4.50E+00	$(mg/kg-day)^{-1}$	1.5E-07
	Dinoseb	29000	mg/kg	N/A	N/A	M	2.26E-08	kg/kg-day	N/A	$(mg/kg-day)^{-1}$	N/A
	Propanil	4000	mg/kg	N/A	N/A	M	2.26E-08	kg/kg-day	N/A	$(mg/kg-day)^{-1}$	N/A
Inhalation	Heptachlor	1.5	mg/kg	N/A	N/A	M	4.41E-12	kg/kg-day	4.55E+00	$(mg/kg-day)^{-1}$	3.0E-11
	Dinoseb	29000	mg/kg	N/A	N/A	M	4.41E-12	kg/kg-day	N/A	$(mg/kg-day)^{-1}$	N/A
	Propanil	4000	mg/kg	N/A	N/A	M	4.41E-12	kg/kg-day	ND	$(mg/kg-day)^{-1}$	N/A
Dermal	Heptachlor	1.5	mg/kg	N/A	N/A	M	1.85E-07	kg/kg-day	9.00E+00	$(mg/kg-day)^{-1}$	2.5E-06
	Dinoseb	29000	mg/kg	N/A	N/A	M	1.85E-07	kg/kg-day	N/A	$(mg/kg-day)^{-1}$	N/A
	Propanil	4000	mg/kg	N/A	N/A	M	1.85E-07	kg/kg-day	N/A	$(mg/kg-day)^{-1}$	N/A
										Total Risk Across All Exposure Routes/Pathways	2.7E-06

See Table 49 for definitions and sources of equation variables for pathway-specific intake factor calculations.

EPC = Exposure point concentration
mg/kg = milligram per kilogram
N/A = Not applicable
M = Medium-specific concentration
ND = No data available

TABLE 78A
CALCULATION OF NON-CANCER HAZARDS
REASONABLE MAXIMUM EXPOSURE
CEDAR CHEMICAL CORPORATION, WEST HELENA, ARKANSAS

Scenario Timeframe:	Future
Medium:	Soil
Exposure Medium:	Surface Soil
Exposure Point:	Site 9 Surface Soil
Receptor Population:	Trespasser
Receptor Age:	Adolescent

Exposure Route	Chemical of Potential Concern	Medium EPC Value	Medium EPC Units	Route EPC Value	Route EPC Units	EPC Selected for Hazard Calculation (1)	Intake (Non-Cancer)	Intake (Non-Cancer) Units	Reference Dose (2)	Reference Dose Units	Reference Concentration	Reference Concentration Units	Hazard Quotient
Ingestion	Heptachlor	1.5	mg/kg	N/A	N/A	M	1.58E-07	kg/kg-day	5.00E-04	mg/kg-day	N/A	N/A	0.00047
	Dinoseb	29000	mg/kg	N/A	N/A	M	1.58E-07	kg/kg-day	1.00E-03	mg/kg-day	N/A	N/A	4.6
	Propanil	4000	mg/kg	N/A	N/A	M	1.58E-07	kg/kg-day	5.00E-03	mg/kg-day	N/A	N/A	0.127
Inhalation	Heptachlor	1.5	mg/kg	N/A	N/A	M	3.08E-11	kg/kg-day	N/A	mg/kg-day	N/A	N/A	N/A
	Dinoseb	29000	mg/kg	N/A	N/A	M	3.08E-11	kg/kg-day	N/A	mg/kg-day	N/A	N/A	N/A
	Propanil	4000	mg/kg	N/A	N/A	M	3.08E-11	kg/kg-day	N/A	mg/kg-day	N/A	N/A	N/A
Dermal	Heptachlor	1.5	mg/kg	N/A	N/A	M	1.30E-06	kg/kg-day	2.50E-04	mg/kg-day	N/A	N/A	0.0078
	Dinoseb	29000	mg/kg	N/A	N/A	M	1.30E-06	kg/kg-day	5.00E-04	mg/kg-day	N/A	N/A	75.3
	Propanil	4000	mg/kg	N/A	N/A	M	1.30E-06	kg/kg-day	2.50E-03	mg/kg-day	N/A	N/A	2 1
												Total Hazard Index Across All Exposure Routes/Pathways	82

See Table 49 for definitions and sources of equation variables for pathway-specific intake factor calculations.

EPC = Exposure point concentration
mg/kg = milligram per kilogram
N/A = Not applicable
M = Media-specific concentration
mg/cu. M = milligram per cubic meter

TABLE 78C
SUMMARY OF RECEPTOR RISKS AND HAZARDS FOR COPCs
REASONABLE MAXIMUM EXPOSURE
CEDAR CHEMICAL CORPORATION, WEST HELENA, ARKANSAS

Scenario Timeframe: Future
Receptor Population: Trespasser
Receptor Age: Adolescent

Medium	Exposure Medium	Exposure Point	Chemical	Carcinogenic Risk				Chemical	Non-Carcinogenic Hazard Quotient			
				Ingestion	Inhalation	Dermal	Exposure Routes Total		Ingestion	Inhalation	Dermal	Exposure Routes Total
Soil	Surface Soil	Site 9	Heptachlor	2E-07	3E-11	3E-06	3E-06	Heptachlor	0.00047	N/A	0.0078	0.0083
			Dinoseb	N/A	N/A	N/A	N/A	Dinoseb	4.6	N/A	75.3	80
			Propanil	N/A	N/A	N/A	N/A	Propanil	0.127	N/A	2.1	2
						Total Risk Across[Soil]	3E-06	Total Hazard Index Across All Media and All Exposure Routes				82
						Total Risk Across All Media and All Exposure Routes	3E-06					

N/A = Not Applicable

TABLE 79A
CALCULATION OF NON-CANCER HAZARDS
REASONABLE MAXIMUM EXPOSURE
CEDAR CHEMICAL CORPORATION, WEST HELENA, ARKANSAS

Scenario Timeframe:	Future
Medium:	Groundwater
Exposure Medium:	Alluvial Groundwater
Exposure Point:	Alluvial Groundwater
Receptor Population:	Offsite Agricultural Workers
Receptor Age:	Adult

Exposure Route	Chemical of Potential Concern	Medium EPC Value	Medium EPC Units	Route EPC Value	Route EPC Units	EPC Selected for Hazard Calculation	Intake (Non-Cancer)	Intake (Non-Cancer) Units	Reference Dose (2)	Reference Dose Units	Reference Concentration	Reference Concentration Units	Hazard Quotient
Inhalation	1,1,2-Trichloroethane	0.027	mg/L	1.9E-02	mg/m^3	R	5.80E-03	mg/kg-day	N/A	mg/kg-day	N/A	N/A	N/A
	1,2-Dichloroethane	87	mg/L	2.9E+00	mg/m^3	R	5.80E-03	mg/kg-day	2.86E-03	mg/kg-day	N/A	N/A	5.8
	1,2-Dichloropropane	0.043	mg/L	7.1E-02	mg/m^3	R	5.80E-03	mg/kg-day	1.14E-03	mg/kg-day	N/A	N/A	0.36
	4-Methyl-2-Pentanone (MIBK)	2.5	mg/L	2.8E-02	mg/m^3	R	5.80E-03	mg/kg-day	2.29E-02	mg/kg-day	N/A	N/A	0.007
	Acetone	2	mg/L	5.2E+00	mg/m^3	R	5.80E-03	mg/kg-day	N/A	mg/kg-day	N/A	N/A	N/A
	Benzene	0.046	mg/L	2.2E-01	mg/m^3	R	5.80E-03	mg/kg-day	N/A	mg/kg-day	N/A	N/A	N/A
	Bromodichloromethane	0.006	mg/L	2.8E-02	mg/m^3	R	5.80E-03	mg/kg-day	N/A	mg/kg-day	N/A	N/A	N/A
	Bromoform	0.011	mg/L	1.3E-02	mg/m^3	R	5.80E-03	mg/kg-day	N/A	mg/kg-day	N/A	N/A	N/A
	Chlorobenzene	0.47	mg/L	4.8E-02	mg/m^3	R	5.80E-03	mg/kg-day	5.71E-03	mg/kg-day	N/A	N/A	0.048
	Chloroform	1.40	mg/L	1.4E-01	mg/m^3	R	5.80E-03	mg/kg-day	8.57E-01	mg/kg-day	N/A	N/A	0.00098
	Dibromochloromethane	0.013	mg/L	1.4E-04	mg/m^3	R	5.80E-03	mg/kg-day	5.71E-02	mg/kg-day	N/A	N/A	0.000014
	Methylene chloride	5	mg/L	4.4E+01	mg/m^3	R	5.80E-03	mg/kg-day	8.75E-01	mg/kg-day	N/A	N/A	0.29
	Toluene	140	mg/L	2.8E+01	mg/m^3	R	5.80E-03	mg/kg-day	1.14E-01	mg/kg-day	N/A	N/A	1.4
												Total Hazard Index Across All Exposure Routes/Pathways	8

See Table 56 for definitions and sources of equation variables for pathway-specific intake factor calculations.

EPC = Exposure point concentration
mg/kg = milligram per kilogram
N/A = Not applicable
R = Route-specific concentration
$\mu g/m^3$ = micrograms per cubic meter

TABLE 79B
CALCULATION OF CANCER RISKS
REASONABLE MAXIMUM EXPOSURE
CEDAR CHEMICAL CORPORATION, WEST HELENA, ARKANSAS

Scenario Timeframe:	Future
Medium:	Groundwater
Exposure Medium:	Alluvial Groundwater
Exposure Point:	Alluvial Groundwater
Receptor Population:	Offsite Agricultural Workers
Receptor Age:	Adult

Exposure Route	Chemical of Potential Concern	Medium EPC Value	Medium EPC Units	Route EPC Value	Route EPC Units	EPC Selected for Risk Calculation	Intake (Cancer)	Intake (Cancer) Units	Cancer Slope Factor	Cancer Slope Factor Units	Cancer Risk
Inhalation	1,1,2-Trichloroethane	0.027	mg/L	1.9E-02	mg/m^3	R	2.07E-03	mg/kg-day	5.60E-02	$(mg/kg\text{-}day)^{-1}$	2.2E-06
	1,2-Dichloroethane	**87**	**mg/L**	**2.9E+00**	mg/m^3	**R**	**2.07E-03**	**mg/kg-day**	**9.10E-02**	$(mg/kg\text{-}day)^{-1}$	**5.4E-04**
	1,2-Dichloropropane	0.043	mg/L	7.1E-02	mg/m^3	R	2.07E-03	mg/kg-day	N/A	$(mg/kg\text{-}day)^{-1}$	N/A
	4-Methyl-2-Pentanone (MIBK)	2.5	mg/L	2.8E-02	mg/m^3	R	2.07E-03	mg/kg-day	N/A	$(mg/kg\text{-}day)^{-1}$	N/A
	Acetone	2	mg/L	5.2E+00	mg/m^3	R	2.07E-03	mg/kg-day	N/A	$(mg/kg\text{-}day)^{-1}$	N/A
	Benzene	**0.046**	**mg/L**	**2.2E-01**	mg/m^3	**R**	**2.07E-03**	**mg/kg-day**	**2.90E-02**	$(mg/kg\text{-}day)^{-1}$	**1.3E-05**
	Bromodichloromethane	0.0061	mg/L	2.8E-02	mg/m^3	R	2.07E-03	mg/kg-day	N/A	$(mg/kg\text{-}day)^{-1}$	N/A
	Bromoform	0.011	mg/L	1.3E-02	mg/m^3	R	2.07E-03	mg/kg-day	3.85E-03	$(mg/kg\text{-}day)^{-1}$	1.0E-07
	Chlorobenzene	0.47	mg/L	4.8E-02	mg/m^3	R	2.07E-03	mg/kg-day	N/A	$(mg/kg\text{-}day)^{-1}$	N/A
	Chloroform	1.4	mg/L	1.4E-01	mg/m^3	R	2.07E-03	mg/kg-day	8.10E-02	$(mg/kg\text{-}day)^{-1}$	2.4E-05
	Dibromochloromethane	0.013	mg/L	1.4E-04	mg/m^3	R	2.07E-03	mg/kg-day	N/A	$(mg/kg\text{-}day)^{-1}$	N/A
	Methylene chloride	**5**	**mg/L**	**4.4E+01**	mg/m^3	**R**	**2.07E-03**	**mg/kg-day**	**1.60E-03**	$(mg/kg\text{-}day)^{-2}$	**1.5E-04**
	Toluene	140	mg/L	2.8E+01	mg/m^3	R	2.07E-03	mg/kg-day	N/A	$(mg/kg\text{-}day)^{-2}$	N/A
											7E-04

See Table 56 for definitions and sources of equation variables for pathway-specific intake factor calculations.

EPC = Exposure point concentration
mg/kg = milligram per kilogram
N/A = Not applicable
R = Route-specific concentration
$\mu g/m^3$ = micrograms per cubic meter

TABLE 79C
SUMMARY OF RECEPTOR RISKS AND HAZARDS FOR COPCs
REASONABLE MAXIMUM EXPOSURE
CEDAR CHEMICAL CORPORATION, WEST HELENA, ARKANSAS

Scenario Timeframe:	Future
Receptor Population:	Offsite Agricultural Worker
Receptor Age:	Adult

Medium	Exposure Medium	Exposure Point	Chemical	Carcinogenic Risk				Chemical	Non-Carcinogenic Hazard Quotient			
				Ingestion	Inhalation	Dermal	Exposure Routes Total		Ingestion	Inhalation	Dermal	Exposure Routes Total
Water	Alluvial Groundwater	Offsite Agricultural Wells	1,1,2-Trichloroethane	N/A	2E-06	N/A	2E-06	1,1,2-Trichloroethane	N/A	N/A	N/A	N/A
			1,2-Dichloroethane	N/A	5E-04	N/A	5E-04	1,2-Dichloroethane	N/A	6	N/A	6
			1,2-Dichloropropane	N/A	N/A	N/A	N/A	1,2-Dichloropropane	N/A	0.36	N/A	0.36
			4-Methyl-2-Pentanone (MIBK)	N/A	N/A	N/A	N/A	4-Methyl-2-Pentanone (MIBK)	N/A	0.01	N/A	0.01
			Acetone	N/A	N/A	N/A	N/A	Acetone	N/A	N/A	N/A	N/A
			Benzene	N/A	1E-05	N/A	1E-05	Benzene	N/A	N/A	N/A	N/A
			Bromodichloromethane	N/A	N/A	N/A	N/A	Bromodichloromethane	N/A	N/A	N/A	N/A
			Bromoform	N/A	1E-07	N/A	1E-07	Bromoform	N/A	N/A	N/A	N/A
			Chlorobenzene	N/A	N/A	N/A	N/A	Chlorobenzene	N/A	0.048	N/A	0.048
			Chloroform	N/A	2E-05	N/A	2E-05	Chloroform	N/A	9.77E-04	N/A	9.77E-04
			Dibromochloromethane	N/A	N/A	N/A	N/A	Dibromochloromethane	N/A	1.42E-05	N/A	1.42E-05
			Methylene chloride	N/A	1E-04	N/A	1E-04	Methylene chloride	N/A	0.29	N/A	0.29
			Toluene	N/A	N/A	N/A	N/A	Toluene	N/A	1.4	N/A	1.4
						Total Risk Across[Medium]	7E-04	Total Hazard Index Across All Media and All Exposure Routes				8
						Total Risk Across All Media and All Exposure Routes	7E-04					

N/A = Not Applicable

TABLE 80
RISK ASSESSMENT SUMMARY
REASONABLE MAXIMUM EXPOSURE
CEDAR CHEMICAL CORPORATION, WEST HELENA, ARKANSAS

Scenario Timeframe: Future
Receptor Population: Construction Worker
Receptor Age: Adult

Medium	Exposure Medium	Exposure Point	Chemical	Carcinogenic Risk				Chemical	Non-Carcinogenic Hazard Quotient			
				Ingestion	Inhalation	Dermal	Exposure Routes Total		Ingestion	Inhalation	Dermal	Exposure Routes Total
Groundwater	Perched Groundwater (1)	Site 1 & 2	N/A	N/A	N/A	N/A	N/A	3,4-Dichloroaniline	3	N/A	69	72
								4-Chloroaniline	0.28	N/A	7	7
								1,2-Dichloroethane	2	N/A	5	7
								Methylene chloride	2	N/A	4	6
Soil	Surface and Subsurface Soil	Site 2	N/A	N/A	N/A	N/A	N/A	1,2-Dichloroethane	N/A	1.3	N/A	1.3
Soil	Subsurface Soil	Site 3	N/A	N/A	N/A	N/A	N/A	Dinoseb	15	N/A	25	40
Soil	Surface and Subsurface Soil	Site 4	N/A	N/A	N/A	N/A	N/A	3,4- Dichloroaniline	3	N/A	6	9
								Dinoseb	1	N/A	2	3
Soil	Surface and Subsurface Soil	Site 9	N/A	N/A	N/A	N/A	N/A	Dinoseb	33	N/A	56	89
								Propanil	0.9	N/A	1.5	2

Total Risk Across[Soil]	N/A
Total Risk Across[Groundwater]	N/A
Total Risk Across All Media and All Exposure Routes	N/A

otal Hazard Index Across All Media and All Exposure Routes By Site

Site 1	93
Site 2	195
Site 3	40
Site 4	13
Site 9	91

332

see table 65C

N/A = Not Applicable. Carcinogenic or noncarcinogenic risks did not exceed 1E-04 or 1, respectively.

TABLE 81
RISK ASSESSMENT SUMMARY
REASONABLE MAXIMUM EXPOSURE
CEDAR CHEMICAL CORPORATION, WEST HELENA, ARKANSAS

Scenario Timeframe: Future
Receptor Population: Site Worker
Receptor Age: Adult

Medium	Exposure Medium	Exposure Point	Chemical	Carcinogenic Risk				Chemical				
				Ingestion	Inhalation	Dermal	Exposure Routes Total		Ingestion	Inhalation	Dermal	Exposure Routes Total
Soil	Surface Soil	Site 9	N/A	N/A	N/A	N/A	N/A	Heptachlor	0.0015	N/A	0.024	0.026
			N/A	N/A	N/A	N/A	N/A	Dinoseb	14	N/A	233	247
			N/A	N/A	N/A	N/A	N/A	Propanil	0.4	N/A	6.4	7
				Total Risk Across[Surface Soil]			N/A	otal Hazard Index Across All Media and All Exposure Routes				
											Site 9	254

N/A = Not Applicable. Carcinogenic or noncarcinogenic risks did not exceed 1E-04 or 1, respectively.

TABLE 82
RISK ASSESSMENT SUMMARY
REASONABLE MAXIMUM EXPOSURE
CEDAR CHEMICAL CORPORATION, WEST HELENA, ARKANSAS

Scenario Timeframe: Future
Receptor Population: Trespasser
Receptor Age: Adolescent

Medium	Exposure Medium	Exposure Point	Chemical	Carcinogenic Risk				Chemical	Non-Carcinogenic Hazard Quotient			
				Ingestion	Inhalation	Dermal	Exposure Routes Total		Ingestion	Inhalation	Dermal	Exposure Routes Total
Soil	Surface Soil	Site 9	N/A	N/A	N/A	N/A	N/A	Dinoseb	5	N/A	75	80
								Propanil	0.13	N/A	2	2
						Total Risk Across[Soil]	N/A				Total Hazard Index Across All Media and All Exposure Routes	82

N/A = Not Applicable. Carcinogenic or noncarcinogenic risks did not exceed 1E-04 or 1, respectively.

TABLE 83
RISK ASSESSMENT SUMMARY
REASONABLE MAXIMUM EXPOSURE
CEDAR CHEMICAL CORPORATION, WEST HELENA, ARKANSAS

Scenario Timeframe: Future
Receptor Population: Offsite Worker
Receptor Age: Adult

Medium	Exposure Medium	Exposure Point	Chemical	Carcinogenic Risk				Chemical				
				Ingestion	Inhalation	Dermal	Exposure Routes Total		Ingestion	Inhalation	Dermal	Exposure Routes Total
Groundwater	Alluvial Groundwater	Offsite	1,1,2-Trichloroethane	N/A	8E-05	N/A	8E-05	1,1,2-Trichloroethane	N/A	N/A	N/A	N/A
			1,2-Dichloroethane	N/A	5E-01	N/A	5E-01	1,2-Dichloroethane	N/A	7896	N/A	7896
			1,2-Dichloropropane	N/A	N/A	N/A	N/A	1,2-Dichloropropane	N/A	21	N/A	21
			Benzene	N/A	3E-04	N/A	3E-04	Benzene	N/A	N/A	N/A	N/A
			Bromodichloromethane	N/A	N/A	N/A	N/A	Bromodichloromethane	N/A	N/A	N/A	N/A
			Bromoform	N/A	2E-06	N/A	2E-06	Bromoform	N/A	N/A	N/A	N/A
			Chlorobenzene	N/A	N/A	N/A	N/A	Chlorobenzene	N/A	61	N/A	61
			Chloroform	N/A	2E-02	N/A	2E-02	Chloroform	N/A	0.98	N/A	0.98
			Methylene chloride	N/A	5E-01	N/A	5E-01	Methylene chloride	N/A	3	N/A	3
			Toluene	N/A	N/A	N/A	N/A	Toluene	N/A	1941	N/A	1941
						Total Risk Across[Soil]	1E+00	Total Hazard Index Across All Media and All Exposure Routes				9923

N/A = Not Applicble. Carcinogenic or noncarcinogenic risks did not exceed 1E-04 or 1, respectively.

Appendix B

Analytical Data

CEDAR CHEMICAL CORPORATION
WEST HELENA, ARKANSAS
SITE 1 PHASE I SURFACE SOIL DATA

PEST	SHORT ID --------->	1HA-1 (0-1')		1HA-2 (0-1')		1HA-3 (0-1')		1HA-4 (0-1')		1HA-5 (0-1')		1MW-1 (0-5')	
	ORIGINAL ID ----->	CED1SHA-1		CED1SHA-2		CED1SHA-3		CED1SHA-4		CED1SHA-5		CED1SMW-1-1	
	SAMPLE DATE ----->	09/02/93		09/02/93		09/02/93		09/02/93		09/02/93		08/31/93	
	DATE ANALYZED --->	09/11/93		09/11/93		09/11/93		09/12/93		09/12/93		09/11/93	
	MATRIX ---------->	Soil		Soil		Soil		Soil		Soil		Soil	
	UNITS ---------->	UG/KG		UG/KG		UG/KG		UG/KG		UG/KG		UG/KG	
CAS #	Parameter	E002	VAL	E002	VAL	E002	VAL	E003	VAL	E003	VAL	E002	VAL
1024-57-3	Heptachlor Epoxide	340.	U	69.	U	60.	U	630.	U	3200.	U	67.	U
1031-07-8	Endosulfan Sulfate	270.	U	55.	U	48.	U	50.	U	4900.		53.	U
309-00-2	Aldrin	16.	U	22.		2.9	U	31.	U	150.	U	3.2	U
319-84-6	Alpha-BHC	12.	U	2.5	U	2.2	U	23.	U	110.	U	2.4	U
319-85-7	Beta-BHC	24.	U	5.	U	4.4	U	47.		510.		4.8	U
319-86-8	Delta-BHC	37.	U	7.5	U	6.6	U	69.	U	2100.		7.2	U
33213-65-9	Endosulfan II	16.	U	3.3	U	2.9	U	31.	U	150.	U	3.2	U
50-29-3	4,4'-DDT	380.		10.	U	31.		92.	U	460.	U	9.6	U
5103-71-9	alpha-Chlordane	57.	U	12.	U	10.	U	110.	U	530.	U	11.	U
5103-74-2	gamma-Chlordane	57.	U	12.	U	10.	U	110.	U	530.	U	11.	U
53494-70-5	Endrin ketone	98.	U	20.	U	17.	U	180.	U	920.	U	19.	U
58-89-9	gamma-BHC (Lindane)	16.	U	3.3	U	2.9	U	31.	U	150.	U	3.2	U
60-57-1	Dieldrin	8.1	U	1.7	U	1.4	U	15.	U	593.		1.6	U
72-20-8	Endrin	24.	U	5.	U	4.4	U	46.	U	230.	U	4.8	U
72-43-5	Methoxychlor	730.	U	150.	U	130.	U	140.	U	6900.	U	140.	U
72-54-8	4,4'-DDD	110.		9.2	U	8.	U	84.	U	420.	U	12.	
72-55-9	4,4'-DDE	98.		47.		7.8		31.		150.	U	11.	
76-44-8	Heptachlor	12.	U	2.5	U	2.2	U	23.	U	110.	U	2.4	U
8001-35-2	Toxaphene	980.	U	200.	U	170.	U	180.	U	9200.	U	190.	U
959-98-8	Endosulfan I	57.	U	12.	U	10.	U	110.	U	530.	U	11.	U

*** Validation Complete ***

CEDAR CHEMICAL CORPORATION
WEST HELENA, ARKANSAS
SITE 1 PHASE I SURFACE SOIL DATA

PEST		SHORT ID --------->	1MW-2 (0-5')		1MW-3 (0-5')		1MW-4 (0-5')		1MW-5 (0-5')			
		ORIGINAL ID ----->	CED1SMW-2-1		CED1SMW-3-1		CED1SMW-4-1		CED1SMW-5-1			
		SAMPLE DATE ----->	08/31/93		09/01/93		09/01/93		09/01/93			
		DATE ANALYZED --->	09/11/93		09/11/93		09/11/93		09/11/93			
		MATRIX ---------->	Soil		Soil		Soil		Soil			
		UNITS ---------->	UG/KG		UG/KG		UG/KG		UG/KG			
CAS #	Parameter		E002	VAL	E002	VAL	E002	VAL	E002	VAL		
1024-57-3	Heptachlor Epoxide		65.	U	64.	U	65.	U	65.	U		
1031-07-8	Endosulfan Sulfate		52.	U	51.	U	52.	U	52.	U		
309-00-2	Aldrin		3.1	U	3.1	U	3.1	U	3.2	U		
319-84-6	Alpha-BHC		2.4	U	2.3	U	2.4	U	2.4	U		
319-85-7	Beta-BHC		4.7	U	4.6	U	4.7	U	4.7	U		
319-86-8	Delta-BHC		7.1	U	7.	U	7.1	U	7.1	U		
33213-65-9	Endosulfan II		3.1	U	3.1	U	3.1	U	3.2	U		
50-29-3	4,4'-DDT		9.4	U	9.3	U	9.4	U	9.5	U		
5103-71-9	alpha-Chlordane		11.	U	11.	U	11.	U	11.	U		
5103-74-2	gamma-Chlordane		11.	U	11.	U	11.	U	11.	U		
53494-70-5	Endrin ketone		19.	U	18.	U	19.	U	19.	U		
58-89-9	gamma-BHC (Lindane)		3.1	U	3.1	U	3.1	U	3.2	U		
60-57-1	Dieldrin		1.6	U	1.5	U	1.6	U	1.6	U		
72-20-8	Endrin		4.7	U	4.6	U	4.7	U	4.7	U		
72-43-5	Methoxychlor		140.	U	140.	U	140.	U	140.	U		
72-54-8	4,4'-DDD		13.		8.5	U	8.6	U	15.			
72-55-9	4,4'-DDE		6.1		3.1	U	3.1	U	11.			
76-44-8	Heptachlor		2.4	U	2.3	U	2.4	U	2.4	U		
8001-35-2	Toxaphene		190.	U	190.	U	190.	U	190.	U		
959-98-8	Endosulfan I		11.	U	11.	U	11.	U	11.	U		

*** Validation Complete ***

CEDAR CHEMICAL CORPORATION
WEST HELENA, ARKANSAS
SITE 1 PHASE I SURFACE SOIL DATA

RCRA METAL													
	SHORT ID --------->	1HA-1 (0-1')		1HA-2 (0-1')		1HA-3 (0-1')		1HA-4 (0-1')		1HA-5 (0-1')		1MW-1 (0-5')	
	ORIGINAL ID ----->	CED1SHA-1		CED1SHA-2		CED1SHA-3		CED1SHA-4		CED1SHA-5		CED1SMW-1-1	
	SAMPLE DATE ----->	09/02/93		09/02/93		09/02/93		09/02/93		09/02/93		08/31/93	
	DATE ANALYZED --->	09/16/93		09/16/93		09/16/93		10/01/93		10/01/93		09/16/93	
	MATRIX ---------->	Soil		Soil		Soil		Soil		Soil		Soil	
	UNITS ---------->	MG/KG		MG/KG		MG/KG		MG/KG		MG/KG		MG/KG	
CAS #	Parameter	E002	VAL	E002	VAL	E002	VAL	E003	VAL	E003	VAL	E002	VAL
7440-38-2	Arsenic (As)	5.1		44.6		5.8		7.3		3.2		5.7	
7440-39-3	Barium (Ba)	119.		164.		163.		152.		43.8		248.	
7440-43-9	Cadmium (Cd)	0.36	U	0.37	U	0.33	U	0.33	U	0.33	U	0.35	U
7440-47-3	Chromium (Cr)	10.6		14.2		12.7		13.5		9.3		12.7	
7439-92-1	Lead (Pb)	8.1		8.7		8.9		19.5		7.6		9.1	
7439-97-6	Mercury (Hg)	0.11	U	0.11	U	0.1	U	0.1	U	0.1	U	0.11	U
7782-49-2	Selenium (Se)	0.6	U	0.62	U	0.55	U	0.55	U	0.55	U	0.59	U
7440-22-4	Silver (Ag)	0.36	U	0.37	U	0.33	U	0.33	U	0.33	U	0.35	U

*** Validation Complete ***

CEDAR CHEMICAL CORPORATION
WEST HELENA, ARKANSAS
SITE 1 PHASE I SURFACE SOIL DATA

RCRA METAL		SHORT ID --------->	1MW-2 (0-5')		1MW-3 (0-5')		1MW-4 (0-5')		1MW-5 (0-5')			
		ORIGINAL ID ----->	CED1SMW-2-1		CED1SMW-3-1		CED1SMW-4-1		CED1SMW-5-1			
		SAMPLE DATE ----->	08/31/93		09/01/93		09/01/93		09/01/93			
		DATE ANALYZED --->	09/16/93		09/16/93		09/16/93		09/16/93			
		MATRIX ---------->	Soil		Soil		Soil		Soil			
		UNITS ----------->	MG/KG		MG/KG		MG/KG		MG/KG			
CAS #	Parameter		E002	VAL	E002	VAL	E002	VAL	E002	VAL		
7440-38-2	Arsenic (As)		14.		6.8		3.3		5.2			
7440-39-3	Barium (Ba)		156.		100.		271.		108.			
7440-43-9	Cadmium (Cd)		0.35	U	0.34	U	0.34	U	0.36	U		
7440-47-3	Chromium (Cr)		10.9		11.3		11.		13.5			
7439-92-1	Lead (Pb)		9.1		9.3		7.7		8.			
7439-97-6	Mercury (Hg)		0.12	U	0.12	U	0.11	U	0.12	U		
7782-49-2	Selenium (Se)		0.58	U	0.57	U	0.56	U	0.59	U		
7440-22-4	Silver (Ag)		0.35	U	0.34	U	0.34	U	0.36	U		

*** Validation Complete ***

CEDAR CHEMICAL CORPORATION
WEST HELENA, ARKANSAS
SITE 1 PHASE I SURFACE SOIL DATA

SVOA	SHORT ID --------->	1HA-1 (0-1')		1HA-2 (0-1')		1HA-3 (0-1')		1HA-4 (0-1')		1HA-5 (0-1')		1MW-1 (0-5')	
	ORIGINAL ID ----->	CED1SHA-1		CED1SHA-2		CED1SHA-3		CED1SHA-4		CED1SHA-5		CED1SMW-1-1	
	SAMPLE DATE ----->	09/02/93		09/02/93		09/02/93		09/02/93		09/02/93		08/31/93	
	DATE ANALYZED --->	09/28/93		09/28/93		09/24/93		10/08/93		10/01/93		09/23/93	
	MATRIX ---------->	Soil		Soil		Soil		Soil		Soil		Soil	
	UNITS ----------->	UG/KG		UG/KG		UG/KG		UG/KG		UG/KG		UG/KG	
CAS #	Parameter	E002	VAL	E002	VAL	E002	VAL	E003	VAL	E003	VAL	E002	VAL
100-01-6	4-Nitroaniline	1600.	U	1600.	U	1400.	U	300000.	U	4500.	U	1600.	U
100-02-7	4-Nitrophenol	4000.	U	4100.	U	3600.	U	760000.	U	11000.	U	4000.	U
100-51-6	Benzyl alcohol	1600.	U	1600.	U	1400.	U	300000.	U	4500.	U	1600.	U
101-55-3	4-Bromophenyl-phenylether	800.	U	820.	U	720.	U	150000.	U	2300.	U	790.	U
105-67-9	2,4-Dimethylphenol	800.	U	820.	U	720.	U	150000.	U	2300.	U	790.	U
106-44-5	4-Methylphenol (p-Cresol)	800.	U	820.	U	720.	U	150000.	U	2300.	U	790.	U
106-46-7	1,4-Dichlorobenzene	800.	U	820.	U	720.	U	150000.	U	260.		790.	U
106-47-8	4-Chloroaniline	1600.	U	1600.	U	1400.	U	300000.	U	4500.	U	1600.	U
108-60-1	bis(2-chloroisopropyl) ether	800.	U	820.	U	720.	U	150000.	U	2300.	U	790.	U
108-95-2	Phenol	800.	U	820.	U	720.	U	150000.	U	2300.	U	790.	U
111-44-4	bis(2-Chloroethyl)ether	800.	U	820.	U	720.	U	150000.	U	2300.	U	790.	U
111-91-1	bis(2-Chloroethoxy)methane	800.	U	820.	U	720.	U	150000.	U	2300.	U	790.	U
117-81-7	bis(2-Ethylhexyl)phthalate (BEHP)	800.	U	820.	U	720.	U	150000.	U	2300.	U	790.	U
117-84-0	Di-n-octylphthalate	800.	U	820.	U	720.	U	150000.	U	2300.	U	790.	U
118-74-1	Hexachlorobenzene	800.	U	820.	U	720.	U	150000.	U	2300.	U	790.	U
120-12-7	Anthracene	800.	U	820.	U	720.	U	150000.	U	2300.	U	790.	U
120-82-1	1,2,4-Trichlorobenzene	800.	U	820.	U	720.	U	150000.	U	2300.	U	790.	U
120-83-2	2,4-Dichlorophenol	800.	U	820.	U	720.	U	150000.	U	2300.	U	790.	U
121-14-2	2,4-Dinitrotoluene	800.	U	820.	U	720.	U	150000.	U	2300.	U	790.	U
129-00-0	Pyrene	800.	U	160.		720.	U	150000.	U	2300.	U	790.	U
131-11-3	Dimethylphthalate	800.	U	820.	U	720.	U	150000.	U	2300.	U	790.	U
132-64-9	Dibenzofuran	800.	U	820.	U	720.	U	150000.	U	2300.	U	790.	U
191-24-2	Benzo(g,h,i)perylene	NR		NR		NR		NR		NR		NR	
193-39-5	Indeno(1,2,3-cd)pyrene	800.	U	820.	U	720.	U	150000.	U	2300.	U	790.	U
205-99-2	Benzo(b)fluoranthene	800.	U	820.	U	720.	U	150000.	U	2300.	U	790.	U
206-44-0	Fluoranthene	800.	U	820.	U	720.	U	150000.	U	2300.	U	790.	U
207-08-9	Benzo(k)fluoranthene	800.	U	820.	U	720.	U	150000.	U	2300.	U	790.	U
208-96-8	Acenaphthylene	800.	U	820.	U	720.	U	150000.	U	2300.	U	790.	U
218-01-9	Chrysene	800.	U	820.	U	720.	U	150000.	U	2300.	U	790.	U
50-32-8	Benzo(a)pyrene	800.	U	820.	U	720.	U	150000.	U	2300.	U	790.	U
51-28-5	2,4-Dinitrophenol	800.	U	820.	U	720.	U	150000.	U	2300.	U	790.	U
534-52-1	4,6-Dinitro-2-methylphenol	4000.	U	4100.	U	3600.	U	760000.	U	11000.	U	4000.	U
53-70-3	Dibenz(a,h)anthracene	NR		NR		NR		NR		NR		NR	
541-73-1	1,3-Dichlorobenzene	800.	U	820.	U	720.	U	150000.	U	2300.	U	790.	U
56-55-3	Benzo(a)anthracene	800.	U	820.	U	720.	U	150000.	U	2300.	U	790.	U
59-50-7	4-Chloro-3-methylphenol	1600.	U	1600.	U	1400.	U	300000.	U	4500.	U	1600.	U
606-20-2	2,6-Dinitrotoluene	800.	U	820.	U	720.	U	150000.	U	2300.	U	790.	U
621-64-7	N-Nitroso-di-n-propylamine	800.	U	820.	U	720.	U	150000.	U	2300.	U	790.	U
65-85-0	Benzoic acid	4000.	U	4100.	U	3600.	U	760000.	U	11000.	U	4000.	U

*** Validation Complete ***

CEDAR CHEMICAL CORPORATION
WEST HELENA, ARKANSAS
SITE 1 PHASE I SURFACE SOIL DATA

SVOA	SHORT ID --------->	1HA-1 (0-1')		1HA-2 (0-1')		1HA-3 (0-1')		1HA-4 (0-1')		1HA-5 (0-1')		1HW-1 (0-5')	
	ORIGINAL ID ----->	CED1SHA-1		CED1SHA-2		CED1SHA-3		CED1SHA-4		CED1SHA-5		CED1SHW-1-1	
	SAMPLE DATE ----->	09/02/93		09/02/93		09/02/93		09/02/93		09/02/93		08/31/93	
	DATE ANALYZED --->	09/28/93		09/28/93		09/24/93		10/08/93		10/01/93		09/23/93	
	MATRIX ---------->	Soil		Soil		Soil		Soil		Soil		Soil	
	UNITS ---------->	UG/KG		UG/KG		UG/KG		UG/KG		UG/KG		UG/KG	
CAS #	Parameter	E002	VAL	E002	VAL	E002	VAL	E003	VAL	E003	VAL	E002	VAL
67-72-1	Hexachloroethane	800.	U	820.	U	720.	U	150000.	U	2300.	U	790.	U
7005-72-3	4-Chlorophenyl-phenylether	800.	U	820.	U	720.	U	150000.	U	2300.	U	790.	U
709-98-8	Propanil	800.	U	820.	U	720.	U	150000.	U	2300.	U	790.	U
77-47-4	Hexachlorocyclopentadiene	800.	U	820.	U	720.	U	150000.	U	2300.	U	790.	U
78-59-1	Isophorone	800.	U	820.	U	720.	U	150000.	U	2300.	U	790.	U
83-32-9	Acenaphthene	800.	U	820.	U	720.	U	150000.	U	2300.	U	790.	U
84-66-2	Diethylphthalate	800.	U	820.	U	720.	U	150000.	U	2300.	U	790.	U
84-74-2	Di-n-butylphthalate	800.	U	820.	U	720.	U	150000.	U	750.	J	790.	U
85-01-8	Phenanthrene	800.	U	820.	U	720.	U	150000.	U	2300.	U	790.	U
85-68-7	Butylbenzylphthalate	800.	U	820.	U	720.	U	150000.	U	2300.	U	790.	U
86-30-6	N-Nitrosodiphenylamine	800.	U	820.	U	720.	U	150000.	U	2300.	U	790.	U
86-73-7	Fluorene	800.	U	820.	U	720.	U	150000.	U	2300.	U	790.	U
87-68-3	Hexachlorobutadiene	800.	U	820.	U	720.	U	150000.	U	2300.	U	790.	U
87-86-5	Pentachlorophenol	4000.	U	4100.	U	3600.	U	760000.	U	11000.	U	4000.	U
88-06-2	2,4,6-Trichlorophenol	800.	U	820.	U	720.	U	150000.	U	2300.	U	790.	U
88-74-4	2-Nitroaniline	4000.	U	4100.	U	3600.	U	760000.	U	11000.	U	4000.	U
88-75-5	2-Nitrophenol	800.	U	820.	U	720.	U	150000.	U	2300.	U	790.	U
88-85-7	Dinoseb	9600.		820.	U	720.	U	150000.	U	2300.	U	790.	U
91-20-3	Naphthalene	800.	U	820.	U	720.	U	150000.	U	2300.	U	790.	U
91-57-6	2-Methylnaphthalene	800.	U	820.	U	720.	U	150000.	U	2300.	U	790.	U
91-58-7	2-Chloronaphthalene	800.	U	820.	U	720.	U	150000.	U	2300.	U	790.	U
91-94-1	3,3'-Dichlorobenzidine	1600.	U	1600.	U	1400.	U	300000.	U	4500.	U	1600.	U
95-48-7	2-Methylphenol (o-Cresol)	800.	U	820.	U	720.	U	150000.	U	2300.	U	790.	U
95-50-1	1,2-Dichlorobenzene	800.	U	820.	U	720.	U	150000.	U	2300.	U	790.	U
95-57-8	2-Chlorophenol	800.	U	820.	U	720.	U	150000.	U	2300.	U	790.	U
95-76-1	3,4-Dichloroaniline	800.	U	820.	U	720.	U	150000.	U	2300.	U	790.	U
95-95-4	2,4,5-Trichlorophenol	800.	U	820.	U	720.	U	150000.	U	2300.	U	790.	U
98-95-3	Nitrobenzene	800.	U	820.	U	720.	U	150000.	U	2300.	U	790.	U
99-09-2	3-Nitroaniline	4000.	U	4100.	U	3600.	U	760000.	U	11000.	U	4000.	U

*** Validation Complete ***

CEDAR CHEMICAL CORPORATION
WEST HELENA, ARKANSAS
SITE 1 PHASE I SURFACE SOIL DATA

SVOA

	SHORT ID -------->	1MW-2 (0-5')		1MW-3 (0-5')		1MW-4 (0-5')		1MW-5 (0-5')			
	ORIGINAL ID ----->	CED1SMW-2-1		CED1SMW-3-1		CED1SMW-4-1		CED1SMW-5-1			
	SAMPLE DATE ----->	08/31/93		09/01/93		09/01/93		09/01/93			
	DATE ANALYZED --->	09/23/93		09/23/93		09/23/93		09/24/93			
	MATRIX ---------->	Soil		Soil		Soil		Soil			
	UNITS ----------->	UG/KG		UG/KG		UG/KG		UG/KG			
CAS #	Parameter	E002	VAL	E002	VAL	E002	VAL	E002	VAL		
100-01-6	4-Nitroaniline	1500.	U	1500.	U	1500.	U	1500.	U		
100-02-7	4-Nitrophenol	3900.	U	3800.	U	3900.	U	3900.	U		
100-51-6	Benzyl alcohol	1500.	U	1500.	U	1500.	U	1500.	U		
101-55-3	4-Bromophenyl-phenylether	780.	U	770.	U	770.	U	780.	U		
105-67-9	2,4-Dimethylphenol	780.	U	770.	U	770.	U	780.	U		
106-44-5	4-Methylphenol (p-Cresol)	780.	U	770.	U	770.	U	780.	U		
106-46-7	1,4-Dichlorobenzene	780.	U	770.	U	770.	U	780.	U		
106-47-8	4-Chloroaniline	1500.	U	1500.	U	1500.	U	1500.	U		
108-60-1	bis(2-chloroisopropyl) ether	780.	U	770.	U	770.	U	780.	U		
108-95-2	Phenol	780.	U	770.	U	770.	U	780.	U		
111-44-4	bis(2-Chloroethyl)ether	780.	U	770.	U	770.	U	780.	U		
111-91-1	bis(2-Chloroethoxy)methane	780.	U	770.	U	770.	U	780.	U		
117-81-7	bis(2-Ethylhexyl)phthalate (BEHP)	780.	U	770.	U	770.	U	780.	U		
117-84-0	Di-n-octylphthalate	780.	U	770.	U	770.	U	780.	U		
118-74-1	Hexachlorobenzene	780.	U	770.	U	770.	U	780.	U		
120-12-7	Anthracene	780.	U	770.	U	770.	U	780.	U		
120-82-1	1,2,4-Trichlorobenzene	780.	U	770.	U	770.	U	780.	U		
120-83-2	2,4-Dichlorophenol	780.	U	770.	U	770.	U	780.	U		
121-14-2	2,4-Dinitrotoluene	780.	U	770.	U	770.	U	780.	U		
129-00-0	Pyrene	780.	U	770.	U	770.	U	780.	U		
131-11-3	Dimethylphthalate	780.	U	770.	U	770.	U	780.	U		
132-64-9	Dibenzofuran	780.	U	770.	U	770.	U	780.	U		
191-24-2	Benzo(g,h,i)perylene	NR		NR		NR		NR			
193-39-5	Indeno(1,2,3-cd)pyrene	780.	U	770.	U	770.	U	780.	U		
205-99-2	Benzo(b)fluoranthene	780.	U	770.	U	770.	U	780.	U		
206-44-0	Fluoranthene	780.	U	770.	U	770.	U	780.	U		
207-08-9	Benzo(k)fluoranthene	780.	U	770.	U	770.	U	780.	U		
208-96-8	Acenaphthylene	780.	U	770.	U	770.	U	780.	U		
218-01-9	Chrysene	780.	U	770.	U	770.	U	780.	U		
50-32-8	Benzo(a)pyrene	780.	U	770.	U	770.	U	780.	U		
51-28-5	2,4-Dinitrophenol	780.	U	770.	U	770.	U	780.	U		
534-52-1	4,6-Dinitro-2-methylphenol	3900.	U	3800.	U	3900.	U	3900.	U		
53-70-3	Dibenz(a,h)anthracene	NR		NR		NR		NR			
541-73-1	1,3-Dichlorobenzene	780.	U	770.	U	770.	U	780.	U		
56-55-3	Benzo(a)anthracene	780.	U	770.	U	770.	U	780.	U		
59-50-7	4-Chloro-3-methylphenol	1500.	U	1500.	U	1500.	U	1500.	U		
606-20-2	2,6-Dinitrotoluene	780.	U	770.	U	770.	U	780.	U		
621-64-7	N-Nitroso-di-n-propylamine	780.	U	770.	U	770.	U	780.	U		
65-85-0	Benzoic acid	3900.	U	3800.	U	3900.	U	3900.	U		

*** Validation Complete ***

CEDAR CHEMICAL CORPORATION
WEST HELENA, ARKANSAS
SITE 1 PHASE I SURFACE SOIL DATA

SVOA		SHORT ID --------->	1MW-2 (0-5')		1MW-3 (0-5')		1MW-4 (0-5')		1MW-5 (0-5')			
		ORIGINAL ID ----->	CED1SMW-2-1		CED1SMW-3-1		CED1SMW-4-1		CED1SMW-5-1			
		SAMPLE DATE ----->	08/31/93		09/01/93		09/01/93		09/01/93			
		DATE ANALYZED --->	09/23/93		09/23/93		09/23/93		09/24/93			
		MATRIX ---------->	Soil		Soil		Soil		Soil			
		UNITS ---------->	UG/KG		UG/KG		UG/KG		UG/KG			
CAS #	Parameter		E002	VAL	E002	VAL	E002	VAL	E002	VAL		
67-72-1	Hexachloroethane		780.	U	770.	U	770.	U	780.	U		
7005-72-3	4-Chlorophenyl-phenylether		780.	U	770.	U	770.	U	780.	U		
709-98-8	Propanil		780.	U	770.	U	770.	U	780.	U		
77-47-4	Hexachlorocyclopentadiene		780.	U	770.	U	770.	U	780.	U		
78-59-1	Isophorone		780.	U	770.	U	770.	U	780.	U		
83-32-9	Acenaphthene		780.	U	770.	U	770.	U	780.	U		
84-66-2	Diethylphthalate		780.	U	770.	U	770.	U	780.	U		
84-74-2	Di-n-butylphthalate		780.	U	770.	U	770.	U	780.	U		
85-01-8	Phenanthrene		780.	U	770.	U	770.	U	780.	U		
85-68-7	Butylbenzylphthalate		780.	U	770.	U	770.	U	780.	U		
86-30-6	N-Nitrosodiphenylamine		780.	U	770.	U	770.	U	780.	U		
86-73-7	Fluorene		780.	U	770.	U	770.	U	780.	U		
87-68-3	Hexachlorobutadiene		780.	U	770.	U	770.	U	780.	U		
87-86-5	Pentachlorophenol		3900.	U	3800.	U	3900.	U	3900.	U		
88-06-2	2,4,6-Trichlorophenol		780.	U	770.	U	770.	U	780.	U		
88-74-4	2-Nitroaniline		3900.	U	3800.	U	3900.	U	3900.	U		
88-75-5	2-Nitrophenol		780.	U	770.	U	770.	U	780.	U		
88-85-7	Dinoseb		780.	U	770.	U	770.	U	780.	U		
91-20-3	Naphthalene		780.	U	770.	U	770.	U	780.	U		
91-57-6	2-Methylnaphthalene		780.	U	770.	U	770.	U	780.	U		
91-58-7	2-Chloronaphthalene		780.	U	770.	U	770.	U	780.	U		
91-94-1	3,3'-Dichlorobenzidine		1500.	U	1500.	U	1500.	U	1500.	U		
95-48-7	2-Methylphenol (o-Cresol)		780.	U	770.	U	770.	U	780.	U		
95-50-1	1,2-Dichlorobenzene		780.	U	770.	U	770.	U	780.	U		
95-57-8	2-Chlorophenol		780.	U	770.	U	770.	U	780.	U		
95-76-1	3,4-Dichloroaniline		780.	U	770.	U	770.	U	780.	U		
95-95-4	2,4,5-Trichlorophenol		780.	U	770.	U	770.	U	780.	U		
98-95-3	Nitrobenzene		780.	U	770.	U	770.	U	780.	U		
99-09-2	3-Nitroaniline		3900.	U	3800.	U	3900.	U	3900.	U		

*** Validation Complete ***

CEDAR CHEMICAL CORPORATION
WEST HELENA, ARKANSAS
SITE 1 PHASE I SURFACE SOIL DATA

VOA	SHORT ID -------->	1HA-1 (0-1')		1HA-2 (0-1')		1HA-3 (0-1')		1HA-4 (0-1')		1HA-5 (0-1')		1MW-1 (0-5')	
	ORIGINAL ID ----->	CED1SHA-1		CED1SHA-2		CED1SHA-3		CED1SHA-4		CED1SHA-5		CED1SMW-1-1	
	SAMPLE DATE ----->	09/02/93		09/02/93		09/02/93		09/02/93		09/02/93		08/31/93	
	DATE ANALYZED --->	09/09/93		09/09/93		09/09/93		09/09/93		09/09/93		09/08/93	
	MATRIX ---------->	Soil		Soil		Soil		Soil		Soil		Soil	
	UNITS ----------->	UG/KG		UG/KG		UG/KG		UG/KG		UG/KG		UG/KG	
CAS #	Parameter	E002	VAL	E002	VAL	E002	VAL	E003	VAL	E003	VAL	E002	VAL
100-41-4	Ethylbenzene	6.	U	6.	U	5.	U	6.	U	13.		6.	U
100-42-5	Styrene	6.	U	6.	U	5.	U	6.	U	26.	U	6.	U
10061-01-5	cis-1,3-Dichloropropene	6.	U	6.	U	5.	U	6.	U	26.	U	6.	U
10061-02-6	trans-1,3-Dichloropropene	6.	U	6.	U	5.	U	6.	U	26.	U	6.	U
107-06-2	1,2-Dichloroethane	6.	U	6.	U	5.	U	6.	U	7500.		6.	U
108-05-4	Vinyl acetate	6.	U	6.	U	5.	U	6.	U	26.	U	6.	U
108-10-1	4-Methyl-2-Pentanone (MIBK)	62.	U	65.	U	53.	U	60.	U	92.		60.	U
108-88-3	Toluene	6.	U	6.	U	5.	U	6.	U	930.		6.	U
108-90-7	Chlorobenzene	6.	U	6.	U	5.	U	6.	U	26.	U	6.	U
124-48-1	Dibromochloromethane	6.	U	6.	U	5.	U	6.	U	26.	U	6.	U
127-18-4	Tetrachloroethene	6.	U	6.	U	5.	U	6.	U	760.		6.	U
1330-20-7	Xylene (total)	6.	U	6.	U	5.	U	3.		440.		6.	U
540-59-0	1,2-Dichloroethene (total)	6.	U	6.	U	5.	U	6.	U	26.	U	6.	U
56-23-5	Carbon tetrachloride	6.	U	6.	U	5.	U	6.	U	26.	U	6.	U
591-78-6	2-Hexanone	62.	U	65.	U	53.	U	60.	U	260.	U	60.	U
67-64-1	Acetone	12.	U	13.	U	11.	U	12.	U	64.		130.	
67-66-3	Chloroform	6.	U	6.	U	5.	U	6.	U	98.		6.	U
71-43-2	Benzene	6.	U	6.	U	5.	U	6.	U	26.	U	6.	U
71-55-6	1,1,1-Trichloroethane	6.	U	6.	U	5.	U	6.	U	26.	U	6.	U
74-83-9	Bromomethane	12.	U	13.	U	11.	U	12.	U	52.	U	12.	U
74-87-3	Chloromethane	12.	U	13.	U	11.	U	12.	U	52.	U	12.	U
75-00-3	Chloroethane	12.	U	13.	U	11.	U	12.	U	52.	U	12.	U
75-01-4	Vinyl chloride	6.	U	6.	U	5.	U	6.	U	26.	U	6.	U
75-09-2	Methylene chloride	6.	U	6.	U	5.	U	6.	U	6.		12.	U
75-15-0	Carbon disulfide	6.	U	6.	U	5.	U	6.	U	26.	U	6.	U
75-25-2	Bromoform	6.	U	6.	U	5.	U	6.	U	26.	U	6.	U
75-27-4	Bromodichloromethane	6.	U	6.	U	5.	U	6.	U	26.	U	6.	U
75-34-3	1,1-Dichloroethane	6.	U	6.	U	5.	U	6.	U	26.	U	6.	U
75-35-4	1,1-Dichloroethene	6.	U	6.	U	5.	U	6.	U	26.	U	6.	U
78-87-5	1,2-Dichloropropane	6.	U	6.	U	5.	U	6.	U	26.	U	6.	U
78-93-3	2-Butanone (MEK)	12.	U	13.	U	11.	U	57.		53.		12.	U
79-00-5	1,1,2-Trichloroethane	6.	U	6.	U	5.	U	6.	U	26.	U	6.	U
79-01-6	Trichloroethene	6.	U	6.	U	5.	U	6.	U	26.	U	6.	U
79-34-5	1,1,2,2-Tetrachloroethane	6.	U	6.	U	5.	U	6.	U	26.	U	6.	U

*** Validation Complete ***

CEDAR CHEMICAL CORPORATION
WEST HELENA, ARKANSAS
SITE 1 PHASE I SURFACE SOIL DATA

VOA									
	SHORT ID -------->	1MW-2 (0-5')		1MW-3 (0-5')		1MW-4 (0-5')		1MW-5 (0-5')	
	ORIGINAL ID ----->	CED1SMW-2-1		CED1SMW-3-1		CED1SMW-4-1		CED1SMW-5-1	
	SAMPLE DATE ----->	08/31/93		09/01/93		09/01/93		09/01/93	
	DATE ANALYZED --->	09/08/93		09/08/93		09/08/93		09/08/93	
	MATRIX ---------->	Soil		Soil		Soil		Soil	
	UNITS ---------->	UG/KG		UG/KG		UG/KG		UG/KG	
CAS #	Parameter	E002	VAL	E002	VAL	E002	VAL	E002	VAL
100-41-4	Ethylbenzene	6.	U	6.	U	6.	U	6.	U
100-42-5	Styrene	6.	U	6.	U	6.	U	6.	U
10061-01-5	cis-1,3-Dichloropropene	6.	U	6.	U	6.	U	6.	U
10061-02-6	trans-1,3-Dichloropropene	6.	U	6.	U	6.	U	6.	U
107-06-2	1,2-Dichloroethane	6.	U	6.	U	6.	U	6.	U
108-05-4	Vinyl acetate	6.	U	6.	U	6.	U	6.	U
108-10-1	4-Methyl-2-Pentanone (MIBK)	61.	U	58.	U	57.	U	56.	U
108-88-3	Toluene	6.	U	6.	U	2.		6.	U
108-90-7	Chlorobenzene	6.	U	6.	U	6.	U	6.	U
124-48-1	Dibromochloromethane	6.	U	6.	U	6.	U	6.	U
127-18-4	Tetrachloroethene	6.	U	6.	U	6.	U	6.	U
1330-20-7	Xylene (total)	6.	U	6.	U	6.	U	6.	U
540-59-0	1,2-Dichloroethene (total)	6.	U	6.	U	6.	U	6.	U
56-23-5	Carbon tetrachloride	6.	U	6.	U	6.	U	6.	U
591-78-6	2-Hexanone	61.	U	58.	U	57.	U	56.	U
67-64-1	Acetone	12.	U	47.	U	50.	U	68.	U
67-66-3	Chloroform	6.	U	6.	U	6.	U	6.	U
71-43-2	Benzene	6.	U	6.	U	6.	U	6.	U
71-55-6	1,1,1-Trichloroethane	6.	U	6.	U	6.	U	6.	U
74-83-9	Bromomethane	12.	U	12.	U	11.	U	11.	U
74-87-3	Chloromethane	12.	U	12.	U	11.	U	11.	U
75-00-3	Chloroethane	12.	U	12.	U	11.	U	11.	U
75-01-4	Vinyl chloride	6.	U	6.	U	6.	U	6.	U
75-09-2	Methylene chloride	7.	U	6.	U	6.	U	8.	U
75-15-0	Carbon disulfide	6.	U	6.	U	6.	U	6.	U
75-25-2	Bromoform	6.	U	6.	U	6.	U	6.	U
75-27-4	Bromodichloromethane	6.	U	6.	U	6.	U	6.	U
75-34-3	1,1-Dichloroethane	6.	U	6.	U	6.	U	6.	U
75-35-4	1,1-Dichloroethene	6.	U	6.	U	6.	U	6.	U
78-87-5	1,2-Dichloropropane	6.	U	6.	U	6.	U	6.	U
78-93-3	2-Butanone (MEK)	12.	U	12.	U	11.	U	11.	U
79-00-5	1,1,2-Trichloroethane	6.	U	6.	U	6.	U	6.	U
79-01-6	Trichloroethene	6.	U	6.	U	6.	U	6.	U
79-34-5	1,1,2,2-Tetrachloroethane	6.	U	6.	U	6.	U	6.	U

*** Validation Complete ***

CEDAR CHEMICAL CORPORATION
WEST HELENA, ARKANSAS
SITE 1 PHASE I SUBSURFACE SOIL DATA

PEST	SHORT ID --------->	1MW-1 (5-10')		1MW-2 (5-10')		1MW-3 (5-10')		1MW-4 (5-10')		1MW-5 (5-10')		1MW-6 (25-30')	
	ORIGINAL ID ----->	CED1SMW-1-2		CED1SMW-2-2		CED1SMW-3-2		CED1SMW-4-2		CED1SMW-5-2		CED1SMW66	
	SAMPLE DATE ----->	08/31/93		08/31/93		09/01/93		09/01/93		09/01/93		09/23/93	
	DATE ANALYZED --->	09/11/93		09/11/93		09/11/93		09/11/93		09/11/93		10/14/93	
	MATRIX ---------->	Soil		Soil		Soil		Soil		Soil		Soil	
	UNITS ---------->	UG/KG		UG/KG		UG/KG		UG/KG		UG/KG		UG/KG	
CAS #	Parameter	E002	VAL	E002	VAL	E002	VAL	E002	VAL	E002	VAL	E013	VAL
1024-57-3	Heptachlor Epoxide	70.	U	69.	U	70.	U	70.	U	68.	U	78.	U
1031-07-8	Endosulfan Sulfate	53.	U	54.	U	55.	U	55.	U	54.	U	62.	U
309-00-2	Aldrin	3.4	U	3.3	U	3.4	U	3.4	U	3.3	U	3.7	U
319-84-6	Alpha-BHC	2.5	U	2.5	U	2.5	U	2.5	U	2.5	U	2.8	U
319-85-7	Beta-BHC	5.1	U	5.	U	5.	U	5.	U	4.9	U	5.6	U
319-86-8	Delta-BHC	7.6	U	7.4	U	7.6	U	7.5	U	7.4	U	8.4	U
33213-65-9	Endosulfan II	3.4	U	3.3	U	3.4	U	3.4	U	3.3	U	3.7	U
50-29-3	4,4'-DDT	10.	U	9.9	U	10.	U	10.	U	9.9	U	11.	U
5103-71-9	alpha-Chlordane	12.	U	12.	U	12.	U	12.	U	12.	U	13.	U
5103-74-2	gamma-Chlordane	12.	U	12.	U	12.	U	12.	U	12.	U	13.	U
53494-70-5	Endrin ketone	20.	U	20.	U	20.	U	20.	U	20.	U	22.	U
58-89-9	gamma-BHC (Lindane)	3.4	U	3.3	U	3.4	U	3.4	U	3.3	U	3.7	U
60-57-1	Dieldrin	1.7	U	1.7	U	1.7	U	1.7	U	1.6	U	1.9	U
72-20-8	Endrin	5.1	U	5.	U	5.	U	5.	U	4.9	U	5.6	U
72-43-5	Methoxychlor	140.	U	150.	U	150.	U	150.	U	150.	U	170.	U
72-54-8	4,4'-DDD	9.3	U	9.1	U	9.2	U	9.2	U	9.1	U	10.	U
72-55-9	4,4'-DDE	3.4	U	3.3	U	3.4	U	3.4	U	3.3	U	3.7	U
76-44-8	Heptachlor	2.5	U	2.5	U	2.5	U	2.5	U	2.5	U	2.8	U
8001-35-2	Toxaphene	190.	U	200.	U	200.	U	200.	U	200.	U	220.	U
959-98-8	Endosulfan I	12.	U	12.	U	12.	U	12.	U	12.	U	13.	U

*** Validation Complete ***

CEDAR CHEMICAL CORPORATION
WEST HELENA, ARKANSAS
SITE 1 PHASE I SUBSURFACE SOIL DATA

RCRA METAL		SHORT ID --------->	1MW-1 (5-10')		1MW-2 (5-10')		1MW-3 (5-10')		1MW-4 (5-10')		1MW-5 (5-10')		1MW-6 (25-30')	
		ORIGINAL ID ----->	CED1SMW-1-2		CED1SMW-2-2		CED1SMW-3-2		CED1SMW-4-2		CED1SMW-5-2		CED1SMW66	
		SAMPLE DATE ----->	08/31/93		08/31/93		09/01/93		09/01/93		09/01/93		09/23/93	
		DATE ANALYZED --->	09/16/93		09/16/93		09/16/93		09/16/93		09/16/93		10/15/93	
		MATRIX ---------->	Soil		Soil		Soil		Soil		Soil		Soil	
		UNITS ---------->	MG/KG		MG/KG		MG/KG		MG/KG		MG/KG		MG/KG	
CAS #	Parameter		E002	VAL	E002	VAL	E002	VAL	E002	VAL	E002	VAL	E013	VAL
7440-38-2	Arsenic (As)		6.1		7.		8.6		6.1		4.8		1.6	
7440-39-3	Barium (Ba)		130.		193.		169.		140.		141.		114.	
7440-43-9	Cadmium (Cd)		0.37	U	0.37	U	0.36	U	0.38	U	0.36	U	0.29	
7440-47-3	Chromium (Cr)		14.4		15.		12.9		13.5		8.6		12.	
7439-92-1	Lead (Pb)		8.5		11.2		9.6		7.3		5.9		8.5	
7439-97-6	Mercury (Hg)		0.12	U	0.12	U	0.13	U	0.12	U	0.12	U	0.13	U
7782-49-2	Selenium (Se)		0.61	U	0.61	U	0.61	U	0.63	U	0.61	U	0.67	U
7440-22-4	Silver (Ag)		0.37	U	0.37	U	0.36	U	0.38	U	0.36	U	0.4	U

*** Validation Complete ***

CEDAR CHEMICAL CORPORATION
WEST HELENA, ARKANSAS
SITE 1 PHASE I SUBSURFACE SOIL DATA

SVOA	SHORT ID --------->	1MW-1 (5-10')		1MW-2 (5-10')		1MW-3 (5-10')		1MW-4 (5-10')		1MW-5 (5-10')		1MW-6 (25-30')	
	ORIGINAL ID ----->	CED1SMW-1-2		CED1SMW-2-2		CED1SMW-3-2		CED1SMW-4-2		CED1SMW-5-2		CED1SMW66	
	SAMPLE DATE ----->	08/31/93		08/31/93		09/01/93		09/01/93		09/01/93		09/23/93	
	DATE ANALYZED --->	09/23/93		09/23/93		09/23/93		09/23/93		09/24/93		10/19/93	
	MATRIX ---------->	Soil		Soil		Soil		Soil		Soil		Soil	
	UNITS ---------->	UG/KG		UG/KG		UG/KG		UG/KG		UG/KG		UG/KG	
CAS #	Parameter	E002	VAL	E002	VAL	E002	VAL	E002	VAL	E002	VAL	ED13	VAL
100-01-6	4-Nitroaniline	1600.	U	1600.	U	1600.	U	1600.	U	1600.	U	1100.	U
100-02-7	4-Nitrophenol	4200.	U	4100.	U	4200.	U	4100.	U	4100.	U	1100.	U
100-51-6	Benzyl alcohol	1600.	U	1600.	U	1600.	U	1600.	U	1600.	U	NR	
101-55-3	4-Bromophenyl-phenylether	840.	U	820.	U	840.	U	820.	U	810.	U	460.	U
105-67-9	2,4-Dimethylphenol	840.	U	820.	U	840.	U	820.	U	810.	U	460.	U
106-44-5	4-Methylphenol (p-Cresol)	840.	U	820.	U	840.	U	820.	U	810.	U	460.	U
106-46-7	1,4-Dichlorobenzene	840.	U	820.	U	840.	U	820.	U	810.	U	460.	U
106-47-8	4-Chloroaniline	1600.	U	1600.	U	1600.	U	1600.	U	1600.	U	460.	U
108-60-1	bis(2-chloroisopropyl) ether	840.	U	820.	U	840.	U	820.	U	810.	U	460.	U
108-95-2	Phenol	840.	U	820.	U	840.	U	820.	U	810.	U	460.	U
111-44-4	bis(2-Chloroethyl)ether	840.	U	820.	U	840.	U	820.	U	810.	U	460.	U
111-91-1	bis(2-Chloroethoxy)methane	840.	U	820.	U	840.	U	820.	U	810.	U	460.	U
117-81-7	bis(2-Ethylhexyl)phthalate (BEHP)	840.	U	820.	U	840.	U	820.	U	810.	U	460.	U
117-84-0	Di-n-octylphthalate	840.	U	820.	U	840.	U	820.	U	810.	U	460.	U
118-74-1	Hexachlorobenzene	840.	U	820.	U	840.	U	820.	U	810.	U	460.	U
120-12-7	Anthracene	840.	U	820.	U	840.	U	820.	U	810.	U	460.	U
120-82-1	1,2,4-Trichlorobenzene	840.	U	820.	U	840.	U	820.	U	810.	U	460.	U
120-83-2	2,4-Dichlorophenol	840.	U	820.	U	840.	U	820.	U	810.	U	460.	U
121-14-2	2,4-Dinitrotoluene	840.	U	820.	U	840.	U	820.	U	810.	U	460.	U
129-00-0	Pyrene	840.	U	820.	U	840.	U	820.	U	810.	U	460.	U
131-11-3	Dimethylphthalate	840.	U	820.	U	840.	U	820.	U	810.	U	460.	U
132-64-9	Dibenzofuran	840.	U	820.	U	840.	U	820.	U	810.	U	460.	U
191-24-2	Benzo(g,h,i)perylene	NR		NR		NR		NR		NR		460.	U
193-39-5	Indeno(1,2,3-cd)pyrene	840.	U	820.	U	840.	U	820.	U	810.	U	460.	U
205-99-2	Benzo(b)fluoranthene	840.	U	820.	U	840.	U	820.	U	810.	U	460.	U
206-44-0	Fluoranthene	840.	U	820.	U	840.	U	820.	U	810.	U	460.	U
207-08-9	Benzo(k)fluoranthene	840.	U	820.	U	840.	U	820.	U	810.	U	460.	U
208-96-8	Acenaphthylene	840.	U	820.	U	840.	U	820.	U	810.	U	460.	U
218-01-9	Chrysene	840.	U	820.	U	840.	U	820.	U	810.	U	460.	U
50-32-8	Benzo(a)pyrene	840.	U	820.	U	840.	U	820.	U	810.	U	460.	U
51-28-5	2,4-Dinitrophenol	840.	U	820.	U	840.	U	820.	U	810.	U	1100.	U
534-52-1	4,6-Dinitro-2-methylphenol	4200.	U	4100.	U	4200.	U	4100.	U	4100.	U	1100.	U
53-70-3	Dibenz(a,h)anthracene	NR		NR		NR		NR		NR		460.	U
541-73-1	1,3-Dichlorobenzene	840.	U	820.	U	840.	U	820.	U	810.	U	460.	U
56-55-3	Benzo(a)anthracene	840.	U	820.	U	840.	U	820.	U	810.	U	460.	U
59-50-7	4-Chloro-3-methylphenol	1600.	U	1600.	U	1600.	U	1600.	U	1600.	U	460.	U
606-20-2	2,6-Dinitrotoluene	840.	U	820.	U	840.	U	820.	U	810.	U	460.	U
621-64-7	N-Nitroso-di-n-propylamine	840.	U	820.	U	840.	U	820.	U	810.	U	460.	U
65-85-0	Benzoic acid	4200.	U	4100.	U	4200.	U	4100.	U	4100.	U	NR	

*** Validation Complete ***

CEDAR CHEMICAL CORPORATION
WEST HELENA, ARKANSAS
SITE 1 PHASE I SUBSURFACE SOIL DATA

SVOA	SHORT ID -------->	1MW-1 (5-10')	1MW-2 (5-10')	1MW-3 (5-10')	1MW-4 (5-10')	1MW-5 (5-10')	1MW-6 (25-30')
	ORIGINAL ID ----->	CED1SMW-1-2	CED1SMW-2-2	CED1SMW-3-2	CED1SMW-4-2	CED1SMW-5-2	CED1SMW66
	SAMPLE DATE ----->	08/31/93	08/31/93	09/01/93	09/01/93	09/01/93	09/23/93
	DATE ANALYZED --->	09/23/93	09/23/93	09/23/93	09/23/93	09/24/93	10/19/93
	MATRIX ---------->	Soil	Soil	Soil	Soil	Soil	Soil
	UNITS ---------->	UG/KG	UG/KG	UG/KG	UG/KG	UG/KG	UG/KG

CAS #	Parameter	E002	VAL	E002	VAL	E002	VAL	E002	VAL	E002	VAL	ED13	VAL
67-72-1	Hexachloroethane	840.	U	820.	U	840.	U	820.	U	810.	U	460.	U
7005-72-3	4-Chlorophenyl-phenylether	840.	U	820.	U	840.	U	820.	U	810.	U	460.	U
709-98-8	Propanil	840.	U	820.	U	840.	U	820.	U	810.	U	1100.	U
77-47-4	Hexachlorocyclopentadiene	840.	U	820.	U	840.	U	820.	U	810.	U	460.	U
78-59-1	Isophorone	840.	U	820.	U	840.	U	820.	U	810.	U	460.	U
83-32-9	Acenaphthene	840.	U	820.	U	840.	U	820.	U	810.	U	460.	U
84-66-2	Diethylphthalate	840.	U	820.	U	840.	U	820.	U	810.	U	460.	U
84-74-2	Di-n-butylphthalate	840.	U	820.	U	840.	U	820.	U	810.	U	120.	
85-01-8	Phenanthrene	840.	U	820.	U	840.	U	820.	U	810.	U	460.	U
85-68-7	Butylbenzylphthalate	840.	U	820.	U	840.	U	820.	U	810.	U	460.	U
86-30-6	N-Nitrosodiphenylamine	840.	U	820.	U	840.	U	820.	U	810.	U	460.	U
86-73-7	Fluorene	840.	U	820.	U	840.	U	820.	U	810.	U	460.	U
87-68-3	Hexachlorobutadiene	840.	U	820.	U	840.	U	820.	U	810.	U	460.	U
87-86-5	Pentachlorophenol	4200.	U	4100.	U	4200.	U	4100.	U	4100.	U	1100.	U
88-06-2	2,4,6-Trichlorophenol	840.	U	820.	U	840.	U	820.	U	810.	U	460.	U
88-74-4	2-Nitroaniline	4200.	U	4100.	U	4200.	U	4100.	U	4100.	U	1100.	U
88-75-5	2-Nitrophenol	840.	U	820.	U	840.	U	820.	U	810.	U	460.	U
88-85-7	Dinoseb	840.	U	820.	U	840.	U	820.	U	810.	U	1100.	U
91-20-3	Naphthalene	840.	U	820.	U	840.	U	820.	U	810.	U	460.	U
91-57-6	2-Methylnaphthalene	840.	U	820.	U	840.	U	820.	U	810.	U	460.	U
91-58-7	2-Chloronaphthalene	840.	U	820.	U	840.	U	820.	U	810.	U	460.	U
91-94-1	3,3'-Dichlorobenzidine	1600.	U	1600.	U	1600.	U	1600.	U	1600.	U	460.	U
95-48-7	2-Methylphenol (o-Cresol)	840.	U	820.	U	840.	U	820.	U	810.	U	460.	U
95-50-1	1,2-Dichlorobenzene	840.	U	820.	U	840.	U	820.	U	810.	U	460.	U
95-57-8	2-Chlorophenol	840.	U	820.	U	840.	U	820.	U	810.	U	460.	U
95-76-1	3,4-Dichloroaniline	840.	U	820.	U	840.	U	820.	U	810.	U	1100.	U
95-95-4	2,4,5-Trichlorophenol	840.	U	820.	U	840.	U	820.	U	810.	U	1100.	U
98-95-3	Nitrobenzene	840.	U	820.	U	840.	U	820.	U	810.	U	460.	U
99-09-2	3-Nitroaniline	4200.	U	4100.	U	4200.	U	4100.	U	4100.	U	1100.	U

*** Validation Complete ***

CEDAR CHEMICAL CORPORATION
WEST HELENA, ARKANSAS
SITE 1 PHASE I SUBSURFACE SOIL DATA

VOA	SHORT ID	1MW-1 (5-10')		1MW-2 (5-10')		1MW-3 (5-10')		1MW-4 (5-10')		1MW-5 (5-10')		1MW-6 (25-30')	
	ORIGINAL ID	CED1SMW-1-2		CED1SMW-2-2		CED1SMW-3-2		CED1SMW-4-2		CED1SMW-5-2		CED1SMW66	
	SAMPLE DATE	08/31/93		08/31/93		09/01/93		09/01/93		09/01/93		09/23/93	
	DATE ANALYZED	09/08/93		09/08/93		09/08/93		09/08/93		09/08/93		10/07/93	
	MATRIX	Soil		Soil		Soil		Soil		Soil		Soil	
	UNITS	UG/KG		UG/KG		UG/KG		UG/KG		UG/KG		UG/KG	
CAS #	Parameter	E002	VAL	E002	VAL	E002	VAL	E002	VAL	E002	VAL	E013	VAL
100-41-4	Ethylbenzene	6.	U	6.	U	6.	U	6.	U	6.	U	7.	U
100-42-5	Styrene	6.	U	6.	U	6.	U	6.	U	6.	U	7.	U
10061-01-5	cis-1,3-Dichloropropene	6.	U	6.	U	6.	U	6.	U	6.	U	7.	U
10061-02-6	trans-1,3-Dichloropropene	6.	U	6.	U	6.	U	6.	U	6.	U	7.	U
107-06-2	1,2-Dichloroethane	6.	U	6.	U	6.	U	6.	U	6.	U	210.	
108-05-4	Vinyl acetate	6.	U	6.	U	6.	U	6.	U	6.	U	7.	U
108-10-1	4-Methyl-2-Pentanone (MIBK)	63.	U	62.	U	61.	U	64.	U	64.	U	70.	U
108-88-3	Toluene	6.	U	6.	U	6.	U	6.	U	6.	U	7.	U
108-90-7	Chlorobenzene	6.	U	6.	U	6.	U	6.	U	6.	U	7.	U
124-48-1	Dibromochloromethane	6.	U	6.	U	6.	U	6.	U	6.	U	7.	U
127-18-4	Tetrachloroethene	6.	U	6.	U	6.	U	6.	U	6.	U	7.	U
1330-20-7	Xylene (total)	6.	U	6.	U	6.	U	6.	U	6.	U	7.	U
540-59-0	1,2-Dichloroethene (total)	6.	U	6.	U	6.	U	6.	U	6.	U	7.	U
56-23-5	Carbon tetrachloride	6.	U	6.	U	6.	U	6.	U	6.	U	7.	U
591-78-6	2-Hexanone	63.	U	62.	U	61.	U	64.	U	64.	U	70.	U
67-64-1	Acetone	13.	U	12.	U	19.	U	59.	U	13.	U	54.	
67-66-3	Chloroform	6.	U	6.	U	6.	U	6.	U	6.	U	7.	U
71-43-2	Benzene	6.	U	6.	U	6.	U	6.	U	6.	U	7.	U
71-55-6	1,1,1-Trichloroethane	6.	U	6.	U	6.	U	6.	U	6.	U	7.	U
74-83-9	Bromomethane	13.	U	12.	U	12.	U	13.	U	13.	U	14.	U
74-87-3	Chloromethane	13.	U	12.	U	12.	U	13.	U	13.	U	14.	U
75-00-3	Chloroethane	13.	U	12.	U	12.	U	13.	U	13.	U	14.	U
75-01-4	Vinyl chloride	6.	U	6.	U	6.	U	6.	U	6.	U	7.	U
75-09-2	Methylene chloride	11.	U	6.	U	6.	U	8.	U	6.	U	33.	
75-15-0	Carbon disulfide	6.	U	6.	U	6.	U	6.	U	6.	U	7.	U
75-25-2	Bromoform	6.	U	6.	U	6.	U	6.	U	6.	U	7.	U
75-27-4	Bromodichloromethane	6.	U	6.	U	6.	U	6.	U	6.	U	7.	U
75-34-3	1,1-Dichloroethane	6.	U	6.	U	6.	U	6.	U	6.	U	7.	U
75-35-4	1,1-Dichloroethene	6.	U	6.	U	6.	U	6.	U	6.	U	7.	U
78-87-5	1,2-Dichloropropane	6.	U	6.	U	6.	U	6.	U	6.	U	7.	U
78-93-3	2-Butanone (MEK)	13.	U	12.	U	12.	U	13.	U	13.	U	18.	U
79-00-5	1,1,2-Trichloroethane	6.	U	6.	U	6.	U	6.	U	6.	U	7.	U
79-01-6	Trichloroethene	6.	U	6.	U	6.	U	6.	U	6.	U	7.	U
79-34-5	1,1,2,2-Tetrachloroethane	6.	U	6.	U	6.	U	6.	U	6.	U	7.	U

*** Validation Complete ***

CEDAR CHEMICAL CORPORATION
WEST HELENA, ARKANSAS
SITE 1 PHASE I SEDIMENT DATA

PEST											
	SHORT ID --------->	1SED-1		1SED-2		1SED-3					
	ORIGINAL ID ------->	CED1SD1		CED1SD2		CED1SD3					
	SAMPLE DATE ------->	09/07/93		09/07/93		09/07/93					
	DATE ANALYZED ----->	09/17/93		09/17/93		09/17/93					
	MATRIX ------------>	Sediment		Sediment		Sediment					
	UNITS ------------->	UG/KG		UG/KG		UG/KG					
CAS #	Parameter	E006	VAL	E006	VAL	E006	VAL				
1024-57-3	Heptachlor Epoxide	1100.	U	68.	U	390.	U				
1031-07-8	Endosulfan Sulfate	900.	U	54.	U	310.	U				
309-00-2	Aldrin	55.	U	3.3	U	19.	U				
319-84-6	Alpha-BHC	41.	U	2.5	U	14.	U				
319-85-7	Beta-BHC	180.		4.9	U	86.					
319-86-8	Delta-BHC	120.	U	7.4	U	43.	U				
33213-65-9	Endosulfan II	55.	U	3.3	U	19.	U				
50-29-3	4,4'-DDT	160.	U	9.9	U	450.					
5103-71-9	alpha-Chlordane	190.	U	12.	U	66.	U				
5103-74-2	gamma-Chlordane	300.		12.	U	66.	U				
53494-70-5	Endrin ketone	330.	U	20.	U	110.	U				
58-89-9	gamma-BHC (Lindane)	63.		3.3	U	38.	U				
60-57-1	Dieldrin	27.	U	1.6	U	9.5	U				
72-20-8	Endrin	82.	U	4.9	U	28.	U				
72-43-5	Methoxychlor	2500.	U	150.	U	850.	U				
72-54-8	4,4'-DDD	150.	U	9.	U	52.	U				
72-55-9	4,4'-DDE	55.	U	3.3	U	19.	U				
76-44-8	Heptachlor	41.	U	2.5	U	14.	U				
8001-35-2	Toxaphene	3300.	U	200.	U	1100.	U				
959-98-8	Endosulfan I	190.	U	12.	U	66.	U				

*** Validation Complete ***

CEDAR CHEMICAL CORPORATION
WEST HELENA, ARKANSAS
SITE 1 PHASE I SEDIMENT DATA

RCRA METAL											
	SHORT ID --------->	1SED-1		1SED-2		1SED-3					
	ORIGINAL ID ----->	CED1SD1		CED1SD2		CED1SD3					
	SAMPLE DATE ----->	09/07/93		09/07/93		09/07/93					
	DATE ANALYZED --->	10/01/93		10/01/93		10/01/93					
	MATRIX ---------->	Sediment		Sediment		Sediment					
	UNITS ----------->	MG/KG		MG/KG		MG/KG					
CAS #	Parameter	E006	VAL	E006	VAL	E006	VAL				
7440-38-2	Arsenic (As)	61.		19.		123.					
7440-39-3	Barium (Ba)	58.5		27.8		69.2					
7440-43-9	Cadmium (Cd)	0.94		0.37	U	0.63					
7440-47-3	Chromium (Cr)	51.8		16.7		82.					
7439-92-1	Lead (Pb)	15.9		14.3		11.4					
7439-97-6	Mercury (Hg)	2.7		0.12	U	3.3					
7782-49-2	Selenium (Se)	1.	U	0.61	U	0.7	U				
7440-22-4	Silver (Ag)	0.6	U	0.37	U	1.2					

*** Validation Complete ***

CEDAR CHEMICAL CORPORATION
WEST HELENA, ARKANSAS
SITE 1 PHASE I SEDIMENT DATA

SVOA											
	SHORT ID --------->	1SED-1		1SED-2		1SED-3					
	ORIGINAL ID ----->	CED1SD1		CED1SD2		CED1SD3					
	SAMPLE DATE ----->	09/07/93		09/07/93		09/07/93					
	DATE ANALYZED --->	10/11/93		10/14/93		10/11/93					
	MATRIX ---------->	Sediment		Sediment		Sediment					
	UNITS ----------->	UG/KG		UG/KG		UG/KG					
CAS #	Parameter	E006	VAL	E006	VAL	E006	VAL				
100-01-6	4-Nitroaniline	680000.	U	20000.	U	470000.	U				
100-02-7	4-Nitrophenol	680000.	U	20000.	U	470000.	U				
100-51-6	Benzyl alcohol	140000.	U	4100.	U	94000.	U				
101-55-3	4-Bromophenyl-phenylether	140000.	U	4100.	U	94000.	U				
105-67-9	2,4-Dimethylphenol	140000.	U	4100.	U	94000.	U				
106-44-5	4-Methylphenol (p-Cresol)	39000.		4100.	U	94000.	U				
106-46-7	1,4-Dichlorobenzene	140000.	U	4100.	U	94000.	U				
106-47-8	4-Chloroaniline	140000.	U	4100.	U	94000.	U				
108-60-1	bis(2-chloroisopropyl) ether	140000.	U	4100.	U	94000.	U				
108-95-2	Phenol	140000.	U	4100.	U	94000.	U				
111-44-4	bis(2-Chloroethyl)ether	140000.	U	4100.	U	94000.	U				
111-91-1	bis(2-Chloroethoxy)methane	140000.	U	4100.	U	94000.	U				
117-81-7	bis(2-Ethylhexyl)phthalate (BEHP)	140000.	U	4100.	U	13000.					
117-84-0	Di-n-octylphthalate	140000.	U	4100.	U	94000.	U				
118-74-1	Hexachlorobenzene	140000.	U	4100.	U	94000.	U				
120-12-7	Anthracene	140000.	U	4100.	U	94000.	U				
120-82-1	1,2,4-Trichlorobenzene	140000.	U	4100.	U	94000.	U				
120-83-2	2,4-Dichlorophenol	140000.	U	4100.	U	94000.	U				
121-14-2	2,4-Dinitrotoluene	140000.	U	4100.	U	94000.	U				
129-00-0	Pyrene	140000.	U	4100.	U	94000.	U				
131-11-3	Dimethylphthalate	140000.	U	4100.	U	94000.	U				
132-64-9	Dibenzofuran	140000.	U	4100.	U	94000.	U				
191-24-2	Benzo(g,h,i)perylene	140000.	U	4100.	U	94000.	U				
193-39-5	Indeno(1,2,3-cd)pyrene	140000.	U	4100.	U	94000.	U				
205-99-2	Benzo(b)fluoranthene	140000.	U	4100.	U	94000.	U				
206-44-0	Fluoranthene	140000.	U	4100.	U	94000.	U				
207-08-9	Benzo(k)fluoranthene	140000.	U	4100.	U	94000.	U				
208-96-8	Acenaphthylene	140000.	U	4100.	U	94000.	U				
218-01-9	Chrysene	140000.	U	4100.	U	94000.	U				
50-32-8	Benzo(a)pyrene	140000.	U	4100.	U	94000.	U				
51-28-5	2,4-Dinitrophenol	680000.	U	20000.	U	470000.	U				
534-52-1	4,6-Dinitro-2-methylphenol	680000.	U	20000.	U	470000.	U				
53-70-3	Dibenz(a,h)anthracene	140000.	U	4100.	U	94000.	U				
541-73-1	1,3-Dichlorobenzene	140000.	U	4100.	U	94000.	U				
56-55-3	Benzo(a)anthracene	140000.	U	4100.	U	94000.	U				
59-50-7	4-Chloro-3-methylphenol	140000.	U	4100.	U	94000.	U				
606-20-2	2,6-Dinitrotoluene	140000.	U	4100.	U	94000.	U				
621-64-7	N-Nitroso-di-n-propylamine	140000.	U	4100.	U	94000.	U				
65-85-0	Benzoic acid	680000.	U	20000.	U	470000.	U				

*** Validation Complete ***

CEDAR CHEMICAL CORPORATION
WEST HELENA, ARKANSAS
SITE 1 PHASE I SEDIMENT DATA

SVOA	SHORT ID --------->	1SED-1		1SED-2		1SED-3	
	ORIGINAL ID ----->	CED1SD1		CED1SD2		CED1SD3	
	SAMPLE DATE ----->	09/07/93		09/07/93		09/07/93	
	DATE ANALYZED --->	10/11/93		10/14/93		10/11/93	
	MATRIX ---------->	Sediment		Sediment		Sediment	
	UNITS ----------->	UG/KG		UG/KG		UG/KG	
CAS #	Parameter	E006	VAL	E006	VAL	E006	VAL
67-72-1	Hexachloroethane	140000.	U	4100.	U	94000.	U
7005-72-3	4-Chlorophenyl-phenylether	140000.	U	4100.	U	94000.	U
709-98-8	Propanil	140000.	U	4100.	U	94000.	U
77-47-4	Hexachlorocyclopentadiene	140000.	U	4100.	U	94000.	U
78-59-1	Isophorone	140000.	U	4100.	U	94000.	U
83-32-9	Acenaphthene	140000.	U	4100.	U	94000.	U
84-66-2	Diethylphthalate	140000.	U	4100.	U	94000.	U
84-74-2	Di-n-butylphthalate	140000.	U	4100.	U	94000.	U
85-01-8	Phenanthrene	140000.	U	4100.	U	94000.	U
85-68-7	Butylbenzylphthalate	140000.	U	4100.	U	94000.	U
86-30-6	N-Nitrosodiphenylamine	140000.	U	4100.	U	94000.	U
86-73-7	Fluorene	140000.	U	4100.	U	94000.	U
87-68-3	Hexachlorobutadiene	140000.	U	4100.	U	94000.	U
87-86-5	Pentachlorophenol	680000.	U	20000.	U	470000.	U
88-06-2	2,4,6-Trichlorophenol	140000.	U	4100.	U	94000.	U
88-74-4	2-Nitroaniline	680000.	U	20000.	U	470000.	U
88-75-5	2-Nitrophenol	140000.	U	4100.	U	94000.	U
88-85-7	Dinoseb	680000.	U	20000.	U	470000.	U
91-20-3	Naphthalene	140000.	U	4100.	U	94000.	U
91-57-6	2-Methylnaphthalene	140000.	U	4100.	U	94000.	U
91-58-7	2-Chloronaphthalene	140000.	U	4100.	U	94000.	U
91-94-1	3,3'-Dichlorobenzidine	270000.	U	8200.	U	190000.	U
95-48-7	2-Methylphenol (o-Cresol)	140000.	U	4100.	U	94000.	U
95-50-1	1,2-Dichlorobenzene	140000.	U	4100.	U	94000.	U
95-57-8	2-Chlorophenol	140000.	U	4100.	U	94000.	U
95-76-1	3,4-Dichloroaniline	1200000.		5500.		910000.	
95-95-4	2,4,5-Trichlorophenol	680000.	U	20000.	U	470000.	U
98-95-3	Nitrobenzene	140000.	U	4100.	U	94000.	U
99-09-2	3-Nitroaniline	680000.	U	20000.	U	470000.	U

*** Validation Complete ***

CEDAR CHEMICAL CORPORATION
WEST HELENA, ARKANSAS
SITE 1 PHASE I SEDIMENT DATA

VOA		SHORT ID --------->	1SED-1		1SED-2		1SED-3				
		ORIGINAL ID ----->	CED1SD1		CED1SD2		CED1SD3				
		SAMPLE DATE ----->	09/07/93		09/07/93		09/07/93				
		DATE ANALYZED --->	09/14/93		09/15/93		09/15/93				
		MATRIX ---------->	Sediment		Sediment		Sediment				
		UNITS ----------->	UG/KG		UG/KG		UG/KG				
CAS #	Parameter		E006	VAL	E006	VAL	E006	VAL			
100-41-4	Ethylbenzene		46.	U	6.	U	19.				
100-42-5	Styrene		46.	U	6.	U	14.	U			
10061-01-5	cis-1,3-Dichloropropene		46.	U	6.	U	14.	U			
10061-02-6	trans-1,3-Dichloropropene		46.	U	6.	U	14.	U			
107-06-2	1,2-Dichloroethane		46.	U	6.	U	14.	U			
108-05-4	Vinyl acetate		46.	U	6.	U	14.	U			
108-10-1	4-Methyl-2-Pentanone (MIBK)		460.	U	62.	U	22.				
108-88-3	Toluene		170.		6.	U	87.				
108-90-7	Chlorobenzene		190.		6.	U	66.				
124-48-1	Dibromochloromethane		46.	U	6.	U	14.	U			
127-18-4	Tetrachloroethene		46.	U	6.	U	14.	U			
1330-20-7	Xylene (total)		74.		6.	U	330.				
540-59-0	1,2-Dichloroethene (total)		46.	U	6.	U	14.	U			
56-23-5	Carbon tetrachloride		46.	U	6.	U	14.	U			
591-78-6	2-Hexanone		210.		62.	U	12.				
67-64-1	Acetone		1200.		12.	U	280.				
67-66-3	Chloroform		46.	U	6.	U	14.	U			
71-43-2	Benzene		30.		6.	U	6.				
71-55-6	1,1,1-Trichloroethane		46.	U	6.	U	14.	U			
74-83-9	Bromomethane		93.	U	12.	U	28.	U			
74-87-3	Chloromethane		93.	U	12.	U	28.	U			
75-00-3	Chloroethane		93.	U	12.	U	28.	U			
75-01-4	Vinyl chloride		46.	U	6.	U	14.	U			
75-09-2	Methylene chloride		46.	U	6.	U	14.	U			
75-15-0	Carbon disulfide		46.	U	6.	U	14.	U			
75-25-2	Bromoform		46.	U	6.	U	14.	U			
75-27-4	Bromodichloromethane		46.	U	6.	U	14.	U			
75-34-3	1,1-Dichloroethane		46.	U	6.	U	14.	U			
75-35-4	1,1-Dichloroethene		46.	U	6.	U	14.	U			
78-87-5	1,2-Dichloropropane		46.	U	6.	U	14.	U			
78-93-3	2-Butanone (MEK)		1800.		2.		150.				
79-00-5	1,1,2-Trichloroethane		46.	U	6.	U	14.	U			
79-01-6	Trichloroethene		46.	U	6.	U	14.	U			
79-34-5	1,1,2,2-Tetrachloroethane		46.	U	6.	U	14.	U			

*** Validation Complete ***

CEDAR CHEMICAL CORPORATION
WEST HELENA, ARKANSAS
SITE 1 PHASE II SURFACE SOIL DATA

ARSENIC							
	SHORT ID -------->	1HA-7 (2-3')	1SB-1 (0-2')				
	ORIGINAL ID ----->	001S000701	001SGB0101				
	SAMPLE DATE ----->	12/12/94	12/20/94				
	DATE EXTRACTED -->	12/21/94	12/27/94				
	DATE ANALYZED --->	12/21/94	12/27/94				
	MATRIX ---------->	Soil	Soil				
	UNITS ----------->	MG/KG	MG/KG				
CAS #	Parameter	11097 VAL	11213 VAL				
7440-38-2	Arsenic (As)	5. U	5. U				

*** Validation Complete ***

CEDAR CHEMICAL CORPORATION
WEST HELENA, ARKANSAS
SITE 1 PHASE II SURFACE SOIL DATA

DCA	SHORT ID ------>	1HA-7 (2-3')					
	ORIGINAL ID ----->	001S000701					
	SAMPLE DATE ----->	01/31/95					
	DATE ANALYZED --->	02/07/95					
	MATRIX ---------->	Soil					
	UNITS ----------->	UG/KG					
CAS #	Parameter	11834 VAL					
95-76-1	3,4-Dichloroaniline	660. U					

*** Validation Complete ***

CEDAR CHEMICAL CORPORATION
WEST HELENA, ARKANSAS
SITE 1 PHASE II SURFACE SOIL DATA

PEST											
	SHORT ID --------->	1HA-7 (2-3')		1SB-1 (0-2')		1HA-7 (2-3')					
	ORIGINAL ID ----->	001S000701		001SGB0101		001S000701					
	SAMPLE DATE ----->	12/12/94		12/20/94		01/31/95					
	DATE EXTRACTED -->	12/22/94		12/22/94		02/03/95					
	DATE ANALYZED --->	12/23/94		12/29/94		02/07/95					
	MATRIX ---------->	Soil		Soil		Soil					
	UNITS ----------->	UG/KG		UG/KG		UG/KG					
CAS #	Parameter	11097	VAL	11213	VAL	11834	VAL				
319-84-6	Alpha-BHC	2.	U	2.	U	2.	U				
319-85-7	Beta-BHC	4.	U	4.	U	4.	U				
319-86-8	Delta-BHC	6.	U	6.	U	6.	U				
58-89-9	gamma-BHC (Lindane)	2.7	U	2.7	U	2.7	U				
76-44-8	Heptachlor	2.	U	2.	U	2.	U				
309-00-2	Aldrin	2.7	U	2.7	U	2.7	U				
1024-57-3	Heptachlor Epoxide	56.	U	56.	U	56.	U				
959-98-8	Endosulfan I	9.4	U	9.4	U	9.4	U				
60-57-1	Dieldrin	1.3	U	1.3	U	1.3	U				
72-55-9	4,4'-DDE	2.7	U	3.8		23.					
72-20-8	Endrin	4.	U	4.	U	4.	U				
33213-65-9	Endosulfan II	2.7	U	2.7	U	2.7	U				
72-54-8	4,4'-DDD	7.	U	7.	U	19.					
7421-93-4	Endrin aldehyde	15.	U	15.	U	15.	U				
1031-07-8	Endosulfan Sulfate	44.	U	44.	U	44.	U				
50-29-3	4,4'-DDT	8.	U	9.7		8.	U				
72-43-5	Methoxychlor	120.	U	120.	U	120.	U				
57-74-9	Chlordane	9.4	U	9.4	U	9.4	U				
8001-35-2	Toxaphene	160.	U	160.	U	160.	U				
12674-11-2	Aroclor-1016	60.	U	60.	U	60.	U				
11104-28-2	Aroclor-1221	180.	U	180.	U	180.	U				
11141-16-5	Aroclor-1232	32.	U	32.	U	32.	U				
53469-21-9	Aroclor-1242	44.	U	44.	U	44.	U				
12672-29-6	Aroclor-1248	170.	U	170.	U	170.	U				
11097-69-1	Aroclor-1254	80.	U	80.	U	80.	U				
11096-82-5	Aroclor-1260	24.	U	24.	U	24.	U				

*** Validation Complete ***

CEDAR CHEMICAL CORPORATION
WEST HELENA, ARKANSAS
SITE 1 PHASE II SURFACE SOIL DATA

SVOA											
	SHORT ID --------->	1HA-7 (2-3')		1SB-1 (0-2')		1HA-7 (2-3')					
	ORIGINAL ID ----->	001S000701		001SGB0101		001S000701					
	SAMPLE DATE ----->	12/12/94		12/20/94		01/31/95					
	DATE EXTRACTED -->	12/22/94		12/22/94		02/03/95					
	DATE ANALYZED --->	12/22/94		12/23/94		02/07/95					
	MATRIX ---------->	Soil		Soil		Soil					
	UNITS ---------->	UG/KG		UG/KG		UG/KG					
CAS #	Parameter	11097	VAL	11213	VAL	11834	VAL				
108-95-2	Phenol	660.	U	660.	U	660.	U				
111-44-4	bis(2-Chloroethyl)ether	660.	U	660.	U	660.	U				
95-57-8	2-Chlorophenol	660.	U	660.	U	660.	U				
541-73-1	1,3-Dichlorobenzene	660.	U	660.	U	660.	U				
106-46-7	1,4-Dichlorobenzene	660.	U	660.	U	660.	U				
100-51-6	Benzyl alcohol	1300.	U	1300.	U	1300.	U				
95-50-1	1,2-Dichlorobenzene	660.	U	660.	U	660.	U				
95-48-7	2-Methylphenol (o-Cresol)	660.	U	660.	U	660.	U				
108-60-1	bis(2-chloroisopropyl) ether	660.	U	660.	U	660.	U				
106-44-5	4-Methylphenol (p-Cresol)	660.	U	660.	U	660.	U				
621-64-7	N-Nitroso-di-n-propylamine	660.	U	660.	U	660.	U				
67-72-1	Hexachloroethane	660.	U	660.	U	660.	U				
98-95-3	Nitrobenzene	660.	U	660.	U	660.	U				
78-59-1	Isophorone	660.	U	660.	U	660.	U				
88-75-5	2-Nitrophenol	660.	U	660.	U	660.	U				
105-67-9	2,4-Dimethylphenol	660.	U	660.	U	660.	U				
111-91-1	bis(2-Chloroethoxy)methane	660.	U	660.	U	660.	U				
120-83-2	2,4-Dichlorophenol	660.	U	660.	U	660.	U				
120-82-1	1,2,4-Trichlorobenzene	660.	U	660.	U	660.	U				
91-20-3	Naphthalene	660.	U	660.	U	660.	U				
87-68-3	Hexachlorobutadiene	660.	U	660.	U	660.	U				
59-50-7	4-Chloro-3-methylphenol	1300.	U	1300.	U	1300.	U				
91-57-6	2-Methylnaphthalene	660.	U	660.	U	660.	U				
77-47-4	Hexachlorocyclopentadiene	660.	U	660.	U	660.	U				
88-06-2	2,4,6-Trichlorophenol	660.	U	660.	U	660.	U				
95-95-4	2,4,5-Trichlorophenol	660.	U	660.	U	660.	U				
91-58-7	2-Chloronaphthalene	660.	U	660.	U	660.	U				
88-74-4	2-Nitroaniline	3300.	U	3300.	U	3300.	U				
131-11-3	Dimethylphthalate	660.	U	660.	U	660.	U				
208-96-8	Acenaphthylene	660.	U	660.	U	660.	U				
99-09-2	3-Nitroaniline	3300.	U	3300.	U	3300.	U				
83-32-9	Acenaphthene	660.	U	660.	U	660.	U				
51-28-5	2,4-Dinitrophenol	3300.	U	3300.	U	3300.	U				
100-02-7	4-Nitrophenol	3300.	U	3300.	U	3300.	U				
132-64-9	Dibenzofuran	660.	U	660.	U	660.	U				
121-14-2	2,4-Dinitrotoluene	660.	U	660.	U	660.	U				
606-20-2	2,6-Dinitrotoluene	660.	U	660.	U	660.	U				
84-66-2	Diethylphthalate	660.	U	660.	U	660.	U				

*** Validation Complete ***

CEDAR CHEMICAL CORPORATION
WEST HELENA, ARKANSAS
SITE 1 PHASE II SURFACE SOIL DATA

SVOA										
	SHORT ID --------->	1HA-7 (2-3')		1SB-1 (0-2')		1HA-7 (2-3')				
	ORIGINAL ID ----->	001S000701		001SGB0101		001S000701				
	SAMPLE DATE ----->	12/12/94		12/20/94		01/31/95				
	DATE EXTRACTED -->	12/22/94		12/22/94		02/03/95				
	DATE ANALYZED --->	12/22/94		12/23/94		02/07/95				
	MATRIX ---------->	Soil		Soil		Soil				
	UNITS ----------->	UG/KG		UG/KG		UG/KG				
CAS #	Parameter	11097	VAL	11213	VAL	11834	VAL			
7005-72-3	4-Chlorophenyl-phenylether	660.	U	660.	U	660.	U			
86-73-7	Fluorene	660.	U	660.	U	660.	U			
100-01-6	4-Nitroaniline	3300.	U	3300.	U	3300.	U			
534-52-1	4,6-Dinitro-2-methylphenol	3300.	U	3300.	U	3300.	U			
86-30-6	N-Nitrosodiphenylamine	660.	U	660.	U	660.	U			
101-55-3	4-Bromophenyl-phenylether	660.	U	660.	U	660.	U			
118-74-1	Hexachlorobenzene	660.	U	660.	U	660.	U			
87-86-5	Pentachlorophenol	3300.	U	3300.	U	3300.	U			
85-01-8	Phenanthrene	660.	U	660.	U	660.	U			
120-12-7	Anthracene	660.	U	660.	U	660.	U			
206-44-0	Fluoranthene	660.	U	660.	U	660.	U			
129-00-0	Pyrene	660.	U	660.	U	660.	U			
85-68-7	Butylbenzylphthalate	660.	U	660.	U	660.	U			
91-94-1	3,3'-Dichlorobenzidine	1300.	U	1300.	U	1300.	U			
56-55-3	Benzo(a)anthracene	660.	U	660.	U	660.	U			
117-81-7	bis(2-Ethylhexyl)phthalate (BEHP)	660.	U	660.	U	660.	U			
218-01-9	Chrysene	660.	U	660.	U	660.	U			
117-84-0	Di-n-octylphthalate	660.	U	660.	U	660.	U			
205-99-2	Benzo(b)fluoranthene	660.	U	660.	U	660.	U			
207-08-9	Benzo(k)fluoranthene	660.	U	660.	U	660.	U			
50-32-8	Benzo(a)pyrene	660.	U	660.	U	660.	U			
193-39-5	Indeno(1,2,3-cd)pyrene	660.	U	660.	U	660.	U			
53-70-3	Dibenz(a,h)anthracene	660.	U	660.	U	660.	U			
191-24-2	Benzo(g,h,i)perylene	660.	U	660.	U	660.	U			
88-85-7	Dinoseb	462.	U	462.	U	462.	U			
65-85-0	Benzoic acid	3300.	U	3300.	U	3300.	U			
106-47-8	4-Chloroaniline	1300.	U	1300.	U	1300.	U			
84-74-2	Di-n-butylphthalate	660.	U	660.	U	660.	U			

*** Validation Complete ***

CEDAR CHEMICAL CORPORATION
WEST HELENA, ARKANSAS
SITE 1 PHASE II SURFACE SOIL DATA

VOA									
	SHORT ID --------->	1HA-7 (2-3')		1SB-1 (0-2')					
	ORIGINAL ID ----->	001S000701		001SGB0101					
	SAMPLE DATE ----->	12/12/94		12/20/94					
	DATE EXTRACTED -->	12/21/94		12/23/94					
	DATE ANALYZED --->	12/21/94		12/23/94					
	MATRIX ---------->	Soil		Soil					
	UNITS ----------->	UG/KG		UG/KG					
CAS #	Parameter	11097	VAL	11213	VAL				
74-87-3	Chloromethane	10.	U	10.	U				
74-83-9	Bromomethane	10.	U	10.	U				
75-01-4	Vinyl chloride	10.	U	10.	U				
75-00-3	Chloroethane	10.	U	10.	U				
75-09-2	Methylene chloride	20.	U	20.	U				
67-64-1	Acetone	100.	U	190.					
75-15-0	Carbon disulfide	100.	U	100.	U				
75-35-4	1,1-Dichloroethene	5.	U	5.	U				
75-34-3	1,1-Dichloroethane	5.	U	5.	U				
156-60-5	trans-1,2-Dichloroethene	5.	U	5.	U				
67-66-3	Chloroform	5.	U	5.	U				
107-06-2	1,2-Dichloroethane	16.		5.	U				
78-93-3	2-Butanone (MEK)	100.	U	100.	U				
71-55-6	1,1,1-Trichloroethane	5.	U	5.	U				
56-23-5	Carbon tetrachloride	5.	U	5.	U				
108-05-4	Vinyl acetate	50.	U	50.	U				
75-27-4	Bromodichloromethane	5.	U	5.	U				
79-34-5	1,1,2,2-Tetrachloroethane	5.	U	5.	U				
78-87-5	1,2-Dichloropropane	5.	U	5.	U				
10061-02-6	trans-1,3-Dichloropropene	5.	U	5.	U				
79-01-6	Trichloroethene	5.	U	5.	U				
124-48-1	Dibromochloromethane	5.	U	5.	U				
79-00-5	1,1,2-Trichloroethane	5.	U	5.	U				
71-43-2	Benzene	5.	U	5.	U				
10061-01-5	cis-1,3-Dichloropropene	5.	U	5.	U				
110-75-8	2-Chloroethylvinylether	10.	U	10.	U				
75-25-2	Bromoform	5.	U	5.	U				
591-78-6	2-Hexanone	50.	U	50.	U				
108-10-1	4-Methyl-2-Pentanone (MIBK)	50.	U	50.	U				
127-18-4	Tetrachloroethene	5.	U	5.	U				
108-88-3	Toluene	5.5		5.	U				
108-90-7	Chlorobenzene	5.	U	5.	U				
100-41-4	Ethylbenzene	5.	U	5.	U				
100-42-5	Styrene	5.	U	5.	U				
1330-20-7	Xylene (total)	15.		5.	U				

*** Validation Complete ***

CEDAR CHEMICAL CORPORATION
WEST HELENA, ARKANSAS
SITE 1 PHASE II SUBSURFACE SOIL DATA

ARSENIC	SHORT ID -------->	1SB-1 (4-6')		1SB-1 (12-14')					
	ORIGINAL ID ----->	001SGB0103		001SGB0107					
	SAMPLE DATE ----->	12/20/94		12/20/94					
	DATE EXTRACTED -->	12/27/94		12/27/94					
	DATE ANALYZED --->	12/27/94		12/27/94					
	MATRIX ---------->	Soil		Soil					
	UNITS ----------->	MG/KG		MG/KG					
CAS #	Parameter	11213	VAL	11213	VAL				
7440-38-2	Arsenic (As)	5.	U	5.	U				

*** Validation Complete ***

CEDAR CHEMICAL CORPORATION
WEST HELENA, ARKANSAS
SITE 1 PHASE II SUBSURFACE SOIL DATA

DCA	SHORT ID --------->	1HA-7 (5-6')		1HA-7 (11-12')			
	ORIGINAL ID ----->	001S000702		001S000704			
	SAMPLE DATE ----->	01/31/95		01/31/95			
	DATE ANALYZED --->	02/07/95		02/07/95			
	MATRIX ---------->	Soil		Soil			
	UNITS ----------->	UG/KG		UG/KG			
CAS #	Parameter	11834	VAL	11834	VAL		
95-76-1	3,4-Dichloroaniline	660.	U	660.	U		

*** Validation Complete ***

CEDAR CHEMICAL CORPORATION
WEST HELENA, ARKANSAS
SITE 1 PHASE II SUBSURFACE SOIL DATA

PEST													
	SHORT ID -------->	1HA-6 (8-9')		1HA-6 (13-14')		1HA-7 (5-6')		1HA-7 (11-12')		1SB-1 (4-6')		1SB-1 (12-14')	
	ORIGINAL ID ----->	001S000603		001S000604		001S000702		001S000704		001SGB0103		001SGB0107	
	SAMPLE DATE ----->	11/28/94		11/28/94		01/31/95		01/31/95		12/20/94		12/20/94	
	DATE EXTRACTED -->	12/03/94		12/03/94		02/03/95		02/03/95		12/22/94		12/22/94	
	DATE ANALYZED --->	12/04/94		12/04/94		02/07/95		02/07/95		12/23/94		12/23/94	
	MATRIX ---------->	Soil		Soil		Soil		Soil		Soil		Soil	
	UNITS ---------->	UG/KG		UG/KG		UG/KG		UG/KG		UG/KG		UG/KG	
CAS #	Parameter	10834	VAL	10834	VAL	11834	VAL	11834	VAL	11213	VAL	11213	VAL
319-84-6	Alpha-BHC	2.	U	200.	U	2.	U	2.	U	2.	U	2.	U
319-85-7	Beta-BHC	4.	U	400.	U	4.	U	4.	U	4.	U	4.	U
319-86-8	Delta-BHC	6.	U	600.	U	6.	U	6.	U	6.	U	6.	U
58-89-9	gamma-BHC (Lindane)	2.7	U	270.	U	2.7	U	2.7	U	2.7	U	2.7	U
76-44-8	Heptachlor	2.	U	200.	U	2.	U	2.	U	2.	U	2.	U
309-00-2	Aldrin	2.7	U	270.	U	2.7	U	2.7	U	2.7	U	2.7	U
1024-57-3	Heptachlor Epoxide	56.	U	5600.	U	56.	U	56.	U	56.	U	56.	U
959-98-8	Endosulfan I	9.4	U	940.	U	9.4	U	9.4	U	9.4	U	9.4	U
60-57-1	Dieldrin	1.3	U	130.	U	1.3	U	1.3	U	1.3	U	1.3	U
72-55-9	4,4'-DDE	2.7	U	270.	U	13.		2.7	U	2.7	U	2.7	U
72-20-8	Endrin	4.	U	400.	U	4.	U	4.	U	4.	U	4.	U
33213-65-9	Endosulfan II	2.7	U	270.	U	2.7	U	2.7	U	2.7	U	2.7	U
72-54-8	4,4'-DDD	7.	U	700.	U	20.		7.	U	7.	U	7.	U
7421-93-4	Endrin aldehyde	15.	U	1500.	U	15.	U	15.	U	15.	U	15.	U
1031-07-8	Endosulfan Sulfate	44.	U	4400.	U	44.	U	44.	U	44.	U	44.	U
50-29-3	4,4'-DDT	8.	U	800.	U	8.	U	8.	U	8.	U	8.	U
72-43-5	Methoxychlor	120.	U	12000.	U	120.	U	120.	U	120.	U	120.	U
57-74-9	Chlordane	9.4	U	940.	U	9.4	U	9.4	U	9.4	U	9.4	U
8001-35-2	Toxaphene	160.	U	16000.	U	160.	U	160.	U	160.	U	160.	U
12674-11-2	Aroclor-1016	60.	U	6000.	U	60.	U	60.	U	60.	U	60.	U
11104-28-2	Aroclor-1221	180.	U	18000.	U	180.	U	180.	U	180.	U	180.	U
11141-16-5	Aroclor-1232	32.	U	3200.	U	32.	U	32.	U	32.	U	32.	U
53469-21-9	Aroclor-1242	44.	U	4400.	U	44.	U	44.	U	44.	U	44.	U
12672-29-6	Aroclor-1248	170.	U	17000.	U	170.	U	170.	U	170.	U	170.	U
11097-69-1	Aroclor-1254	80.	U	8000.	U	80.	U	80.	U	80.	U	80.	U
11096-82-5	Aroclor-1260	24.	U	2400.	U	24.	U	24.	U	24.	U	24.	U

*** Validation Complete ***

CEDAR CHEMICAL CORPORATION
WEST HELENA, ARKANSAS
SITE 1 PHASE II SUBSURFACE SOIL DATA

SVOA													
	SHORT ID -------->	1HA-6 (8-9')		1HA-6 (13-14')		1HA-7 (5-6')		1HA-7 (11-12')		1SB-1 (4-6')		1SB-1 (12-14')	
	ORIGINAL ID ----->	001S000603		001S000604		001S000702		001S000704		001SGB0103		001SGB0107	
	SAMPLE DATE ----->	11/28/94		11/28/94		01/31/95		01/31/95		12/20/94		12/20/94	
	DATE EXTRACTED -->	12/02/94		12/02/94		02/03/95		02/03/95		12/22/94		12/22/94	
	DATE ANALYZED --->	12/07/94		12/07/94		02/07/95		02/07/95		12/23/94		12/23/94	
	MATRIX ---------->	Soil		Soil		Soil		Soil		Soil		Soil	
	UNITS ---------->	UG/KG		UG/KG		UG/KG		UG/KG		UG/KG		UG/KG	
CAS #	Parameter	10834	VAL	10834	VAL	11834	VAL	11834	VAL	11213	VAL	11213	VAL
108-95-2	Phenol	660.	U	660.	U	660.	U	660.	U	660.	U	660.	U
111-44-4	bis(2-Chloroethyl)ether	660.	U	660.	U	660.	U	660.	U	660.	U	660.	U
95-57-8	2-Chlorophenol	660.	U	660.	U	660.	U	660.	U	660.	U	660.	U
541-73-1	1,3-Dichlorobenzene	660.	U	660.	U	660.	U	660.	U	660.	U	660.	U
106-46-7	1,4-Dichlorobenzene	660.	U	660.	U	660.	U	660.	U	660.	U	660.	U
100-51-6	Benzyl alcohol	1300.	U	1300.	U	1300.	U	1300.	U	1300.	U	1300.	U
95-50-1	1,2-Dichlorobenzene	660.	U	660.	U	660.	U	660.	U	660.	U	660.	U
95-48-7	2-Methylphenol (o-Cresol)	660.	U	660.	U	660.	U	660.	U	660.	U	660.	U
108-60-1	bis(2-chloroisopropyl) ether	660.	U	660.	U	660.	U	660.	U	660.	U	660.	U
106-44-5	4-Methylphenol (p-Cresol)	660.	U	660.	U	660.	U	660.	U	660.	U	660.	U
621-64-7	N-Nitroso-di-n-propylamine	660.	U	660.	U	660.	U	660.	U	660.	U	660.	U
67-72-1	Hexachloroethane	660.	U	660.	U	660.	U	660.	U	660.	U	660.	U
98-95-3	Nitrobenzene	660.	U	660.	U	660.	U	660.	U	660.	U	660.	U
78-59-1	Isophorone	660.	U	660.	U	660.	U	660.	U	660.	U	660.	U
88-75-5	2-Nitrophenol	660.	U	660.	U	660.	U	660.	U	660.	U	660.	U
105-67-9	2,4-Dimethylphenol	660.	U	660.	U	660.	U	660.	U	660.	U	660.	U
111-91-1	bis(2-Chloroethoxy)methane	660.	U	660.	U	660.	U	660.	U	660.	U	660.	U
120-83-2	2,4-Dichlorophenol	660.	U	660.	U	660.	U	660.	U	660.	U	660.	U
120-82-1	1,2,4-Trichlorobenzene	660.	U	660.	U	660.	U	660.	U	660.	U	660.	U
91-20-3	Naphthalene	660.	U	660.	U	660.	U	660.	U	660.	U	660.	U
87-68-3	Hexachlorobutadiene	660.	U	660.	U	660.	U	660.	U	660.	U	660.	U
59-50-7	4-Chloro-3-methylphenol	1300.	U	1300.	U	1300.	U	1300.	U	1300.	U	1300.	U
91-57-6	2-Methylnaphthalene	660.	U	660.	U	660.	U	660.	U	660.	U	660.	U
77-47-4	Hexachlorocyclopentadiene	660.	U	660.	U	660.	U	660.	U	660.	U	660.	U
88-06-2	2,4,6-Trichlorophenol	660.	U	660.	U	660.	U	660.	U	660.	U	660.	U
95-95-4	2,4,5-Trichlorophenol	660.	U	660.	U	660.	U	660.	U	660.	U	660.	U
91-58-7	2-Chloronaphthalene	660.	U	660.	U	660.	U	660.	U	660.	U	660.	U
88-74-4	2-Nitroaniline	3300.	U	3300.	U	3300.	U	3300.	U	3300.	U	3300.	U
131-11-3	Dimethylphthalate	660.	U	660.	U	660.	U	660.	U	660.	U	660.	U
208-96-8	Acenaphthylene	660.	U	660.	U	660.	U	660.	U	660.	U	660.	U
99-09-2	3-Nitroaniline	3300.	U	3300.	U	3300.	U	3300.	U	3300.	U	3300.	U
83-32-9	Acenaphthene	660.	U	660.	U	660.	U	660.	U	660.	U	660.	U
51-28-5	2,4-Dinitrophenol	3300.	U	3300.	U	3300.	U	3300.	U	3300.	U	3300.	U
100-02-7	4-Nitrophenol	3300.	U	3300.	U	3300.	U	3300.	U	3300.	U	3300.	U
132-64-9	Dibenzofuran	660.	U	660.	U	660.	U	660.	U	660.	U	660.	U
121-14-2	2,4-Dinitrotoluene	660.	U	660.	U	660.	U	660.	U	660.	U	660.	U
606-20-2	2,6-Dinitrotoluene	660.	U	660.	U	660.	U	660.	U	660.	U	660.	U
84-66-2	Diethylphthalate	660.	U	660.	U	660.	U	660.	U	660.	U	660.	U

*** Validation Complete ***

CEDAR CHEMICAL CORPORATION
WEST HELENA, ARKANSAS
SITE 1 PHASE II SUBSURFACE SOIL DATA

SVOA													
	SHORT ID --------->	1HA-6 (8-9')		1HA-6 (13-14')		1HA-7 (5-6')		1HA-7 (11-12')		1SB-1 (4-6')		1SB-1 (12-14')	
	ORIGINAL ID ----->	001S000603		001S000604		001S000702		001S000704		001SGB0103		001SGB0107	
	SAMPLE DATE ----->	11/28/94		11/28/94		01/31/95		01/31/95		12/20/94		12/20/94	
	DATE EXTRACTED -->	12/02/94		12/02/94		02/03/95		02/03/95		12/22/94		12/22/94	
	DATE ANALYZED --->	12/07/94		12/07/94		02/07/95		02/07/95		12/23/94		12/23/94	
	MATRIX ---------->	Soil		Soil		Soil		Soil		Soil		Soil	
	UNITS ---------->	UG/KG		UG/KG		UG/KG		UG/KG		UG/KG		UG/KG	
CAS #	Parameter	10834	VAL	10834	VAL	11834	VAL	11834	VAL	11213	VAL	11213	VAL
7005-72-3	4-Chlorophenyl-phenylether	660.	U	660.	U	660.	U	660.	U	660.	U	660.	U
86-73-7	Fluorene	660.	U	660.	U	660.	U	660.	U	660.	U	660.	U
100-01-6	4-Nitroaniline	3300.	U	3300.	U	3300.	U	3300.	U	3300.	U	3300.	U
534-52-1	4,6-Dinitro-2-methylphenol	3300.	U	3300.	U	3300.	U	3300.	U	3300.	U	3300.	U
86-30-6	N-Nitrosodiphenylamine	660.	U	660.	U	660.	U	660.	U	660.	U	660.	U
101-55-3	4-Bromophenyl-phenylether	660.	U	660.	U	660.	U	660.	U	660.	U	660.	U
118-74-1	Hexachlorobenzene	660.	U	660.	U	660.	U	660.	U	660.	U	660.	U
87-86-5	Pentachlorophenol	3300.	U	3300.	U	3300.	U	3300.	U	3300.	U	3300.	U
85-01-8	Phenanthrene	660.	U	660.	U	660.	U	660.	U	660.	U	660.	U
120-12-7	Anthracene	660.	U	660.	U	660.	U	660.	U	660.	U	660.	U
206-44-0	Fluoranthene	660.	U	660.	U	660.	U	660.	U	660.	U	660.	U
129-00-0	Pyrene	660.	U	660.	U	660.	U	660.	U	660.	U	660.	U
85-68-7	Butylbenzylphthalate	660.	U	660.	U	660.	U	660.	U	660.	U	660.	U
91-94-1	3,3'-Dichlorobenzidine	1300.	U	1300.	U	1300.	U	1300.	U	1300.	U	1300.	U
56-55-3	Benzo(a)anthracene	660.	U	660.	U	660.	U	660.	U	660.	U	660.	U
117-81-7	bis(2-Ethylhexyl)phthalate (BEHP)	660.	U	660.	U	660.	U	660.	U	660.	U	660.	U
218-01-9	Chrysene	660.	U	660.	U	660.	U	660.	U	660.	U	660.	U
117-84-0	Di-n-octylphthalate	660.	U	660.	U	660.	U	660.	U	660.	U	660.	U
205-99-2	Benzo(b)fluoranthene	660.	U	660.	U	660.	U	660.	U	660.	U	660.	U
207-08-9	Benzo(k)fluoranthene	660.	U	660.	U	660.	U	660.	U	660.	U	660.	U
50-32-8	Benzo(a)pyrene	660.	U	660.	U	660.	U	660.	U	660.	U	660.	U
193-39-5	Indeno(1,2,3-cd)pyrene	660.	U	660.	U	660.	U	660.	U	660.	U	660.	U
53-70-3	Dibenz(a,h)anthracene	660.	U	660.	U	660.	U	660.	U	660.	U	660.	U
191-24-2	Benzo(g,h,i)perylene	660.	U	660.	U	660.	U	660.	U	660.	U	660.	U
88-85-7	Dinoseb	462.	U	462.	U	462.	U	462.	U	462.	U	462.	U
65-85-0	Benzoic acid	3300.	U	3300.	U	3300.	U	3300.	U	3300.	U	3300.	U
106-47-8	4-Chloroaniline	1300.	U	1300.	U	1300.	U	1300.	U	1300.	U	1300.	U
84-74-2	Di-n-butylphthalate	660.	U	660.	U	660.	U	660.	U	660.	U	660.	U

*** Validation Complete ***

CEDAR CHEMICAL CORPORATION
WEST HELENA, ARKANSAS
SITE 1 PHASE II SUBSURFACE SOIL DATA

VOA									
	SHORT ID -------->	1SB-1 (4-6')		1SB-1 (12-14')					
	ORIGINAL ID ----->	001SGB0103		001SGB0107					
	SAMPLE DATE ----->	12/20/94		12/20/94					
	DATE EXTRACTED -->	12/23/94		12/23/94					
	DATE ANALYZED --->	12/23/94		12/23/94					
	MATRIX ---------->	Soil		Soil					
	UNITS ----------->	UG/KG		UG/KG					
CAS #	Parameter	11213	VAL	11213	VAL				
74-87-3	Chloromethane	10.	U	10.	U				
74-83-9	Bromomethane	10.	U	10.	U				
75-01-4	Vinyl chloride	10.	U	10.	U				
75-00-3	Chloroethane	10.	U	10.	U				
75-09-2	Methylene chloride	20.	U	20.	U				
67-64-1	Acetone	100.	U	100.					
75-15-0	Carbon disulfide	100.	U	100.	U				
75-35-4	1,1-Dichloroethene	5.	U	5.	U				
75-34-3	1,1-Dichloroethane	5.	U	5.	U				
156-60-5	trans-1,2-Dichloroethene	5.	U	5.	U				
67-66-3	Chloroform	5.	U	5.	U				
107-06-2	1,2-Dichloroethane	5.	U	5.	U				
78-93-3	2-Butanone (MEK)	100.	U	100.	U				
71-55-6	1,1,1-Trichloroethane	5.	U	5.	U				
56-23-5	Carbon tetrachloride	5.	U	5.	U				
108-05-4	Vinyl acetate	50.	U	50.	U				
75-27-4	Bromodichloromethane	5.	U	5.	U				
79-34-5	1,1,2,2-Tetrachloroethane	5.	U	5.	U				
78-87-5	1,2-Dichloropropane	5.	U	5.	U				
10061-02-6	trans-1,3-Dichloropropene	5.	U	5.	U				
79-01-6	Trichloroethene	5.	U	5.	U				
124-48-1	Dibromochloromethane	5.	U	5.	U				
79-00-5	1,1,2-Trichloroethane	5.	U	5.	U				
71-43-2	Benzene	5.	U	5.	U				
10061-01-5	cis-1,3-Dichloropropene	5.	U	5.	U				
110-75-8	2-Chloroethylvinylether	10.	U	10.	U				
75-25-2	Bromoform	5.	U	5.	U				
591-78-6	2-Hexanone	50.	U	50.	U				
108-10-1	4-Methyl-2-Pentanone (MIBK)	50.	U	50.	U				
127-18-4	Tetrachloroethene	5.	U	5.	U				
108-88-3	Toluene	5.	U	5.	U				
108-90-7	Chlorobenzene	5.	U	5.	U				
100-41-4	Ethylbenzene	5.	U	5.	U				
100-42-5	Styrene	5.	U	5.	U				
1330-20-7	Xylene (total)	5.	U	5.	U				

*** Validation Complete ***

CEDAR CHEMICAL CORPORATION
WEST HELENA, ARKANSAS
PHASE 1 SITE 2 SURFACE SOIL DATA

RCRA METAL		SHORT ID ------>	2HA-5 (0-1')	2HA-5 (0-1')DUP
		ORIGINAL ID ----->	CED2HA51	CED2HA51D
		SAMPLE DATE ----->	09/13/93	09/13/93
		MATRIX ---------->	Soil	Soil
		UNITS ----------->	MG/KG	MG/KG
CAS #	Parameter		E010 VAL	E010 VAL
7440-38-2	Arsenic (As)		98.1	68.8
7440-39-3	Barium (Ba)		89.4	86.
7440-43-9	Cadmium (Cd)		161.8	163.8
7440-47-3	Chromium (Cr)		95.3	64.
7439-92-1	Lead (Pb)		65.9	19.
7439-97-6	Mercury (Hg)		111.7	111.5
7782-49-2	Selenium (Se)		70.9	67.9
7440-22-4	Silver (Ag)		89.9	87.9

*** Validation Complete ***

CEDAR CHEMICAL CORPORATION
WEST HELENA, ARKANSAS
PHASE 1 SITE 2 SUBSURFACE SOIL DATA

PEST	SHORT ID --------->	2SB-1 (15-20')		2SB-1 (25-30')		2SB-2 (20-25')		2SB-2 (25-30')		2SB-3 (13-14')		2SB-3 (24-25')	
	ORIGINAL ID ----->	CED2SB14		CED2SB16		CED2-SB2-5		CED2-SB2-6		CED2-SB3-14		CED2-SB3-25	
	SAMPLE DATE ----->	09/22/93		09/22/93		09/21/93		09/21/93		09/17/93		09/17/93	
	DATE ANALYZED --->	10/08/93		10/08/93		10/07/93		10/07/93		10/07/93		10/07/93	
	MATRIX ---------->	Soil		Soil		Soil		Soil		Soil		Soil	
	UNITS ----------->	UG/KG		UG/KG		UG/KG		UG/KG		UG/KG		UG/KG	
CAS #	Parameter	E013	VAL	E013	VAL	E011	VAL	E011	VAL	E011	VAL	ED11	VAL
1024-57-3	Heptachlor Epoxide	72.	U	71.	U	73.	U	740.	U	70.	U	150.	U
1031-07-8	Endosulfan Sulfate	57.	U	56.	U	58.	U	590.	U	55.	U	120.	U
309-00-2	Aldrin	3.5	U	3.4	U	3.5	U	36.	U	3.4	U	7.	U
319-84-6	Alpha-BHC	2.6	U	2.6	U	2.6	U	27.	U	2.5	U	5.3	U
319-85-7	Beta-BHC	5.2	U	5.1	U	5.3	U	53.	U	5.	U	11.	U
319-86-8	Delta-BHC	7.8	U	7.7	U	7.9	U	80.	U	7.6	U	16.	U
33213-65-9	Endosulfan II	3.5	U	3.4	U	3.5	U	36.	U	3.4	U	7.	U
50-29-3	4,4'-DDT	10.	U	10.	U	11.	U	110.	U	10.	U	21.	U
5103-71-9	alpha-Chlordane	12.	U	12.	U	12.	U	120.	U	12.	U	25.	U
5103-74-2	gamma-Chlordane	12.	U	12.	U	12.	U	120.	U	12.	U	25.	U
53494-70-5	Endrin ketone	21.	U	20.	U	21.	U	200.	U	20.	U	42.	U
58-89-9	gamma-BHC (Lindane)	3.5	U	3.4	U	3.5	U	36.	U	3.6	U	7.	U
60-57-1	Dieldrin	1.7	U	1.7	U	1.8	U	18.	U	1.7	U	3.5	U
72-20-8	Endrin	5.2	U	5.1	U	5.3	U	53.	U	5.	U	11.	U
72-43-5	Methoxychlor	160.	U	150.	U	160.	U	34000.	U	150.	U	320.	U
72-54-8	4,4'-DDD	9.6	U	9.4	U	9.7	U	98.	U	9.2	U	19.	U
72-55-9	4,4'-DDE	3.5	U	3.4	U	3.5	U	36.	U	3.4	U	7.	U
76-44-8	Heptachlor	2.6	U	2.6	U	2.6	U	27.	U	2.5	U	5.3	U
8001-35-2	Toxaphene	210.	U	200.	U	210.	U	2100.	U	200.	U	420.	U
959-98-8	Endosulfan I	12.	U	12.	U	12.	U	120.	U	12.	U	25.	U

*** Validation Complete ***

CEDAR CHEMICAL CORPORATION
WEST HELENA, ARKANSAS
PHASE 1 SITE 2 SUBSURFACE SOIL DATA

PEST	SHORT ID ---------->	2SB-4 (15-20')		2SB-4 (25-30')		2SB-5 (15-20')		2SB-5 (25-30')		2SB-6 (21-22')		2SB-6 (28-29')	
	ORIGINAL ID ----->	CED2SB44		CED2SB46		CED2SB54		CED2SB56		CED2SB622		CED2SB629	
	SAMPLE DATE ----->	09/23/93		09/23/93		09/21/93		09/21/93		09/20/93		09/20/93	
	DATE ANALYZED --->	10/08/93		10/14/93		10/13/93		10/13/93		10/07/93		10/07/93	
	MATRIX ---------->	Soil		Soil		Soil		Soil		Soil		Soil	
	UNITS ---------->	UG/KG		UG/KG		UG/KG		UG/KG		UG/KG		UG/KG	
CAS #	Parameter	E013	VAL	E013	VAL	E013	VAL	E013	VAL	E012	VAL	E012	VAL
1024-57-3	Heptachlor Epoxide	74.	U	71.	U	700.	U	770.	U	710.	U	3700.	U
1031-07-8	Endosulfan Sulfate	59.	U	56.	U	550.	U	610.	U	560.	U	2900.	U
309-00-2	Aldrin	3.6	U	3.4	U	34.	U	140.		34.	U	500.	
319-84-6	Alpha-BHC	9.8		2.6	U	25.	U	44.		26.	U	210.	
319-85-7	Beta-BHC	5.3	U	5.1	U	50.	U	56.	U	51.	U	270.	U
319-86-8	Delta-BHC	8.	U	7.7	U	76.	U	83.	U	77.	U	400.	U
33213-65-9	Endosulfan II	3.6	U	3.4	U	34.	U	37.	U	34.	U	180.	U
50-29-3	4,4'-DDT	11.	U	10.	U	100.	U	110.	U	420.		870.	
5103-71-9	alpha-Chlordane	12.	U	12.	U	120.	U	130.	U	120.	U	630.	U
5103-74-2	gamma-Chlordane	12.	U	12.	U	120.	U	130.	U	150.		630.	U
53494-70-5	Endrin ketone	21.	U	20.	U	200.	U	220.	U	200.	U	1100.	U
58-89-9	gamma-BHC (Lindane)	3.6	U	3.4	U	34.	U	37.	U	34.	U	180.	U
60-57-1	Dieldrin	1.8	U	1.7	U	17.	U	19.	U	17.	U	89.	U
72-20-8	Endrin	5.3	U	5.1	U	50.	U	75.		340.		680.	
72-43-5	Methoxychlor	230.		150.	U	160000.		160000.		16000.		290000.	
72-54-8	4,4'-DDD	10.	U	9.4	U	92.	U	100.	U	180.		490.	U
72-55-9	4,4'-DDE	3.6	U	3.4	U	34.	U	37.	U	34.	U	180.	U
76-44-8	Heptachlor	2.7	U	2.6	U	25.	U	81.		110.		270.	
8001-35-2	Toxaphene	210.	U	200.	U	2000.	U	2200.	U	1100.	U	1100.	U
959-98-8	Endosulfan I	12.	U	12.	U	120.	U	130.	U	120.	U	630.	U

*** Validation Complete ***

CEDAR CHEMICAL CORPORATION
WEST HELENA, ARKANSAS
PHASE 1 SITE 2 SUBSURFACE SOIL DATA

PEST	SHORT ID --------->	2SB-7 (10-15')		2SB-7 (25-30')		2SB-8 (15-20')		2SB-8 (25-30')		2SB-9 (4-5')		2SB-9 (26-27')	
	ORIGINAL ID ----->	CED2SB73		CED2SB76		CED2-SB8-4		CED2SB86		CED2SB905		CED2SB905	
	SAMPLE DATE ----->	09/23/93		09/23/93		09/21/93		09/21/93		09/21/93		09/21/93	
	DATE ANALYZED --->	10/08/93		10/13/93		10/07/93		10/05/93		10/07/93		10/07/93	
	MATRIX ---------->	Soil		Soil		Soil		Soil		Soil		Soil	
	UNITS ---------->	UG/KG		UG/KG		UG/KG		UG/KG		UG/KG		UG/KG	
CAS #	Parameter	E013	VAL	E013	VAL	E011	VAL	E011	VAL	E012	VAL	E012	VAL
1024-57-3	Heptachlor Epoxide	70.	U	750.	U	140.	U	750.	U	720.	U	740.	U
1031-07-8	Endosulfan Sulfate	56.	U	600.	U	110.	U	1600.	U	570.	U	590.	U
309-00-2	Aldrin	3.4	U	36.	U	6.9	U	36.	U	35.	U	36.	U
319-84-6	Alpha-BHC	14.		27.	U	30.		27.	U	26.	U	27.	U
319-85-7	Beta-BHC	5.1	U	54.	U	10.	U	54.	U	52.	U	53.	U
319-86-8	Delta-BHC	7.6	U	81.	U	16.	U	81.	U	78.	U	80.	U
33213-65-9	Endosulfan II	3.4	U	36.	U	6.9	U	110.	U	35.	U	36.	U
50-29-3	4,4'-DDT	10.	U	110.	U	21.	U	220.	U	100.	U	110.	U
5103-71-9	alpha-Chlordane	12.	U	130.	U	24.	U	130.	U	120.	U	120.	U
5103-74-2	gamma-Chlordane	12.	U	130.	U	24.	U	130.	U	120.	U	120.	U
53494-70-5	Endrin ketone	20.	U	220.	U	41.	U	600.	U	210.	U	200.	U
58-89-9	gamma-BHC (Lindane)	3.4	U	36.	U	6.9	U	36.	U	35.	U	36.	U
60-57-1	Dieldrin	1.7	U	18.	U	3.4	U	54.	U	17.	U	18.	U
72-20-8	Endrin	5.1	U	54.	U	10.	U	99.	U	52.	U	53.	U
72-43-5	Methoxychlor	150.	U	17000.		310.	U	1900.		240000.		340000.	
72-54-8	4,4'-DDD	9.3	U	99.	U	19.	U	36.	U	96.	U	98.	U
72-55-9	4,4'-DDE	3.4	U	36.	U	6.9	U	18.	U	35.	U	36.	U
76-44-8	Heptachlor	2.5	U	27.	U	5.2	U	27.	U	26.	U	27.	U
8001-35-2	Toxaphene	200.	U	2200.	U	410.	U	130.	U	2100.	U	2100.	U
959-98-8	Endosulfan I	12.	U	130.	U	24.	U	36.	U	120.	U	120.	U

*** Validation Complete ***

CEDAR CHEMICAL CORPORATION
WEST HELENA, ARKANSAS
PHASE 1 SITE 2 SUBSURFACE SOIL DATA

PEST	SHORT ID --------->	2SB-10 (15-20')		2SB-10 (25-30')		2SB-11 (20-25')		2SB-11 (25-30')		2SB-12 (15-20')		2SB-12 (25-30')	
	ORIGINAL ID ----->	CED2SB104		CED2SB106		CED2SB115		CED6SB116		CED2SB124		CED2SB126	
	SAMPLE DATE ----->	09/23/93		09/23/93		09/23/93		09/23/93		09/23/93		09/23/93	
	DATE ANALYZED --->	10/15/93		10/15/93		10/14/93		10/20/93		10/13/93		10/13/93	
	MATRIX ---------->	Soil		Soil		Soil		Soil		Soil		Soil	
	UNITS ---------->	UG/KG		UG/KG		UG/KG		UG/KG		UG/KG		UG/KG	
CAS #	Parameter	ED13	VAL	ED13	VAL	ED13	VAL	ED13	VAL	ED13	VAL	ED13	VAL
1024-57-3	Heptachlor Epoxide	70000.	U	290.	U	78.	U	77.	U	710.	U	690.	U
1031-07-8	Endosulfan Sulfate	56000.	U	230.	U	62.	U	61.	U	570.	U	550.	U
309-00-2	Aldrin	3400.	U	14.	U	3.8	U	3.7	U	34.	U	33.	U
319-84-6	Alpha-BHC	2500.	U	11.	U	2.8	U	2.8	U	26.	U	25.	U
319-85-7	Beta-BHC	5100.	U	53.	U	7.2		5.5	U	52.	U	50.	U
319-86-8	Delta-BHC	7600.	U	32.	U	8.5	U	8.3	U	78.	U	74.	U
33213-65-9	Endosulfan II	3400.	U	14.	U	3.8	U	3.7	U	34.	U	33.	U
50-29-3	4,4'-DDT	10000.	U	42.	U	11.	U	11.	U	103.	U	99.	U
5103-71-9	alpha-Chlordane	12000.	U	50.	U	13.	U	13.	U	120.	U	120.	U
5103-74-2	gamma-Chlordane	12000.	U	50.	U	13.	U	13.	U	120.	U	120.	U
53494-70-5	Endrin ketone	20000.	U	85.	U	23.	U	22.	U	210.	U	200.	U
58-89-9	gamma-BHC (Lindane)	3400.	U	14.	U	3.8	U	3.7	U	34.	U	33.	U
60-57-1	Dieldrin	1700.	U	7.1	U	1.9	U	1.8	U	17.	U	17.	U
72-20-8	Endrin	5100.	U	21.	U	5.7	U	5.5	U	52.	U	50.	U
72-43-5	Methoxychlor	26000.		7300.		170.	U	170.	U	22000.		63000.	
72-54-8	4,4'-DDD	9300.	U	39.	U	10.	U	10.	U	95.	U	91.	U
72-55-9	4,4'-DDE	3400.	U	14.	U	3.8	U	3.7	U	34.	U	33.	U
76-44-8	Heptachlor	2500.	U	27.	U	2.8	U	2.8	U	26.	U	25.	U
8001-35-2	Toxaphene	20000.	U	850.	U	230.	U	220.	U	2100.	U	2000.	U
959-98-8	Endosulfan I	12000.	U	50.	U	13.	U	13.	U	120.	U	120.	U

*** Validation Complete ***

CEDAR CHEMICAL CORPORATION
WEST HELENA, ARKANSAS
PHASE 1 SITE 2 SUBSURFACE SOIL DATA

PEST	SHORT ID --------->	2MW-1 (15-20')		2MW-1 (20-25')		2MW-1 (30-35')		2MW-2 (5-10')		2MW-2 (15-20')		2MW-3 (15-20')	
	ORIGINAL ID ----->	CED2SMW1-4		CED2SMW1-5		CED2SMW1-7		CED2-SMW2-2		CED2-SMW2-4		CED2-SMW3-4	
	SAMPLE DATE ----->	09/10/93		09/10/93		09/10/93		09/13/93		09/13/93		09/13/93	
	DATE ANALYZED --->	09/16/93		09/16/93		09/16/93		10/06/93		10/06/93		10/06/93	
	MATRIX ---------->	Soil		Soil		Soil		Soil		Soil		Soil	
	UNITS ----------->	UG/KG		UG/KG		UG/KG		UG/KG		UG/KG		UG/KG	
CAS #	Parameter	E008	VAL	E008	VAL	E008	VAL	E010	VAL	E010	VAL	E010	VAL
1024-57-3	Heptachlor Epoxide	72.	U	74.	U	70.	U	130.	U	73.	U	71.	U
1031-07-8	Endosulfan Sulfate	57.	U	58.	U	56.	U	56.	U	58.	U	56.	U
309-00-2	Aldrin	3.5	U	3.5	U	3.4	U	3.4	U	3.5	U	3.4	U
319-84-6	Alpha-BHC	2.6	U	2.7	U	2.5	U	4.4		2.6	U	2.6	U
319-85-7	Beta-BHC	5.2	U	5.3	U	5.1	U	5.1	U	5.3	U	5.1	U
319-86-8	Delta-BHC	7.8	U	8.	U	7.6	U	7.6	U	7.9	U	7.7	U
33213-65-9	Endosulfan II	3.5	U	3.5	U	3.4	U	3.4	U	3.5	U	3.4	U
50-29-3	4,4'-DDT	10.4	U	11.	U	10.	U	10.	U	11.	U	10.	U
5103-71-9	alpha-Chlordane	12.	U	12.	U	12.	U	12.	U	12.	U	12.	U
5103-74-2	gamma-Chlordane	12.	U	12.	U	12.	U	12.	U	12.	U	12.	U
53494-70-5	Endrin ketone	21.	U	21.	U	20.	U	20.	U	21.	U	21.	U
58-89-9	gamma-BHC (Lindane)	3.5	U	3.5	U	3.4	U	3.4	U	3.5	U	3.4	U
60-57-1	Dieldrin	1.7	U	1.8	U	1.7	U	1.7	U	1.8	U	1.7	U
72-20-8	Endrin	5.2	U	5.3	U	5.1	U	5.1	U	5.3	U	5.1	U
72-43-5	Methoxychlor	160.	U	160.	U	150.	U	150.	U	160.	U	150.	U
72-54-8	4,4'-DDD	9.5	U	9.7	U	9.3	U	9.3	U	9.7	U	9.4	U
72-55-9	4,4'-DDE	3.5	U	3.5	U	3.4	U	3.4	U	3.5	U	3.4	U
76-44-8	Heptachlor	2.6	U	2.7	U	2.5	U	2.5	U	2.6	U	2.6	U
8001-35-2	Toxaphene	210.	U	210.	U	200.	U	200.	U	210.	U	210.	U
959-98-8	Endosulfan I	12.	U	12.	U	12.	U	12.	U	12.	U	12.	U

*** Validation Complete ***

CEDAR CHEMICAL CORPORATION
WEST HELENA, ARKANSAS
PHASE 1 SITE 2 SUBSURFACE SOIL DATA

PEST

SHORT ID -------->	2MW-3 (20-25')		2MW-3 (30-35')				
ORIGINAL ID ----->	CED2-SMW3-5		CED2-SMW3-7				
SAMPLE DATE ----->	09/13/93		09/15/93				
DATE ANALYZED --->	10/06/93		10/06/93				
MATRIX ---------->	Soil		Soil				
UNITS ----------->	UG/KG		UG/KG				
CAS #	Parameter	E010 VAL	E010 VAL				
1024-57-3	Heptachlor Epoxide	75. U	75. U				
1031-07-8	Endosulfan Sulfate	59. U	59. U				
309-00-2	Aldrin	3.6 U	3.6 U				
319-84-6	Alpha-BHC	2.7 U	2.7 U				
319-85-7	Beta-BHC	5.4 U	5.4 U				
319-86-8	Delta-BHC	8.1 U	8.1 U				
33213-65-9	Endosulfan II	3.6 U	3.6 U				
50-29-3	4,4'-DDT	11. U	11. U				
5103-71-9	alpha-Chlordane	13. U	13. U				
5103-74-2	gamma-Chlordane	13. U	13. U				
53494-70-5	Endrin ketone	22. U	22. U				
58-89-9	gamma-BHC (Lindane)	3.6 U	3.6 U				
60-57-1	Dieldrin	1.8 U	1.8 U				
72-20-8	Endrin	5.4 U	5.4 U				
72-43-5	Methoxychlor	160. U	160. U				
72-54-8	4,4'-DDD	9.9 U	9.9 U				
72-55-9	4,4'-DDE	3.6 U	3.6 U				
76-44-8	Heptachlor	2.7 U	2.7 U				
8001-35-2	Toxaphene	220. U	220. U				
959-98-8	Endosulfan I	13. U	13. U				

*** Validation Complete ***

CEDAR CHEMICAL CORPORATION
WEST HELENA, ARKANSAS
PHASE 1 SITE 2 SUBSURFACE SOIL DATA

RCRA METAL		SHORT ID --------->	2SB-1 (15-20')		2SB-1 (25-30')		2SB-2 (20-25')		2SB-2 (25-30')		2SB-3 (13-14')		2SB-3 (24-25')	
		ORIGINAL ID ----->	CED2SB14		CED2SB16		CED2-SB2-5		CED2-SB2-6		CED2-SB3-14		CED2-SB3-25	
		SAMPLE DATE ----->	09/22/93		09/22/93		09/21/93		09/21/93		09/17/93		09/17/93	
		DATE ANALYZED --->	10/15/93		10/15/93		10/11/93		10/11/93		10/11/93		10/11/93	
		MATRIX ---------->	Soil		Soil		Soil		Soil		Soil		Soil	
		UNITS ---------->	MG/KG		MG/KG		MG/KG		MG/KG		MG/KG		MG/KG	
CAS #	Parameter		E013	VAL	E013	VAL	E011	VAL	E011	VAL	E011	VAL	E011	VAL
7440-38-2	Arsenic (As)		10.7		4.3		9.4		4.9		8.5		8.	
7440-39-3	Barium (Ba)		140.		151.		205.		133.		228.		145.	
7440-43-9	Cadmium (Cd)		0.29		0.94		0.39	U	0.36	U	0.36	U	0.39	U
7440-47-3	Chromium (Cr)		13.5		9.		15.4		11.5		10.5		12.2	
7439-92-1	Lead (Pb)		12.3		8.2		12.2		8.2		11.4		10.8	
7439-97-6	Mercury (Hg)		0.12	U	0.13	U	0.13	U	0.13	U	0.13	U	0.13	U
7782-49-2	Selenium (Se)		0.63	U	0.63	U	0.65	U	0.61	U	0.6	U	0.64	U
7440-22-4	Silver (Ag)		0.38	U	0.38	U	0.39	U	0.36	U	0.36	U	0.39	U

*** Validation Complete ***

CEDAR CHEMICAL CORPORATION
WEST HELENA, ARKANSAS
PHASE 1 SITE 2 SUBSURFACE SOIL DATA

RCRA METAL	SHORT ID ---------->	2SB-4 (15-20')		2SB-4 (25-30')		2SB-5 (15-20')		2SB-5 (25-30')		2SB-6 (21-22')		2SB-6 (28-29')	
	ORIGINAL ID ----->	CED2SB44		CED2SB46		CED2SB54		CED2SB56		CED2-SB6-22		CED2-SB6-29	
	SAMPLE DATE ----->	09/23/93		09/23/93		09/21/93		09/21/93		09/20/93		09/20/93	
	DATE ANALYZED --->	10/15/93		10/15/93		10/15/93		10/15/93		10/11/93		10/11/93	
	MATRIX ---------->	Soil		Soil		Soil		Soil		Soil		Soil	
	UNITS ---------->	MG/KG		MG/KG		MG/KG		MG/KG		MG/KG		MG/KG	
CAS #	Parameter	E013	VAL	E013	VAL	E013	VAL	E013	VAL	E011	VAL	E011	VAL
7440-38-2	Arsenic (As)	7.2		14.7		9.1		5.6		18.7		3.7	
7440-39-3	Barium (Ba)	219.		126.		152.		181.		178.		98.8	
7440-43-9	Cadmium (Cd)	0.26	U	0.97		0.24	U	1.1		0.38	U	0.73	
7440-47-3	Chromium (Cr)	17.1		12.3		9.7		15.5		15.3		13.7	
7439-92-1	Lead (Pb)	14.2		12.8		7.1		13.8		17.4		12.6	
7439-97-6	Mercury (Hg)	0.13	U	0.13	U	0.11	U	0.13	U	0.12	U	0.13	U
7782-49-2	Selenium (Se)	0.65	U	0.63	U	0.6	U	0.67	U	0.63	U	0.65	U
7440-22-4	Silver (Ag)	0.39	U	0.38	U	0.36	U	0.4	U	0.38	U	0.39	U

*** Validation Complete ***

CEDAR CHEMICAL CORPORATION
WEST HELENA, ARKANSAS
PHASE 1 SITE 2 SUBSURFACE SOIL DATA

RCRA METAL		SHORT ID --------->	2SB-7 (10-15')		2SB-7 (25-30')		2SB-8 (15-20')		2SB-8 (25-30')		2SB-9 (4-5')		2SB-9 (26-27')	
		ORIGINAL ID ----->	CED2SB73		CED2SB76		CED2-SB8-4		CED2-SB8-6		CED2-SB9-5		CED2-SB9-27	
		SAMPLE DATE ----->	09/23/93		09/23/93		09/21/93		09/21/93		09/21/93		09/21/93	
		DATE ANALYZED --->	10/15/93		10/15/93		10/11/93		10/11/93		10/11/93		10/11/93	
		MATRIX ---------->	Soil		Soil		Soil		Soil		Soil		Soil	
		UNITS ---------->	MG/KG		MG/KG		MG/KG		MG/KG		MG/KG		MG/KG	
CAS #	Parameter		E013	VAL	E013	VAL	E011	VAL	E011	VAL	E011	VAL	E011	VAL
7440-38-2	Arsenic (As)		10.9		12.1		7.2		27.7		10.7		9.1	
7440-39-3	Barium (Ba)		197.		102.		180.		174.		88.7		184.	
7440-43-9	Cadmium (Cd)		0.28		0.3		0.38	U	0.39	U	0.73		0.39	U
7440-47-3	Chromium (Cr)		13.9		18.4		9.2		19.9		10.9		15.2	
7439-92-1	Lead (Pb)		14.3		17.2		9.4		10.8		8.8		17.3	
7439-97-6	Mercury (Hg)		0.13	U	0.12	U	0.12	U	0.13	U	0.12	U	0.13	U
7782-49-2	Selenium (Se)		0.63	U	0.66	U	0.63	U	0.68		1.1		0.66	U
7440-22-4	Silver (Ag)		0.38	U	0.4	U	0.38	U	0.39	U	0.37	U	0.39	U

*** Validation Complete ***

CEDAR CHEMICAL CORPORATION
WEST HELENA, ARKANSAS
PHASE 1 SITE 2 SUBSURFACE SOIL DATA

RCRA METAL													
	SHORT ID --------->	2SB-10 (15-20')		2SB-10 (25-30')		2SB-11 (20-25')		2SB-11 (25-30')		2SB-12 (15-20')		2SB-12 (25-30')	
	ORIGINAL ID ----->	CED2SB104		CED2SB106		CED2SB115		CED2SB116		CED2SB124		CED2SB126	
	SAMPLE DATE ----->	09/23/93		09/23/93		09/23/93		09/23/93		09/23/93		09/23/93	
	DATE ANALYZED --->	10/15/93		10/15/93		10/15/93		10/15/93		10/15/93		10/15/93	
	MATRIX ---------->	Soil		Soil		Soil		Soil		Soil		Soil	
	UNITS ---------->	MG/KG		MG/KG		MG/KG		MG/KG		MG/KG		MG/KG	
CAS #	Parameter	E013	VAL	E013	VAL	E013	VAL	E013	VAL	E013	VAL	E013	VAL
7440-38-2	Arsenic (As)	8.8		9.9		8.8		20.1		7.7		24.4	
7440-39-3	Barium (Ba)	202.		109.		188.		172.		153.		85.1	
7440-43-9	Cadmium (Cd)	0.75		0.26	U	0.53		0.45		0.25	U	0.25	
7440-47-3	Chromium (Cr)	13.		20.2		18.4		20.2		12.5		13.	
7439-92-1	Lead (Pb)	12.1		13.7		17.7		12.8		8.1		8.1	
7439-97-6	Mercury (Hg)	0.12	U	0.13	U	0.14	U	0.13	U	0.12	U	0.12	U
7782-49-2	Selenium (Se)	0.61	U	0.66	U	0.69	U	0.67	U	0.63	U	0.6	U
7440-22-4	Silver (Ag)	0.36	U	0.4	U	0.42	U	0.4	U	0.38	U	0.36	U

*** Validation Complete ***

CEDAR CHEMICAL CORPORATION
WEST HELENA, ARKANSAS
PHASE 1 SITE 2 SUBSURFACE SOIL DATA

RCRA METAL		SHORT ID --------->	2MW-1 (15-20')		2MW-1 (20-25')		2MW-1 (30-35')		2MW-2 (5-10')		2MW-2 (15-20')		2MW-3 (15-20')	
		ORIGINAL ID ----->	CED2SMW14		CED2SMW15		CED2SMW17		CED2-SMW2-2		CED2-SMW2-4		CED2-SMW3-4	
		SAMPLE DATE ----->	09/10/93		09/10/93		09/10/93		09/13/93		09/13/93		09/13/93	
		DATE ANALYZED --->	09/16/93		09/16/93		09/16/93		10/01/93		10/01/93		10/01/93	
		MATRIX ---------->	Soil		Soil		Soil		Soil		Soil		Soil	
		UNITS ---------->	MG/KG		MG/KG		MG/KG		MG/KG		MG/KG		MG/KG	
CAS #	Parameter		E008	VAL	E008	VAL	E008	VAL	E010	VAL	E010	VAL	E010	VAL
7440-38-2	Arsenic (As)		10.5		9.		5.		7.6		12.2		10.8	
7440-39-3	Barium (Ba)		187.		158.		83.8		197.		178.		151.	
7440-43-9	Cadmium (Cd)		0.75		0.39	U	0.47		0.37	U	0.51		0.37	U
7440-47-3	Chromium (Cr)		9.7		11.1		13.9		15.4		18.3		13.9	
7439-92-1	Lead (Pb)		9.3		7.1		9.2		21.2		14.6		9.7	
7439-97-6	Mercury (Hg)		0.12	U	0.13	U	0.12	U	0.12	U	0.13	U	0.13	U
7782-49-2	Selenium (Se)		0.65	U	0.65	U	0.75	U	0.61	U	0.63	U	0.62	U
7440-22-4	Silver (Ag)		0.39	U	0.39	U	0.38	U	0.37	U	0.38	U	0.37	U

*** Validation Complete ***

CEDAR CHEMICAL CORPORATION
WEST HELENA, ARKANSAS
PHASE 1 SITE 2 SUBSURFACE SOIL DATA

RCRA METAL								
	SHORT ID --------->	2MW-3 (20-25')		2MW-3 (30-35')				
	ORIGINAL ID ----->	CED2-SMW3-5		CED2-SMW3-7				
	SAMPLE DATE ----->	09/13/93		09/15/93				
	DATE ANALYZED --->	10/01/93		10/01/93				
	MATRIX ---------->	Soil		Soil				
	UNITS ----------->	MG/KG		MG/KG				
CAS #	Parameter	E010	VAL	E010	VAL			
7440-38-2	Arsenic (As)	11.3		6.1				
7440-39-3	Barium (Ba)	133.		87.8				
7440-43-9	Cadmium (Cd)	0.44		0.4	U			
7440-47-3	Chromium (Cr)	15.		8.4				
7439-92-1	Lead (Pb)	10.		6.7				
7439-97-6	Mercury (Hg)	0.13	U	0.14	U			
7782-49-2	Selenium (Se)	0.67	U	0.66	U			
7440-22-4	Silver (Ag)	0.4	U	0.4	U			

*** Validation Complete ***

CEDAR CHEMICAL CORPORATION
WEST HELENA, ARKANSAS
PHASE 1 SITE 2 SUBSURFACE SOIL DATA

SVOA	SHORT ID	2SB-1 (15-20')	2SB-1 (25-30')	2SB-2 (20-25')	2SB-2 (25-30')	2SB-3 (13-14')	2SB-3 (24-25')
	ORIGINAL ID	CED2SB14	CED2SB16	CED2SB25	CED2SB26	CED2SB314	CED2SB325
	SAMPLE DATE	09/22/93	09/22/93	09/21/93	09/21/93	09/17/93	09/17/93
	DATE ANALYZED	10/19/93	10/19/93	10/16/93	10/16/93	10/16/93	10/16/93
	MATRIX	Soil	Soil	Soil	Soil	Soil	Soil
	UNITS	UG/KG	UG/KG	UG/KG	UG/KG	UG/KG	UG/KG

CAS #	Parameter	E013	VAL	E013	VAL	E011	VAL	E011	VAL	E011	VAL	E011	VAL
100-01-6	4-Nitroaniline	1000.	U	1000.	U	5300.	U	2000.	U	10417.	U	11000.	U
100-02-7	4-Nitrophenol	67.		46.		12000.		2900.		25000.		22000.	
100-51-6	Benzyl alcohol	NR		NR		NR		NR		NR		NR	
101-55-3	4-Bromophenyl-phenylether	430.	U	420.	U	2200.	U	840.	U	4100.	U	4300.	U
105-67-9	2,4-Dimethylphenol	430.	U	420.	U	2200.	U	840.	U	4100.	U	4300.	U
106-44-5	4-Methylphenol (p-Cresol)	430.	U	420.	U	2200.	U	840.	U	4100.	U	4300.	U
106-46-7	1,4-Dichlorobenzene	430.	U	420.	U	2200.	U	840.	U	4100.	U	4300.	U
106-47-8	4-Chloroaniline	430.	U	420.	U	2200.	U	840.	U	4100.	U	4300.	U
108-60-1	bis(2-chloroisopropyl) ether	430.	U	420.	U	2200.	U	840.	U	4100.	U	4300.	U
108-95-2	Phenol	440.		580.		540.		360.		4100.	U	4300.	U
111-44-4	bis(2-Chloroethyl)ether	430.	U	420.	U	2200.	U	840.	U	4100.	U	4300.	U
111-91-1	bis(2-Chloroethoxy)methane	430.	U	420.	U	2200.	U	840.	U	4100.	U	4300.	U
117-81-7	bis(2-Ethylhexyl)phthalate (BEHP)	430.	U	420.	U	2200.	U	840.	U	4100.	U	4300.	U
117-84-0	Di-n-octylphthalate	430.	U	420.	U	2200.	U	840.	U	4100.	U	4300.	U
118-74-1	Hexachlorobenzene	430.	U	420.	U	2200.	U	840.	U	4100.	U	4300.	U
120-12-7	Anthracene	430.	U	420.	U	2200.	U	840.	U	4100.	U	4300.	U
120-82-1	1,2,4-Trichlorobenzene	430.	U	420.	U	2200.	U	840.	U	4100.	U	4300.	U
120-83-2	2,4-Dichlorophenol	430.	U	420.	U	2200.	U	840.	U	4100.	U	4300.	U
121-14-2	2,4-Dinitrotoluene	430.	U	420.	U	2200.	U	840.	U	4100.	U	4300.	U
129-00-0	Pyrene	430.	U	420.	U	2200.	U	840.	U	4100.	U	4300.	U
131-11-3	Dimethylphthalate	430.	U	420.	U	2200.	U	840.	U	4100.	U	4300.	U
132-64-9	Dibenzofuran	430.	U	420.	U	2200.	U	840.	U	4100.	U	4300.	U
191-24-2	Benzo(g,h,i)perylene	430.	U	420.	U	2200.	U	840.	U	4100.	U	4300.	U
193-39-5	Indeno(1,2,3-cd)pyrene	430.	U	420.	U	2200.	U	840.	U	4100.	U	4300.	U
205-99-2	Benzo(b)fluoranthene	430.	U	420.	U	2200.	U	840.	U	4100.	U	4300.	U
206-44-0	Fluoranthene	430.	U	420.	U	2200.	U	840.	U	4100.	U	4300.	U
207-08-9	Benzo(k)fluoranthene	430.	U	420.	U	2200.	U	840.	U	4100.	U	4300.	U
208-96-8	Acenaphthylene	430.	U	420.	U	2200.	U	840.	U	4100.	U	4300.	U
218-01-9	Chrysene	430.	U	420.	U	2200.	U	840.	U	4100.	U	4300.	U
50-32-8	Benzo(a)pyrene	430.	U	420.	U	2200.	U	840.	U	4100.	U	4300.	U
51-28-5	2,4-Dinitrophenol	1000.	U	1000.	U	5300.	U	2000.	U	10000.	U	11000.	U
534-52-1	4,6-Dinitro-2-methylphenol	1000.	U	1000.	U	5300.	U	2000.	U	10000.	U	11000.	U
53-70-3	Dibenz(a,h)anthracene	430.	U	420.	U	2200.	U	840.	U	4100.	U	4300.	U
541-73-1	1,3-Dichlorobenzene	430.	U	420.	U	2200.	U	840.	U	4100.	U	4300.	U
56-55-3	Benzo(a)anthracene	430.	U	420.	U	2200.	U	840.	U	4100.	U	4300.	U
59-50-7	4-Chloro-3-methylphenol	430.	U	420.	U	2200.	U	840.	U	4100.	U	4300.	U
606-20-2	2,6-Dinitrotoluene	430.	U	420.	U	2200.	U	840.	U	4100.	U	4300.	U
621-64-7	N-Nitroso-di-n-propylamine	430.	U	420.	U	2200.	U	840.	U	4100.	U	4300.	U
65-85-0	Benzoic acid	NR		NR		NR		NR		NR		NR	

*** Validation Complete ***

CEDAR CHEMICAL CORPORATION
WEST HELENA, ARKANSAS
PHASE 1 SITE 2 SUBSURFACE SOIL DATA

SVOA	SHORT ID --------->	2SB-1 (15-20')		2SB-1 (25-30')		2SB-2 (20-25')		2SB-2 (25-30')		2SB-3 (13-14')		2SB-3 (24-25')	
	ORIGINAL ID ----->	CED2SB14		CED2SB16		CED2SB25		CED2SB26		CED2SB314		CED2SB325	
	SAMPLE DATE ----->	09/22/93		09/22/93		09/21/93		09/21/93		09/17/93		09/17/93	
	DATE ANALYZED --->	10/19/93		10/19/93		10/16/93		10/16/93		10/16/93		10/16/93	
	MATRIX ---------->	Soil		Soil		Soil		Soil		Soil		Soil	
	UNITS ---------->	UG/KG		UG/KG		UG/KG		UG/KG		UG/KG		UG/KG	
CAS #	Parameter	E013	VAL	E013	VAL	E011	VAL	E011	VAL	E011	VAL	E011	VAL
67-72-1	Hexachloroethane	430.	U	420.	U	2200.	U	840.	U	4100.	U	4300.	U
7005-72-3	4-Chlorophenyl-phenylether	430.	U	420.	U	2200.	U	840.	U	4100.	U	4300.	U
709-98-8	Propanil	200.		100.		240.		2000.	U	11000.		2000.	
77-47-4	Hexachlorocyclopentadiene	430.	U	420.	U	2200.	U	840.	U	4100.	U	4300.	U
78-59-1	Isophorone	430.	U	420.	U	2200.	U	840.	U	4100.	U	4300.	U
83-32-9	Acenaphthene	430.	U	420.	U	2200.	U	840.	U	4100.	U	4300.	U
84-66-2	Diethylphthalate	430.	U	420.	U	2200.	U	840.	U	4100.	U	4300.	U
84-74-2	Di-n-butylphthalate	70.		53.		2200.	U	120.		4100.	U	4300.	U
85-01-8	Phenanthrene	430.	U	420.	U	2200.	U	840.	U	4100.	U	4300.	U
85-68-7	Butylbenzylphthalate	430.	U	420.	U	2200.	U	840.	U	4100.	U	4300.	U
86-30-6	N-Nitrosodiphenylamine	430.	U	420.	U	2200.	U	840.	U	4100.	U	4300.	U
86-73-7	Fluorene	430.	U	420.	U	2200.	U	840.	U	4100.	U	4300.	U
87-68-3	Hexachlorobutadiene	430.	U	420.	U	2200.	U	840.	U	4100.	U	4300.	U
87-86-5	Pentachlorophenol	1000.	U	1000.	U	5300.	U	2000.	U	10000.	U	11000.	U
88-06-2	2,4,6-Trichlorophenol	430.	U	420.	U	2200.	U	840.	U	4100.	U	4300.	U
88-74-4	2-Nitroaniline	1000.	U	1000.	U	5300.	U	2000.	U	10000.	U	11000.	U
88-75-5	2-Nitrophenol	430.	U	420.	U	400.		180.		720.		4300.	U
88-85-7	Dinoseb	1000.	U	1000.	U	850.		2000.	U	29000.		11000.	U
91-20-3	Naphthalene	430.	U	420.	U	2200.	U	840.	U	4100.	U	4300.	U
91-57-6	2-Methylnaphthalene	430.	U	420.	U	2200.	U	840.	U	4100.	U	4300.	U
91-58-7	2-Chloronaphthalene	430.	U	420.	U	2200.	U	840.	U	4100.	U	4300.	U
91-94-1	3,3'-Dichlorobenzidine	430.	U	420.	U	2200.	U	840.	U	4100.	U	4300.	U
95-48-7	2-Methylphenol (o-Cresol)	430.	U	420.	U	2200.	U	840.	U	4100.	U	4300.	U
95-50-1	1,2-Dichlorobenzene	430.	U	420.	U	2200.	U	840.	U	4100.	U	4300.	U
95-57-8	2-Chlorophenol	430.	U	420.	U	2200.	U	840.	U	4100.	U	4300.	U
95-76-1	3,4-Dichloroaniline	430.	U	1000.	U	5300.	U	2000.	U	10000.	U	11000.	U
95-95-4	2,4,5-Trichlorophenol	1000.	U	1000.	U	5300.	U	2000.	U	10000.	U	11000.	U
98-95-3	Nitrobenzene	430.	U	420.	U	2200.	U	840.	U	4100.	U	4300.	U
99-09-2	3-Nitroaniline	1000.	U	1000.	U	NR		NR		NR		NR	

*** Validation Complete ***

CEDAR CHEMICAL CORPORATION
WEST HELENA, ARKANSAS
PHASE 1 SITE 2 SUBSURFACE SOIL DATA

SVOA	SHORT ID ---------->	2SB-4 (15-20')		2SB-4 (25-30')		2SB-5 (15-20')		2SB-5 (25-30')		2SB-6 (21-22')		2SB-6 (28-29')	
	ORIGINAL ID ----->	CED2SB44		CED2SB46		CED2SB54		CED2SB56		CED2SB622		CED2SB629	
	SAMPLE DATE ----->	09/23/93		09/23/93		09/21/93		09/21/93		09/20/93		09/20/93	
	DATE ANALYZED --->	10/18/93		10/19/93		10/19/93		10/18/93		10/16/93		10/16/93	
	MATRIX ---------->	Soil		Soil		Soil		Soil		Soil		Soil	
	UNITS ---------->	UG/KG		UG/KG		UG/KG		UG/KG		UG/KG		UG/KG	
CAS #	Parameter	E013	VAL	E013	VAL	E013	VAL	E013	VAL	E011	VAL	E011	VAL
100-01-6	4-Nitroaniline	1100.	U	1000.	U	10000.	U	56000.	U	5100.	U	110000.	U
100-02-7	4-Nitrophenol	1100.	U	120.		9200.		3100.		4200.		9700.	
100-51-6	Benzyl alcohol	NR		NR		NR		NR		NR		NR	
101-55-3	4-Bromophenyl-phenylether	440.	U	420.	U	4200.	U	23000.	U	2100.	U	44000.	U
105-67-9	2,4-Dimethylphenol	440.	U	420.	U	4200.	U	23000.	U	2100.	U	44000.	U
106-44-5	4-Methylphenol (p-Cresol)	440.	U	420.	U	4200.	U	23000.	U	2100.	U	44000.	U
106-46-7	1,4-Dichlorobenzene	440.	U	420.	U	4200.	U	23000.	U	2100.	U	44000.	U
106-47-8	4-Chloroaniline	440.	U	420.	U	4200.	U	23000.	U	2100.	U	44000.	U
108-60-1	bis(2-chloroisopropyl) ether	440.	U	420.	U	4200.	U	23000.	U	2100.	U	44000.	U
108-95-2	Phenol	440.	U	1000.		4200.	U	23000.	U	330.		44000.	U
111-44-4	bis(2-Chloroethyl)ether	440.	U	420.	U	4200.	U	23000.	U	2100.	U	44000.	U
111-91-1	bis(2-Chloroethoxy)methane	440.	U	420.	U	4200.	U	23000.	U	2100.	U	44000.	U
117-81-7	bis(2-Ethylhexyl)phthalate (BEHP)	440.	U	420.	U	4200.	U	23000.	U	2100.	U	44000.	U
117-84-0	Di-n-octylphthalate	440.	U	420.	U	4200.	U	23000.	U	2100.	U	44000.	U
118-74-1	Hexachlorobenzene	440.	U	420.	U	4200.	U	23000.	U	2100.	U	44000.	U
120-12-7	Anthracene	440.	U	420.	U	4200.	U	23000.	U	2100.	U	44000.	U
120-82-1	1,2,4-Trichlorobenzene	440.	U	420.	U	4200.	U	23000.	U	2100.	U	44000.	U
120-83-2	2,4-Dichlorophenol	440.	U	420.	U	4200.	U	23000.	U	2100.	U	44000.	U
121-14-2	2,4-Dinitrotoluene	440.	U	420.	U	4200.	U	23000.	U	2100.	U	44000.	U
129-00-0	Pyrene	440.	U	420.	U	4200.	U	23000.	U	2100.	U	44000.	U
131-11-3	Dimethylphthalate	440.	U	420.	U	4200.	U	23000.	U	2100.	U	44000.	U
132-64-9	Dibenzofuran	440.	U	420.	U	4200.	U	23000.	U	2100.	U	44000.	U
191-24-2	Benzo(g,h,i)perylene	440.	U	420.	U	4200.	U	23000.	U	2100.	U	44000.	U
193-39-5	Indeno(1,2,3-cd)pyrene	440.	U	420.	U	4200.	U	23000.	U	2100.	U	44000.	U
205-99-2	Benzo(b)fluoranthene	440.	U	420.	U	4200.	U	23000.	U	2100.	U	44000.	U
206-44-0	Fluoranthene	440.	U	420.	U	4200.	U	23000.	U	2100.	U	44000.	U
207-08-9	Benzo(k)fluoranthene	440.	U	420.	U	4200.	U	23000.	U	2100.	U	44000.	U
208-96-8	Acenaphthylene	440.	U	420.	U	4200.	U	23000.	U	2100.	U	44000.	U
218-01-9	Chrysene	440.	U	420.	U	4200.	U	23000.	U	2100.	U	44000.	U
50-32-8	Benzo(a)pyrene	440.	U	420.	U	4200.	U	23000.	U	2100.	U	44000.	U
51-28-5	2,4-Dinitrophenol	1100.	U	1000.	U	10000.	U	56000.	U	5100.	U	110000.	U
534-52-1	4,6-Dinitro-2-methylphenol	1100.	U	1000.	U	10000.	U	56000.	U	5100.	U	110000.	U
53-70-3	Dibenz(a,h)anthracene	440.	U	420.	U	4200.	U	23000.	U	2100.	U	44000.	U
541-73-1	1,3-Dichlorobenzene	440.	U	420.	U	4200.	U	23000.	U	2100.	U	44000.	U
56-55-3	Benzo(a)anthracene	440.	U	420.	U	4200.	U	23000.	U	2100.	U	44000.	U
59-50-7	4-Chloro-3-methylphenol	440.	U	420.	U	4200.	U	23000.	U	2100.	U	44000.	U
606-20-2	2,6-Dinitrotoluene	440.	U	420.	U	4200.	U	23000.	U	2100.	U	44000.	U
621-64-7	N-Nitroso-di-n-propylamine	440.	U	420.	U	4200.	U	23000.	U	2100.	U	44000.	U
65-85-0	Benzoic acid	NR		NR		NR		NR		NR		NR	

*** Validation Complete ***

CEDAR CHEMICAL CORPORATION
WEST HELENA, ARKANSAS
PHASE 1 SITE 2 SUBSURFACE SOIL DATA

SVOA	SHORT ID ---------->	2SB-4 (15-20')		2SB-4 (25-30')		2SB-5 (15-20')		2SB-5 (25-30')		2SB-6 (21-22')		2SB-6 (28-29')	
	ORIGINAL ID ----->	CED2SB44		CED2SB46		CED2SB54		CED2SB56		CED2SB622		CED2SB629	
	SAMPLE DATE ----->	09/23/93		09/23/93		09/21/93		09/21/93		09/20/93		09/20/93	
	DATE ANALYZED --->	10/18/93		10/19/93		10/19/93		10/18/93		10/16/93		10/16/93	
	MATRIX ---------->	Soil		Soil		Soil		Soil		Soil		Soil	
	UNITS ---------->	UG/KG		UG/KG		UG/KG		UG/KG		UG/KG		UG/KG	
CAS #	Parameter	E013	VAL	E013	VAL	E013	VAL	E013	VAL	E011	VAL	E011	VAL
67-72-1	Hexachloroethane	440.	U	420.	U	4200.	U	23000.	U	2100.	U	44000.	U
7005-72-3	4-Chlorophenyl-phenylether	440.	U	420.	U	4200.	U	23000.	U	2100.	U	44000.	U
709-98-8	Propanil	1100.	U	100.		1200.		6400.		670.		11000.	
77-47-4	Hexachlorocyclopentadiene	440.	U	420.	U	4200.	U	23000.	U	2100.	U	44000.	U
78-59-1	Isophorone	440.	U	420.	U	4200.	U	23000.	U	2100.	U	44000.	U
83-32-9	Acenaphthene	440.	U	420.	U	4200.	U	23000.	U	2100.	U	44000.	U
84-66-2	Diethylphthalate	440.	U	420.	U	4200.	U	23000.	U	2100.	U	44000.	U
84-74-2	Di-n-butylphthalate	80.		100.		4200.	U	23000.	U	2100.	U	44000.	U
85-01-8	Phenanthrene	440.	U	420.	U	4200.	U	23000.	U	2100.	U	44000.	U
85-68-7	Butylbenzylphthalate	440.	U	420.	U	4200.	U	23000.	U	2100.	U	44000.	U
86-30-6	N-Nitrosodiphenylamine	440.	U	420.	U	4200.	U	23000.	U	2100.	U	44000.	U
86-73-7	Fluorene	440.	U	420.	U	4200.	U	23000.	U	2100.	U	44000.	U
87-68-3	Hexachlorobutadiene	440.	U	420.	U	4200.	U	23000.	U	2100.	U	44000.	U
87-86-5	Pentachlorophenol	1100.	U	1000.	U	10000.	U	56000.	U	5100.	U	110000.	U
88-06-2	2,4,6-Trichlorophenol	440.	U	420.	U	4200.	U	23000.	U	2100.	U	44000.	U
88-74-4	2-Nitroaniline	1100.	U	1000.	U	10000.	U	56000.	U	5100.	U	110000.	U
88-75-5	2-Nitrophenol	440.	U	420.	U	4200.	U	23000.	U	2100.	U	44000.	U
88-85-7	Dinoseb	1100.	U	1000.	U	17000.	U	49000.		10000.		93000.	
91-20-3	Naphthalene	440.	U	420.	U	4200.	U	23000.	U	2100.	U	44000.	U
91-57-6	2-Methylnaphthalene	440.	U	420.	U	4200.	U	23000.	U	2100.	U	44000.	U
91-58-7	2-Chloronaphthalene	440.	U	420.	U	4200.	U	23000.	U	2100.	U	44000.	U
91-94-1	3,3'-Dichlorobenzidine	440.	U	420.	U	4200.	U	23000.	U	2100.	U	44000.	U
95-48-7	2-Methylphenol (o-Cresol)	440.	U	420.	U	4200.	U	23000.	U	2100.	U	44000.	U
95-50-1	1,2-Dichlorobenzene	440.	U	420.	U	4200.	U	23000.	U	2100.	U	44000.	U
95-57-8	2-Chlorophenol	440.	U	420.	U	4200.	U	23000.	U	2100.	U	44000.	U
95-76-1	3,4-Dichloroaniline	1100.	U	1000.	U	10000.	U	56000.	U	5100.	U	110000.	U
95-95-4	2,4,5-Trichlorophenol	1100.	U	1000.	U	10000.	U	56000.	U	5100.	U	110000.	U
98-95-3	Nitrobenzene	440.	U	420.	U	4200.	U	23000.	U	2100.	U	44000.	U
99-09-2	3-Nitroaniline	1000.	U	1000.	U	4200.	U	56000.	U	NR		NR	

*** Validation Complete ***

CEDAR CHEMICAL CORPORATION
WEST HELENA, ARKANSAS
PHASE 1 SITE 2 SUBSURFACE SOIL DATA

SVOA	SHORT ID --------->	2SB-7 (10-15')		2SB-7 (25-30')		2SB-8 (15-20')		2SB-8 (25-30')		2SB-9 (4-5')		2SB-9 (26-27')	
	ORIGINAL ID ----->	CED2SB73		CED2SB76		CED2SB84		CED2SB86		CED2SB95		CED2SB927	
	SAMPLE DATE ----->	09/23/93		09/23/93		09/21/93		09/21/93		09/21/93		09/21/93	
	DATE ANALYZED --->	10/18/93		10/18/93		10/16/93		10/16/93		10/16/93		10/16/93	
	MATRIX ---------->	Soil		Soil		Soil		Soil		Soil		Soil	
	UNITS ---------->	UG/KG		UG/KG		UG/KG		UG/KG		UG/KG		UG/KG	
CAS #	Parameter	E013	VAL	E013	VAL	E011	VAL	E011	VAL	E011	VAL	E011	VAL
100-01-6	4-Nitroaniline	1000.	U	1100.	U	2100.	U	11000.	U	5200.	U	5300.	U
100-02-7	4-Nitrophenol	1000.	U	1100.		880.		900.		1200.		320.	
100-51-6	Benzyl alcohol	NR		NR		NR		NR		NR		NR	
101-55-3	4-Bromophenyl-phenylether	420.	U	450.	U	860.	U	4500.	U	2100.	U	2200.	U
105-67-9	2,4-Dimethylphenol	420.	U	450.	U	860.	U	4500.	U	2100.	U	2200.	U
106-44-5	4-Methylphenol (p-Cresol)	420.	U	450.	U	860.	U	4500.	U	2100.	U	2200.	U
106-46-7	1,4-Dichlorobenzene	420.	U	450.	U	860.	U	4500.	U	2100.	U	2200.	U
106-47-8	4-Chloroaniline	420.	U	450.	U	860.	U	4500.	U	2100.	U	2200.	U
108-60-1	bis(2-chloroisopropyl) ether	420.	U	450.	U	860.	U	4500.	U	2100.	U	2200.	U
108-95-2	Phenol	1600.	U	450.	U	3100.		22000.		3300.		1500.	
111-44-4	bis(2-Chloroethyl)ether	420.	U	450.	U	860.	U	4500.	U	2100.	U	2200.	U
111-91-1	bis(2-Chloroethoxy)methane	420.	U	450.	U	860.	U	4500.	U	2100.	U	2200.	U
117-81-7	bis(2-Ethylhexyl)phthalate (BEHP)	420.	U	450.	U	860.	U	4500.	U	2100.	U	2200.	U
117-84-0	Di-n-octylphthalate	420.	U	450.	U	860.	U	4500.	U	2100.	U	2200.	U
118-74-1	Hexachlorobenzene	420.	U	450.	U	860.	U	4500.	U	2100.	U	2200.	U
120-12-7	Anthracene	420.	U	450.	U	860.	U	4500.	U	2100.	U	2200.	U
120-82-1	1,2,4-Trichlorobenzene	420.	U	450.	U	860.	U	4500.	U	2100.	U	2200.	U
120-83-2	2,4-Dichlorophenol	420.	U	450.	U	860.	U	4500.	U	2100.	U	2200.	U
121-14-2	2,4-Dinitrotoluene	420.	U	450.	U	860.	U	4500.	U	2100.	U	2200.	U
129-00-0	Pyrene	420.	U	450.	U	860.	U	4500.	U	2100.	U	2200.	U
131-11-3	Dimethylphthalate	420.	U	450.	U	860.	U	4500.	U	2100.	U	2200.	U
132-64-9	Dibenzofuran	420.	U	450.	U	860.	U	4500.	U	2100.	U	2200.	U
191-24-2	Benzo(g,h,i)perylene	420.	U	450.	U	860.	U	4500.	U	2100.	U	2200.	U
193-39-5	Indeno(1,2,3-cd)pyrene	420.	U	450.	U	860.	U	4500.	U	2100.	U	2200.	U
205-99-2	Benzo(b)fluoranthene	420.	U	450.	U	860.	U	4500.	U	2100.	U	2200.	U
206-44-0	Fluoranthene	420.	U	450.	U	860.	U	4500.	U	2100.	U	2200.	U
207-08-9	Benzo(k)fluoranthene	420.	U	450.	U	860.	U	4500.	U	2100.	U	2200.	U
208-96-8	Acenaphthylene	420.	U	450.	U	860.	U	4500.	U	2100.	U	2200.	U
218-01-9	Chrysene	420.	U	450.	U	860.	U	4500.	U	2100.	U	2200.	U
50-32-8	Benzo(a)pyrene	420.	U	450.	U	860.	U	4500.	U	2100.	U	2200.	U
51-28-5	2,4-Dinitrophenol	1000.	U	1100.	U	2100.	U	11000.	U	5200.	U	5300.	U
534-52-1	4,6-Dinitro-2-methylphenol	1000.	U	1100.	U	2100.	U	11000.	U	5200.	U	5300.	U
53-70-3	Dibenz(a,h)anthracene	420.	U	450.	U	860.	U	4500.	U	2100.	U	2200.	U
541-73-1	1,3-Dichlorobenzene	420.	U	450.	U	860.	U	4500.	U	2100.	U	2200.	U
56-55-3	Benzo(a)anthracene	420.	U	450.	U	860.	U	4500.	U	2100.	U	2200.	U
59-50-7	4-Chloro-3-methylphenol	420.	U	450.	U	860.	U	4500.	U	2100.	U	2200.	U
606-20-2	2,6-Dinitrotoluene	420.	U	450.	U	860.	U	4500.	U	2100.	U	2200.	U
621-64-7	N-Nitroso-di-n-propylamine	420.	U	450.	U	860.	U	4500.	U	2100.	U	2200.	U
65-85-0	Benzoic acid	NR		NR		NR		NR		NR		NR	

*** Validation Complete ***

CEDAR CHEMICAL CORPORATION
WEST HELENA, ARKANSAS
PHASE 1 SITE 2 SUBSURFACE SOIL DATA

SVOA	SHORT ID --------->	2SB-7 (10-15')		2SB-7 (25-30')		2SB-8 (15-20')		2SB-8 (25-30')		2SB-9 (4-5')		2SB-9 (26-27')	
	ORIGINAL ID ----->	CED2SB73		CED2SB76		CED2SB84		CED2SB86		CED2SB95		CED2SB927	
	SAMPLE DATE ----->	09/23/93		09/23/93		09/21/93		09/21/93		09/21/93		09/21/93	
	DATE ANALYZED --->	10/18/93		10/18/93		10/16/93		10/16/93		10/16/93		10/16/93	
	MATRIX ---------->	Soil		Soil		Soil		Soil		Soil		Soil	
	UNITS ----------->	UG/KG		UG/KG		UG/KG		UG/KG		UG/KG		UG/KG	
CAS #	Parameter	E013	VAL	E013	VAL	E011	VAL	E011	VAL	E011	VAL	E011	VAL
67-72-1	Hexachloroethane	420.	U	450.	U	860.	U	4500.	U	2100.	U	2200.	U
7005-72-3	4-Chlorophenyl-phenylether	420.	U	450.	U	860.	U	4500.	U	2100.	U	2200.	U
709-98-8	Propanil	270.		1600.	U	2100.		4800.		10000.		8600.	
77-47-4	Hexachlorocyclopentadiene	420.	U	450.	U	860.	U	4500.	U	2100.	U	2200.	U
78-59-1	Isophorone	420.	U	450.	U	860.	U	4500.	U	2100.	U	2200.	U
83-32-9	Acenaphthene	420.	U	450.	U	860.	U	4500.	U	2100.	U	2200.	U
84-66-2	Diethylphthalate	420.	U	450.	U	860.	U	4500.	U	2100.	U	2200.	U
84-74-2	Di-n-butylphthalate	74.		450.	U	220.		4500.	U	2100.	U	2200.	U
85-01-8	Phenanthrene	420.	U	450.	U	860.	U	4500.	U	2100.	U	2200.	U
85-68-7	Butylbenzylphthalate	420.	U	450.	U	860.	U	4500.	U	2100.	U	2200.	U
86-30-6	N-Nitrosodiphenylamine	420.	U	450.	U	860.	U	4500.	U	2100.	U	2200.	U
86-73-7	Fluorene	420.	U	450.	U	860.	U	4500.	U	2100.	U	2200.	U
87-68-3	Hexachlorobutadiene	420.	U	450.	U	860.	U	4500.	U	2100.	U	2200.	U
87-86-5	Pentachlorophenol	1000.	U	1100.	U	2100.	U	11000.	U	5200.	U	5300.	U
88-06-2	2,4,6-Trichlorophenol	420.	U	450.	U	860.	U	4500.	U	2100.	U	2200.	U
88-74-4	2-Nitroaniline	1000.	U	1100.	U	2100.	U	11000.	U	5200.	U	5300.	U
88-75-5	2-Nitrophenol	420.	U	53.		89.		400.		2100.	U	2200.	U
88-85-7	Dinoseb	1000.	U	1100.	U	2100.	U	510.		1100.		920.	
91-20-3	Naphthalene	420.	U	450.	U	860.	U	4500.	U	2100.	U	2200.	U
91-57-6	2-Methylnaphthalene	420.	U	450.	U	860.	U	4500.	U	2100.	U	2200.	U
91-58-7	2-Chloronaphthalene	420.	U	72.		860.	U	4500.	U	2100.	U	310.	
91-94-1	3,3'-Dichlorobenzidine	420.	U	450.	U	860.	U	4500.	U	2100.	U	2200.	U
95-48-7	2-Methylphenol (o-Cresol)	420.	U	450.	U	860.	U	4500.	U	2100.	U	2200.	U
95-50-1	1,2-Dichlorobenzene	420.	U	450.	U	150.		1100.		5300.		12000.	
95-57-8	2-Chlorophenol	420.	U	450.	U	860.	U	4500.	U	2100.	U	2200.	U
95-76-1	3,4-Dichloroaniline	1000.	U	1100.	U	2100.	U	11000.	U	5200.	U	5300.	U
95-95-4	2,4,5-Trichlorophenol	1000.	U	1100.	U	2100.	U	11000.	U	5200.	U	5300.	U
98-95-3	Nitrobenzene	420.	U	450.	U	860.	U	4500.	U	2100.	U	2200.	U
99-09-2	3-Nitroaniline	1000.	U	901.	U	NR		NR		NR		NR	

*** Validation Complete ***

CEDAR CHEMICAL CORPORATION
WEST HELENA, ARKANSAS
PHASE 1 SITE 2 SUBSURFACE SOIL DATA

SVOA	SHORT ID --------->	2SB-10 (15-20')		2SB-10 (25-30')		2SB-11 (20-25')		2SB-11 (25-30')		2SB-12 (15-20')		2SB-12 (25-30')	
	ORIGINAL ID ----->	CED2SB104		CED2SB106		CED2SB115		CED6SB116		CED2SB124		CED2SB126	
	SAMPLE DATE ----->	09/23/93		09/23/93		09/23/93		09/23/93		09/23/93		09/23/93	
	DATE ANALYZED --->	10/20/93		10/19/93		10/20/93		10/18/93		10/19/93		10/18/93	
	MATRIX ---------->	Soil		Soil		Soil		Soil		Soil		Soil	
	UNITS ---------->	UG/KG		UG/KG		UG/KG		UG/KG		UG/KG		UG/KG	
CAS #	Parameter	E013	VAL	E013	VAL	E013	VAL	E013	VAL	E013	VAL	E013	VAL
100-01-6	4-Nitroaniline	20000.	U	1100.	U	2300.	U	1100.	U	52000.	U	3000.	U
100-02-7	4-Nitrophenol	20000.	U	1100.	U	180.		560.		9200.		710.	
100-51-6	Benzyl alcohol	NR		NR		NR		NR		NR		NR	
101-55-3	4-Bromophenyl-phenylether	8400.	U	440.	U	930.	U	460.	U	21000.	U	1200.	U
105-67-9	2,4-Dimethylphenol	8400.	U	440.	U	930.	U	460.	U	21000.	U	1200.	U
106-44-5	4-Methylphenol (p-Cresol)	8400.	U	440.	U	930.	U	460.	U	21000.	U	1200.	U
106-46-7	1,4-Dichlorobenzene	8400.	U	440.	U	930.	U	460.	U	21000.	U	1200.	U
106-47-8	4-Chloroaniline	8400.	U	440.	U	930.	U	460.	U	21000.	U	1200.	U
108-60-1	bis(2-chloroisopropyl) ether	8400.	U	440.	U	930.	U	460.	U	21000.	U	1200.	U
108-95-2	Phenol	2500.		440.	U	280.		460.		100000.		6900.	
111-44-4	bis(2-Chloroethyl)ether	8400.	U	440.	U	930.	U	460.	U	21000.	U	180.	
111-91-1	bis(2-Chloroethoxy)methane	8400.	U	440.	U	930.	U	460.	U	21000.	U	1200.	U
117-81-7	bis(2-Ethylhexyl)phthalate (BEHP)	8400.	U	440.	U	930.	U	460.	U	21000.	U	1200.	U
117-84-0	Di-n-octylphthalate	8400.	U	440.	U	930.	U	460.	U	21000.	U	1200.	U
118-74-1	Hexachlorobenzene	8400.	U	440.	U	930.	U	460.	U	21000.	U	1200.	U
120-12-7	Anthracene	8400.	U	440.	U	930.	U	460.	U	21000.	U	1200.	U
120-82-1	1,2,4-Trichlorobenzene	1200.		440.	U	930.	U	460.	U	21000.	U	1200.	U
120-83-2	2,4-Dichlorophenol	8400.	U	440.	U	930.	U	460.	U	21000.	U	1200.	U
121-14-2	2,4-Dinitrotoluene	8400.	U	440.	U	930.	U	460.	U	21000.	U	1200.	U
129-00-0	Pyrene	8400.	U	440.	U	930.	U	460.	U	21000.	U	1200.	U
131-11-3	Dimethylphthalate	8400.	U	440.	U	930.	U	460.	U	21000.	U	1200.	U
132-64-9	Dibenzofuran	8400.	U	440.	U	930.	U	460.	U	21000.	U	1200.	U
191-24-2	Benzo(g,h,i)perylene	8400.	U	440.	U	930.	U	460.	U	21000.	U	1200.	U
193-39-5	Indeno(1,2,3-cd)pyrene	8400.	U	440.	U	930.	U	460.	U	21000.	U	1200.	U
205-99-2	Benzo(b)fluoranthene	8400.	U	440.	U	930.	U	460.	U	21000.	U	1200.	U
206-44-0	Fluoranthene	8400.	U	440.	U	930.	U	460.	U	21000.	U	1200.	U
207-08-9	Benzo(k)fluoranthene	8400.	U	440.	U	930.	U	460.	U	21000.	U	1200.	U
208-96-8	Acenaphthylene	8400.	U	440.	U	930.	U	460.	U	21000.	U	1200.	U
218-01-9	Chrysene	8400.	U	440.	U	930.	U	460.	U	21000.	U	1200.	U
50-32-8	Benzo(a)pyrene	8400.	U	440.	U	930.	U	460.	U	21000.	U	1200.	U
51-28-5	2,4-Dinitrophenol	20000.	U	1100.	U	2300.	U	1100.	U	52000.	U	3000.	U
534-52-1	4,6-Dinitro-2-methylphenol	20000.	U	1100.	U	2300.	U	1100.	U	52000.	U	3000.	U
53-70-3	Dibenz(a,h)anthracene	8400.	U	440.	U	930.	U	460.	U	21000.	U	1200.	U
541-73-1	1,3-Dichlorobenzene	8400.	U	440.	U	930.	U	460.	U	21000.	U	1200.	U
56-55-3	Benzo(a)anthracene	8400.	U	440.	U	930.	U	460.	U	21000.	U	1200.	U
59-50-7	4-Chloro-3-methylphenol	8400.	U	440.	U	930.	U	460.	U	21000.	U	1200.	U
606-20-2	2,6-Dinitrotoluene	8400.	U	440.	U	930.	U	460.	U	21000.	U	1200.	U
621-64-7	N-Nitroso-di-n-propylamine	8400.	U	440.	U	930.	U	460.	U	21000.	U	1200.	U
65-85-0	Benzoic acid	NR		NR		NR		NR		NR		NR	

*** Validation Complete ***

CEDAR CHEMICAL CORPORATION
WEST HELENA, ARKANSAS
PHASE 1 SITE 2 SUBSURFACE SOIL DATA

SVOA	SHORT ID --------->	2SB-10 (15-20')		2SB-10 (25-30')		2SB-11 (20-25')		2SB-11 (25-30')		2SB-12 (15-20')		2SB-12 (25-30')	
	ORIGINAL ID ----->	CED2SB104		CED2SB106		CED2SB115		CED6SB116		CED2SB124		CED2SB126	
	SAMPLE DATE ----->	09/23/93		09/23/93		09/23/93		09/23/93		09/23/93		09/23/93	
	DATE ANALYZED --->	10/20/93		10/19/93		10/20/93		10/18/93		10/19/93		10/18/93	
	MATRIX ---------->	Soil		Soil		Soil		Soil		Soil		Soil	
	UNITS ---------->	UG/KG		UG/KG		UG/KG		UG/KG		UG/KG		UG/KG	
CAS #	Parameter	E013	VAL	E013	VAL	E013	VAL	E013	VAL	E013	VAL	E013	VAL
67-72-1	Hexachloroethane	8400.	U	440.	U	930.	U	460.	U	21000.	U	1200.	U
7005-72-3	4-Chlorophenyl-phenylether	8400.	U	440.	U	930.	U	460.	U	21000.	U	1200.	U
709-98-8	Propanil	47000.		93.		6400.		300.		79000.		670.	
77-47-4	Hexachlorocyclopentadiene	8400.	U	440.	U	930.	U	460.	U	21000.	U	1200.	U
78-59-1	Isophorone	8400.	U	440.	U	930.	U	460.	U	21000.	U	1200.	U
83-32-9	Acenaphthene	8400.	U	440.	U	930.	U	460.	U	21000.	U	1200.	U
84-66-2	Diethylphthalate	8400.	U	440.	U	930.	U	460.	U	21000.	U	1200.	U
84-74-2	Di-n-butylphthalate	8400.	U	440.	U	130.		150.		3200.		1200.	U
85-01-8	Phenanthrene	8400.	U	440.	U	930.	U	460.	U	21000.	U	1200.	U
85-68-7	Butylbenzylphthalate	8400.	U	440.	U	930.	U	460.	U	21000.	U	1200.	U
86-30-6	N-Nitrosodiphenylamine	8400.	U	440.	U	930.	U	460.	U	21000.	U	1200.	U
86-73-7	Fluorene	8400.	U	440.	U	930.	U	460.	U	21000.	U	1200.	U
87-68-3	Hexachlorobutadiene	8400.	U	440.	U	930.	U	460.	U	21000.	U	1200.	U
87-86-5	Pentachlorophenol	20000.	U	1100.	U	2300.	U	1100.	U	52000.	U	3000.	U
88-06-2	2,4,6-Trichlorophenol	8400.	U	440.	U	930.	U	460.	U	21000.	U	1200.	U
88-74-4	2-Nitroaniline	20000.	U	1100.	U	2300.	U	1100.	U	52000.	U	3000.	U
88-75-5	2-Nitrophenol	2900.		440.	U	930.	U	460.	U	21000.	U	150.	
88-85-7	Dinoseb	990.		440.	U	930.	U	460.	U	9800.		1200.	U
91-20-3	Naphthalene	8400.	U	440.	U	930.	U	460.	U	21000.	U	1200.	U
91-57-6	2-Methylnaphthalene	8400.	U	440.	U	930.	U	460.	U	21000.	U	1200.	U
91-58-7	2-Chloronaphthalene	850.		440.	U	930.	U	460.	U	5400.		1200.	U
91-94-1	3,3'-Dichlorobenzidine	8400.	U	440.	U	930.	U	460.	U	21000.	U	1200.	U
95-48-7	2-Methylphenol (o-Cresol)	8400.	U	440.	U	930.	U	460.	U	21000.	U	1200.	U
95-50-1	1,2-Dichlorobenzene	11000.		440.	U	930.	U	460.	U	21000.	U	1200.	U
95-57-8	2-Chlorophenol	8400.	U	440.	U	930.	U	460.	U	21000.	U	1200.	U
95-76-1	3,4-Dichloroaniline	5300.		440.	U	930.	U	460.	U	21000.	U	1200.	U
95-95-4	2,4,5-Trichlorophenol	20000.	U	1100.	U	2300.	U	1100.	U	52000.	U	3000.	U
98-95-3	Nitrobenzene	8400.	U	440.	U	930.	U	460.	U	21000.	U	1200.	U
99-09-2	3-Nitroaniline	20000.	U	1100.	U	2300.	U	1100.	U	52000.	U	3000.	U

*** Validation Complete ***

CEDAR CHEMICAL CORPORATION
WEST HELENA, ARKANSAS
PHASE 1 SITE 2 SUBSURFACE SOIL DATA

SVOA	SHORT ID	2MW-1 (15-20')		2MW-1 (20-25')		2MW-1 (30-35')		2MW-2 (5-10')		2MW-2 (15-20')		2MW-3 (15-20')	
	ORIGINAL ID	CED2SMW14		CED2SMW15		CED2SMW17		CED2SMW2-2		CED2SMW2-4		CED2SMW3-4	
	SAMPLE DATE	09/10/93		09/10/93		09/10/93		09/13/93		09/13/93		09/13/93	
	DATE ANALYZED	09/17/93		09/17/93		09/17/93		10/17/93		10/17/93		10/18/93	
	MATRIX	Soil		Soil		Soil		Soil		Soil		Soil	
	UNITS	UG/KG		UG/KG		UG/KG		UG/KG		UG/KG		UG/KG	
CAS #	Parameter	E008	VAL	E008	VAL	E008	VAL	E010	VAL	E010	VAL	E010	VAL
100-01-6	4-Nitroaniline	1700.	U	1700.	U	1600.	U	4200.	U	4400.	U	4300.	U
100-02-7	4-Nitrophenol	4300.	U	4400.	U	4200.	U	4200.	U	4400.	U	4300.	U
100-51-6	Benzyl alcohol	1700.	U	1700.	U	1600.	U	850.	U	880.	U	850.	U
101-55-3	4-Bromophenyl-phenylether	850.	U	880.	U	840.	U	850.	U	880.	U	850.	U
105-67-9	2,4-Dimethylphenol	850.	U	880.	U	840.	U	850.	U	880.	U	850.	U
106-44-5	4-Methylphenol (p-Cresol)	850.	U	880.	U	840.	U	850.	U	880.	U	850.	U
106-46-7	1,4-Dichlorobenzene	850.	U	880.	U	840.	U	850.	U	880.	U	850.	U
106-47-8	4-Chloroaniline	1700.	U	1700.	U	1600.	U	850.	U	880.	U	850.	U
108-60-1	bis(2-chloroisopropyl) ether	850.	U	880.	U	840.	U	850.	U	880.	U	850.	U
108-95-2	Phenol	850.	U	750.		170.		850.	U	880.	U	2700.	
111-44-4	bis(2-Chloroethyl)ether	850.	U	880.	U	840.	U	850.	U	880.	U	850.	U
111-91-1	bis(2-Chloroethoxy)methane	850.	U	880.	U	840.	U	850.	U	880.	U	850.	U
117-81-7	bis(2-Ethylhexyl)phthalate (BEHP)	850.	U	880.	U	840.	U	850.	U	880.	U	850.	U
117-84-0	Di-n-octylphthalate	850.	U	880.	U	840.	U	850.	U	880.	U	850.	U
118-74-1	Hexachlorobenzene	850.	U	880.	U	840.	U	850.	U	880.	U	850.	U
120-12-7	Anthracene	850.	U	880.	U	840.	U	850.	U	880.	U	850.	U
120-82-1	1,2,4-Trichlorobenzene	850.	U	880.	U	840.	U	850.	U	880.	U	850.	U
120-83-2	2,4-Dichlorophenol	850.	U	880.	U	840.	U	850.	U	880.	U	850.	U
121-14-2	2,4-Dinitrotoluene	850.	U	880.	U	840.	U	850.	U	880.	U	850.	U
129-00-0	Pyrene	850.	U	880.	U	840.	U	850.	U	880.	U	850.	U
131-11-3	Dimethylphthalate	850.	U	880.	U	840.	U	850.	U	880.	U	850.	U
132-64-9	Dibenzofuran	850.	U	880.	U	840.	U	850.	U	880.	U	850.	U
191-24-2	Benzo(g,h,i)perylene	NR		NR		NR		850.	U	880.	U	850.	U
193-39-5	Indeno(1,2,3-cd)pyrene	850.	U	880.	U	840.	U	850.	U	880.	U	850.	U
205-99-2	Benzo(b)fluoranthene	850.	U	880.	U	840.	U	850.	U	880.	U	850.	U
206-44-0	fluoranthene	850.	U	880.	U	840.	U	850.	U	880.	U	850.	U
207-08-9	Benzo(k)fluoranthene	850.	U	880.	U	840.	U	850.	U	880.	U	850.	U
208-96-8	Acenaphthylene	850.	U	880.	U	840.	U	850.	U	880.	U	850.	U
218-01-9	Chrysene	850.	U	880.	U	840.	U	850.	U	880.	U	850.	U
50-32-8	Benzo(a)pyrene	850.	U	880.	U	840.	U	850.	U	880.	U	850.	U
51-28-5	2,4-Dinitrophenol	850.	U	880.	U	840.	U	4200.	U	4400.	U	4300.	U
534-52-1	4,6-Dinitro-2-methylphenol	4300.	U	4400.	U	4200.	U	4200.	U	4400.	U	4300.	U
53-70-3	Dibenz(a,h)anthracene	NR		NR		NR		850.	U	880.	U	850.	U
541-73-1	1,3-Dichlorobenzene	850.	U	880.	U	840.	U	850.	U	880.	U	850.	U
56-55-3	Benzo(a)anthracene	850.	U	880.	U	840.	U	850.	U	880.	U	850.	U
59-50-7	4-Chloro-3-methylphenol	1700.	U	1700.	U	1600.	U	850.	U	880.	U	850.	U
606-20-2	2,6-Dinitrotoluene	850.	U	880.	U	840.	U	850.	U	880.	U	850.	U
621-64-7	N-Nitroso-di-n-propylamine	850.	U	880.	U	840.	U	850.	U	880.	U	850.	U
65-85-0	Benzoic acid	4300.	U	540.		4200.	U	4200.	U	4400.	U	4300.	U

*** Validation Complete ***

CEDAR CHEMICAL CORPORATION
WEST HELENA, ARKANSAS
PHASE 1 SITE 2 SUBSURFACE SOIL DATA

SVOA	SHORT ID -------->	2MW-1 (15-20')		2MW-1 (20-25')		2MW-1 (30-35')		2MW-2 (5-10')		2MW-2 (15-20')		2MW-3 (15-20')	
	ORIGINAL ID ----->	CED2SMW14		CED2SMW15		CED2SMW17		CED2SMW2-2		CED2SMW2-4		CED2SMW3-4	
	SAMPLE DATE ----->	09/10/93		09/10/93		09/10/93		09/13/93		09/13/93		09/13/93	
	DATE ANALYZED --->	09/17/93		09/17/93		09/17/93		10/17/93		10/17/93		10/18/93	
	MATRIX ---------->	Soil		Soil		Soil		Soil		Soil		Soil	
	UNITS ---------->	UG/KG		UG/KG		UG/KG		UG/KG		UG/KG		UG/KG	
CAS #	Parameter	E008	VAL	E008	VAL	E008	VAL	E010	VAL	E010	VAL	E010	VAL
67-72-1	Hexachloroethane	850.	U	880.	U	840.	U	850.	U	880.	U	850.	U
7005-72-3	4-Chlorophenyl-phenylether	850.	U	880.	U	840.	U	850.	U	880.	U	850.	U
709-98-8	Propanil	330.		260.		840.	U	460.		880.	U	90.	
77-47-4	Hexachlorocyclopentadiene	850.	U	880.	U	840.	U	850.	U	880.	U	850.	U
78-59-1	Isophorone	850.	U	880.	U	840.	U	850.	U	880.	U	850.	U
83-32-9	Acenaphthene	850.	U	880.	U	840.	U	850.	U	880.	U	850.	U
84-66-2	Diethylphthalate	850.	U	880.	U	840.	U	850.	U	880.	U	850.	U
84-74-2	Di-n-butylphthalate	110.		880.	U	95.		850.	U	880.	U	850.	U
85-01-8	Phenanthrene	850.	U	880.	U	840.	U	850.	U	880.	U	850.	U
85-68-7	Butylbenzylphthalate	850.	U	880.	U	840.	U	850.	U	880.	U	850.	U
86-30-6	N-Nitrosodiphenylamine	850.	U	880.	U	840.	U	850.	U	880.	U	850.	U
86-73-7	Fluorene	850.	U	880.	U	840.	U	850.	U	880.	U	850.	U
87-68-3	Hexachlorobutadiene	850.	U	880.	U	840.	U	850.	U	880.	U	850.	U
87-86-5	Pentachlorophenol	4300.	U	4400.	U	4200.	U	4200.	U	4400.	U	4300.	U
88-06-2	2,4,6-Trichlorophenol	850.	U	880.	U	840.	U	850.	U	880.	U	850.	U
88-74-4	2-Nitroaniline	4300.	U	4400.	U	4200.	U	4200.	U	4400.	U	4300.	U
88-75-5	2-Nitrophenol	850.	U	880.	U	840.	U	850.	U	880.	U	850.	U
88-85-7	Dinoseb	850.	U	880.	U	840.	U	4200.	U	4400.	U	1700.	U
91-20-3	Naphthalene	850.	U	880.	U	840.	U	850.	U	880.	U	850.	U
91-57-6	2-Methylnaphthalene	850.	U	880.	U	840.	U	850.	U	880.	U	850.	U
91-58-7	2-Chloronaphthalene	850.	U	880.	U	840.	U	850.	U	880.	U	850.	U
91-94-1	3,3'-Dichlorobenzidine	1700.	U	1700.	U	1600.	U	1700.	U	1800.	U	1700.	U
95-48-7	2-Methylphenol (o-Cresol)	850.	U	880.	U	840.	U	850.	U	880.	U	850.	U
95-50-1	1,2-Dichlorobenzene	850.	U	880.	U	840.	U	850.	U	880.	U	850.	U
95-57-8	2-Chlorophenol	850.	U	880.	U	840.	U	850.	U	880.	U	850.	U
95-76-1	3,4-Dichloroaniline	850.	U	880.	U	840.	U	390.		880.	U	850.	U
95-95-4	2,4,5-Trichlorophenol	850.	U	880.	U	840.	U	4200.	U	4400.	U	4300.	U
98-95-3	Nitrobenzene	850.	U	880.	U	840.	U	850.	U	880.	U	850.	U
99-09-2	3-Nitroaniline	4300.	U	4400.	U	4200.	U	4200.	U	4400.	U	4300.	U

*** Validation Complete ***

CEDAR CHEMICAL CORPORATION
WEST HELENA, ARKANSAS
PHASE 1 SITE 2 SUBSURFACE SOIL DATA

SVOA									
	SHORT ID --------->	2MW-3 (20-25')		2MW-3 (30-35')					
	ORIGINAL ID ----->	CED2SMW3-5		CED2SMW3-7					
	SAMPLE DATE ----->	09/13/93		09/15/93					
	DATE ANALYZED --->	10/18/93		10/19/93					
	MATRIX ---------->	Soil		Soil					
	UNITS ---------->	UG/KG		UG/KG					
CAS #	Parameter	E010	VAL	E010	VAL				
100-01-6	4-Nitroaniline	4500.	U	4500.	U				
100-02-7	4-Nitrophenol	1600.		4500.	U				
100-51-6	Benzyl alcohol	900.	U	900.	U				
101-55-3	4-Bromophenyl-phenylether	900.	U	900.	U				
105-67-9	2,4-Dimethylphenol	900.	U	900.	U				
106-44-5	4-Methylphenol (p-Cresol)	900.	U	900.	U				
106-46-7	1,4-Dichlorobenzene	900.	U	900.	U				
106-47-8	4-Chloroaniline	900.	U	900.	U				
108-60-1	bis(2-chloroisopropyl) ether	900.	U	900.	U				
108-95-2	Phenol	49000.		900.	U				
111-44-4	bis(2-Chloroethyl)ether	900.	U	900.	U				
111-91-1	bis(2-Chloroethoxy)methane	900.	U	900.	U				
117-81-7	bis(2-Ethylhexyl)phthalate (BEHP)	900.	U	900.	U				
117-84-0	Di-n-octylphthalate	900.	U	900.	U				
118-74-1	Hexachlorobenzene	900.	U	900.	U				
120-12-7	Anthracene	900.	U	900.	U				
120-82-1	1,2,4-Trichlorobenzene	900.	U	900.	U				
120-83-2	2,4-Dichlorophenol	900.	U	900.	U				
121-14-2	2,4-Dinitrotoluene	900.	U	900.	U				
129-00-0	Pyrene	900.	U	900.	U				
131-11-3	Dimethylphthalate	900.	U	900.	U				
132-64-9	Dibenzofuran	900.	U	900.	U				
191-24-2	Benzo(g,h,i)perylene	900.	U	900.	U				
193-39-5	Indeno(1,2,3-cd)pyrene	900.	U	900.	U				
205-99-2	Benzo(b)fluoranthene	900.	U	900.	U				
206-44-0	Fluoranthene	900.	U	900.	U				
207-08-9	Benzo(k)fluoranthene	900.	U	900.	U				
208-96-8	Acenaphthylene	900.	U	900.	U				
218-01-9	Chrysene	900.	U	900.	U				
50-32-8	Benzo(a)pyrene	900.	U	900.	U				
51-28-5	2,4-Dinitrophenol	4500.	U	4500.	U				
534-52-1	4,6-Dinitro-2-methylphenol	4500.	U	4500.	U				
53-70-3	Dibenz(a,h)anthracene	900.	U	900.	U				
541-73-1	1,3-Dichlorobenzene	900.	U	900.	U				
56-55-3	Benzo(a)anthracene	900.	U	900.	U				
59-50-7	4-Chloro-3-methylphenol	900.	U	900.	U				
606-20-2	2,6-Dinitrotoluene	900.	U	900.	U				
621-64-7	N-Nitroso-di-n-propylamine	900.	U	900.	U				
65-85-0	Benzoic acid	4500.	U	4500.	U				

*** Validation Complete ***

CEDAR CHEMICAL CORPORATION
WEST HELENA, ARKANSAS
PHASE 1 SITE 2 SUBSURFACE SOIL DATA

SVOA						
	SHORT ID -------->	2MW-3 (20-25')		2MW-3 (30-35')		
	ORIGINAL ID ----->	CED2SMW3-5		CED2SMW3-7		
	SAMPLE DATE ----->	09/13/93		09/15/93		
	DATE ANALYZED --->	10/18/93		10/19/93		
	MATRIX ---------->	Soil		Soil		
	UNITS ----------->	UG/KG		UG/KG		
CAS #	Parameter	E010	VAL	E010	VAL	
67-72-1	Hexachloroethane	900.	U	900.	U	
7005-72-3	4-Chlorophenyl-phenylether	900.	U	900.	U	
709-98-8	Propanil	190.		120.		
77-47-4	Hexachlorocyclopentadiene	900.	U	900.	U	
78-59-1	Isophorone	900.	U	900.	U	
83-32-9	Acenaphthene	900.	U	900.	U	
84-66-2	Diethylphthalate	900.	U	900.	U	
84-74-2	Di-n-butylphthalate	900.	U	320.		
85-01-8	Phenanthrene	900.	U	900.	U	
85-68-7	Butylbenzylphthalate	900.	U	900.	U	
86-30-6	N-Nitrosodiphenylamine	900.	U	900.	U	
86-73-7	Fluorene	900.	U	900.	U	
87-68-3	Hexachlorobutadiene	900.	U	900.	U	
87-86-5	Pentachlorophenol	4500.	U	4500.	U	
88-06-2	2,4,6-Trichlorophenol	900.	U	900.	U	
88-74-4	2-Nitroaniline	4500.	U	4500.	U	
88-75-5	2-Nitrophenol	900.	U	900.	U	
88-85-7	Dinoseb	4500.	U	4500.	U	
91-20-3	Naphthalene	900.	U	900.	U	
91-57-6	2-Methylnaphthalene	900.	U	900.	U	
91-58-7	2-Chloronaphthalene	900.	U	900.	U	
91-94-1	3,3'-Dichlorobenzidine	1800.	U	1800.	U	
95-48-7	2-Methylphenol (o-Cresol)	900.	U	900.	U	
95-50-1	1,2-Dichlorobenzene	900.	U	900.	U	
95-57-8	2-Chlorophenol	900.	U	900.	U	
95-76-1	3,4-Dichloroaniline	310.		250.		
95-95-4	2,4,5-Trichlorophenol	4500.	U	4500.	U	
98-95-3	Nitrobenzene	900.	U	900.	U	
99-09-2	3-Nitroaniline	4500.	U	4500.	U	

*** Validation Complete ***

CEDAR CHEMICAL CORPORATION
WEST HELENA, ARKANSAS
PHASE 1 SITE 2 SUBSURFACE SOIL DATA

VOA	SHORT ID -------->	2SB-1 (15-20')		2SB-1 (25-30')		2SB-2 (20-25')		2SB-2 (25-30')		2SB-3 (13-14')		2SB-3 (24-25')	
	ORIGINAL ID ----->	CED2SB14		CED2SB16		CED2-SB2-5		CED2-SB2-6		CED2-SB3-14		CED2-SB3-25	
	SAMPLE DATE ----->	09/22/93		09/22/93		09/21/93		09/21/93		09/17/93		09/17/93	
	DATE ANALYZED --->	10/05/93		10/05/93		10/02/93		10/04/93		09/28/93		09/30/93	
	MATRIX ---------->	Soil		Soil		Soil		Soil		Soil		Soil	
	UNITS ---------->	UG/KG		UG/KG		UG/KG		UG/KG		UG/KG		UG/KG	
CAS #	Parameter	E013	VAL	E013	VAL	E011	VAL	E011	VAL	E011	VAL	ED11	VAL
100-41-4	Ethylbenzene	840.	U	1600.	U	8200.	U	750.	U	1.		620.	
100-42-5	Styrene	840.	U	1600.	U	8200.	U	750.	U	6.	U	620.	U
10061-01-5	cis-1,3-Dichloropropene	840.	U	1600.	U	8200.	U	750.	U	6.	U	620.	U
10061-02-6	trans-1,3-Dichloropropene	840.	U	1600.	U	8200.	U	750.	U	6.	U	620.	U
107-06-2	1,2-Dichloroethane	3300.		4100.		70000.		9600.		12.		620.	
108-05-4	Vinyl acetate	840.	U	1600.	U	8200.	U	750.	U	6.	U	1200.	U
108-10-1	4-Methyl-2-Pentanone (MIBK)	8400.	U	3200.	U	82000.	U	7500.	U	67.		1200.	
108-88-3	Toluene	840.	U	1600.	U	8200.	U	750.	U	3.		620.	U
108-90-7	Chlorobenzene	840.	U	1600.	U	8200.	U	750.	U	6.	U	620.	U
124-48-1	Dibromochloromethane	840.	U	1600.	U	8200.	U	750.	U	6.	U	620.	U
127-18-4	Tetrachloroethene	840.	U	1600.	U	8200.	U	750.	U	6.	U	620.	U
1330-20-7	Xylene (total)	840.	U	450.		8200.	U	750.	U	7.		620.	
540-59-0	1,2-Dichloroethene (total)	840.	U	1600.	U	8200.	U	750.	U	6.	U	620.	U
56-23-5	Carbon tetrachloride	840.	U	1600.	U	8200.	U	750.	U	6.	U	620.	U
591-78-6	2-Hexanone	8400.	U	3200.	U	82000.	U	7500.	U	64.	U	1200.	U
67-64-1	Acetone	1500.		3200.	U	16000.	U	1100.		25.		1200.	U
67-66-3	Chloroform	840.	U	1600.	U	8200.	U	750.	U	6.	U	620.	
71-43-2	Benzene	840.	U	1600.	U	8200.	U	750.	U	6.	U	620.	U
71-55-6	1,1,1-Trichloroethane	840.	U	1600.	U	8200.	U	750.	U	6.	U	620.	U
74-83-9	Bromomethane	1700.	U	3200.	U	16000.	U	1500.	U	13.	U	1200.	U
74-87-3	Chloromethane	1700.	U	3200.	U	16000.	U	1500.	U	13.	U	1200.	U
75-00-3	Chloroethane	1700.	U	3200.	U	16000.	U	1500.	U	13.	U	1200.	U
75-01-4	Vinyl chloride	840.	U	1600.	U	8200.	U	750.	U	6.	U	1200.	U
75-09-2	Methylene chloride	13000.		110000.		45000.		40000.		68.		8100.	
75-15-0	Carbon disulfide	840.	U	1600.	U	8200.	U	750.	U	6.	U	620.	U
75-25-2	Bromoform	840.	U	1600.	U	8200.	U	750.	U	6.	U	620.	U
75-27-4	Bromodichloromethane	840.	U	1600.	U	8200.	U	750.	U	6.	U	620.	U
75-34-3	1,1-Dichloroethane	840.	U	1600.	U	8200.	U	750.	U	6.	U	620.	U
75-35-4	1,1-Dichloroethene	840.	U	1600.	U	8200.	U	750.	U	6.	U	620.	U
78-87-5	1,2-Dichloropropane	840.	U	1600.	U	8200.	U	750.	U	6.	U	620.	U
78-93-3	2-Butanone (MEK)	1700.	U	1600.		16000.	U	1500.	U	22.		1200.	U
79-00-5	1,1,2-Trichloroethane	840.	U	1600.	U	8200.	U	750.	U	6.	U	620.	U
79-01-6	Trichloroethene	840.	U	1600.	U	8200.	U	750.	U	6.	U	620.	U
79-34-5	1,1,2,2-Tetrachloroethane	840.	U	1600.	U	8200.	U	750.	U	6.	U	620.	U

*** Validation Complete ***

CEDAR CHEMICAL CORPORATION
WEST HELENA, ARKANSAS
PHASE 1 SITE 2 SUBSURFACE SOIL DATA

VOA	SHORT ID --------->	2SB-4 (15-20')		2SB-4 (25-30')		2SB-5 (15-20')		2SB-5 (25-30')		2SB-6 (21-22')		2SB-6 (28-29')	
	ORIGINAL ID ----->	CED2SB44		CED2SB46		CED2SB54		CED2SB56		CED2-SB6-22		CED2-SB6-29	
	SAMPLE DATE ----->	09/23/93		09/23/93		09/21/93		09/21/93		09/20/93		09/20/93	
	DATE ANALYZED --->	10/05/93		10/07/93		10/05/93		10/04/93		10/01/93		10/01/93	
	MATRIX ---------->	Soil		Soil		Soil		Soil		Soil		Soil	
	UNITS ----------->	UG/KG		UG/KG		UG/KG		UG/KG		UG/KG		UG/KG	
CAS #	Parameter	E013	VAL	E013	VAL	E013	VAL	E013	VAL	E011	VAL	E011	VAL
100-41-4	Ethylbenzene	10.		1600.	U	120.		89000.	U	7800.	U	8300.	U
100-42-5	Styrene	33.	U	1600.	U	29.	U	89000.	U	7800.	U	8300.	U
10061-01-5	cis-1,3-Dichloropropene	33.	U	1600.	U	29.	U	89000.	U	7800.	U	8300.	U
10061-02-6	trans-1,3-Dichloropropene	33.	U	1600.	U	29.	U	89000.	U	7800.	U	8300.	U
107-06-2	1,2-Dichloroethane	270.		2600.		1800.		110000.		32000.		170000.	
108-05-4	Vinyl acetate	33.	U	1600.	U	29.	U	89000.	U	7800.	U	8300.	U
108-10-1	4-Methyl-2-Pentanone (MIBK)	180.		16000.	U	20.		890000.	U	78000.	U	83000.	U
108-88-3	Toluene	1200.		1600.	U	27.		89000.	U	7800.	U	8300.	U
108-90-7	Chlorobenzene	25.		1600.	U	14.		89000.	U	7800.	U	8300.	U
124-48-1	Dibromochloromethane	33.	U	1600.	U	29.	U	89000.	U	7800.	U	8300.	U
127-18-4	Tetrachloroethene	33.	U	1600.	U	29.	U	89000.	U	7800.	U	8300.	U
1330-20-7	Xylene (total)	49.		1600.	U	550.		89000.	U	7800.	U	4800.	
540-59-0	1,2-Dichloroethene (total)	33.	U	1600.	U	29.	U	89000.	U	7800.	U	8300.	U
56-23-5	Carbon tetrachloride	33.	U	1600.	U	29.	U	89000.	U	7800.	U	8300.	U
591-78-6	2-Hexanone	330.	U	16000.	U	290.	U	890000.	U	78000.	U	83000.	U
67-64-1	Acetone	1000.		2600.		150.		180000.	U	16000.	U	17000.	U
67-66-3	Chloroform	18.		1600.	U	250.		89000.	U	7800.	U	2800.	
71-43-2	Benzene	33.	U	1600.	U	29.	U	89000.	U	7800.	U	8300.	U
71-55-6	1,1,1-Trichloroethane	33.	U	1600.	U	29.	U	89000.	U	7800.	U	8300.	U
74-83-9	Bromomethane	67.	U	3200.	U	58.	U	180000.	U	16000.	U	17000.	U
74-87-3	Chloromethane	67.	U	3200.	U	58.	U	180000.	U	16000.	U	17000.	U
75-00-3	Chloroethane	67.	U	3200.	U	58.	U	180000.	U	16000.	U	17000.	U
75-01-4	Vinyl chloride	33.	U	1600.	U	29.	U	89000.	U	7800.	U	8300.	U
75-09-2	Methylene chloride	1200.		100000.		1900.		380000.		170000.		82000.	
75-15-0	Carbon disulfide	33.	U	1600.	U	29.	U	89000.	U	7800.	U	8300.	U
75-25-2	Bromoform	33.	U	1600.	U	29.	U	89000.	U	7800.	U	8300.	U
75-27-4	Bromodichloromethane	33.	U	1600.	U	29.	U	89000.	U	7800.	U	8300.	U
75-34-3	1,1-Dichloroethane	33.	U	1600.	U	29.	U	89000.	U	7800.	U	8300.	U
75-35-4	1,1-Dichloroethene	33.	U	1600.	U	29.	U	89000.	U	7800.	U	8300.	U
78-87-5	1,2-Dichloropropane	33.	U	1600.	U	32.		89000.	U	7800.	U	8300.	U
78-93-3	2-Butanone (MEK)	67.	U	3200.	U	58.	U	180000.	U	16000.	U	17000.	U
79-00-5	1,1,2-Trichloroethane	33.	U	1600.	U	29.	U	89000.	U	7800.	U	8300.	U
79-01-6	Trichloroethene	33.	U	1600.	U	29.	U	89000.	U	7800.	U	8300.	U
79-34-5	1,1,2,2-Tetrachloroethane	33.	U	1600.	U	29.	U	89000.	U	7800.	U	8300.	U

*** Validation Complete ***

CEDAR CHEMICAL CORPORATION
WEST HELENA, ARKANSAS
PHASE 1 SITE 2 SUBSURFACE SOIL DATA

VOA	SHORT ID -------->	2SB-7 (10-15')		2SB-7 (25-30')		2SB-8 (15-20')		2SB-8 (25-30')		2SB-9 (4-5')		2SB-9 (26-27')	
	ORIGINAL ID ----->	CED2SB73		CED2SB76		CED2SB84		CED2SB86		CED2-SB9-5		CED2-SB9-27	
	SAMPLE DATE ----->	09/23/93		09/23/93		09/21/93		09/21/93		09/21/93		09/21/93	
	DATE ANALYZED --->	10/06/93		10/06/93		10/05/93		10/05/93		10/01/93		10/02/93	
	MATRIX ---------->	Soil		Soil		Soil		Soil		Soil		Soil	
	UNITS ---------->	UG/KG		UG/KG		UG/KG		UG/KG		UG/KG		UG/KG	
CAS #	Parameter	E013	VAL	E013	VAL	E011	VAL	E011	VAL	E011	VAL	E011	VAL
100-41-4	Ethylbenzene	7.	U	820.	U	32.	U	17.		2.		420.	
100-42-5	Styrene	7.	U	820.	U	32.	U	34.	U	7.	U	1700.	U
10061-01-5	cis-1,3-Dichloropropene	7.	U	820.	U	32.	U	34.	U	7.	U	1700.	U
10061-02-6	trans-1,3-Dichloropropene	7.	U	820.	U	32.	U	34.	U	7.	U	1700.	U
107-06-2	1,2-Dichloroethane	11.		820.	U	130.		220.		14.		2900.	
108-05-4	Vinyl acetate	7.	U	820.	U	32.	U	34.	U	7.	U	1700.	U
108-10-1	4-Methyl-2-Pentanone (MIBK)	12.		8200.	U	27.		79.		68.	U	17000.	U
108-88-3	Toluene	4.		20000.		85.		1200.		15.		5000.	
108-90-7	Chlorobenzene	7.	U	820.	U	32.	U	100.		3.		530.	
124-48-1	Dibromochloromethane	7.	U	820.	U	32.	U	34.	U	7.	U	1700.	U
127-18-4	Tetrachloroethene	7.	U	820.	U	32.	U	34.	U	7.	U	1700.	U
1330-20-7	Xylene (total)	7.	U	820.	U	13.		170.		15.		2600.	
540-59-0	1,2-Dichloroethene (total)	7.	U	820.	U	32.	U	34.	U	7.	U	1700.	U
56-23-5	Carbon tetrachloride	7.	U	820.	U	32.	U	34.	U	7.	U	670.	
591-78-6	2-Hexanone	70.	U	8200.	U	320.	U	340.	U	68.	U	17000.	U
67-64-1	Acetone	210.		2400.		980.		10000.		26.		3300.	U
67-66-3	Chloroform	7.	U	260.		50.		1100.		2.		13000.	
71-43-2	Benzene	7.	U	820.	U	32.	U	34.	U	7.	U	1700.	U
71-55-6	1,1,1-Trichloroethane	7.	U	820.	U	32.	U	34.	U	7.	U	1700.	U
74-83-9	Bromomethane	14.	U	1600.	U	65.	U	68.	U	14.	U	3300.	U
74-87-3	Chloromethane	14.	U	1600.	U	65.	U	68.	U	14.	U	3300.	U
75-00-3	Chloroethane	14.	U	1600.	U	65.	U	68.	U	14.	U	3300.	U
75-01-4	Vinyl chloride	7.	U	820.	U	32.	U	34.	U	7.	U	1700.	U
75-09-2	Methylene chloride	46.		850.	U	1100.		2100.		28.		93000.	
75-15-0	Carbon disulfide	7.	U	820.	U	32.	U	34.	U	7.	U	1700.	U
75-25-2	Bromoform	7.	U	820.	U	32.	U	34.	U	7.	U	1700.	U
75-27-4	Bromodichloromethane	7.	U	820.	U	32.	U	34.	U	7.	U	1700.	U
75-34-3	1,1-Dichloroethane	7.	U	820.	U	32.	U	34.	U	7.	U	1700.	U
75-35-4	1,1-Dichloroethene	7.	U	820.	U	32.	U	34.	U	7.	U	1700.	U
78-87-5	1,2-Dichloropropane	7.	U	820.	U	32.	U	34.	U	7.	U	1700.	U
78-93-3	2-Butanone (MEK)	21.		1600.	U	65.	U	68.	U	14.	U	3300.	U
79-00-5	1,1,2-Trichloroethane	7.	U	820.	U	32.	U	34.	U	7.	U	1700.	U
79-01-6	Trichloroethene	7.	U	820.	U	32.	U	34.	U	7.	U	1700.	U
79-34-5	1,1,2,2-Tetrachloroethane	7.	U	820.	U	32.	U	34.	U	7.	U	1700.	U

*** Validation Complete ***

CEDAR CHEMICAL CORPORATION
WEST HELENA, ARKANSAS
PHASE 1 SITE 2 SUBSURFACE SOIL DATA

VOA	SHORT ID	2SB-10 (15-20')		2SB-10 (25-30')		2SB-11 (20-25')		2SB-11 (25-30')		2SB-12 (15-20')		2SB-12 (25-30')	
	ORIGINAL ID	CED2SB104		CED2SB106		CED2SB115		CED2SB116		CED2SB124		CED2SB126	
	SAMPLE DATE	09/23/93		09/23/93		09/23/93		09/23/93		09/23/93		09/23/93	
	DATE ANALYZED	10/07/93		10/07/93		10/07/93		10/06/93		10/06/93		10/07/93	
	MATRIX	Soil		Soil		Soil		Soil		Soil		Soil	
	UNITS	UG/KG		UG/KG		UG/KG		UG/KG		UG/KG		UG/KG	
CAS #	Parameter	E013	VAL	E013	VAL	E013	VAL	E013	VAL	E013	VAL	E013	VAL
100-41-4	Ethylbenzene	8300.	U	33.	U	18.	U	830.	U	760.	U	31.	U
100-42-5	Styrene	8300.	U	33.	U	18.	U	830.	U	760.	U	31.	U
10061-01-5	cis-1,3-Dichloropropene	8300.	U	33.	U	18.	U	830.	U	760.	U	31.	U
10061-02-6	trans-1,3-Dichloropropene	8300.	U	33.	U	18.	U	830.	U	760.	U	31.	U
107-06-2	1,2-Dichloroethane	8300.	U	33.	U	40.		170.		3400.		63.	
108-05-4	Vinyl acetate	8300.	U	33.	U	18.	U	830.	U	760.	U	31.	U
108-10-1	4-Methyl-2-Pentanone (MIBK)	83000.	U	20.		180.	U	8300.	U	7600.	U	60.	
108-88-3	Toluene	390000.		1100.		90.		180.		170.		30.	
108-90-7	Chlorobenzene	8300.	U	33.	U	18.	U	830.	U	760.	U	31.	U
124-48-1	Dibromochloromethane	8300.	U	33.	U	18.	U	830.	U	760.	U	31.	U
127-18-4	Tetrachloroethene	8300.	U	33.	U	18.	U	830.	U	760.	U	31.	U
1330-20-7	Xylene (total)	2800.		33.	U	7.		830.	U	760.	U	31.	U
540-59-0	1,2-Dichloroethene (total)	8300.	U	33.	U	18.	U	830.	U	760.	U	31.	U
56-23-5	Carbon tetrachloride	8300.	U	33.	U	18.	U	830.	U	760.	U	31.	U
591-78-6	2-Hexanone	83000.	U	330.	U	180.	U	8300.	U	7600.	U	310.	U
67-64-1	Acetone	17000.	U	240.		84.		17000.		1500.	U	7400.	
67-66-3	Chloroform	8300.	U	64.		39.		2700.		620.		1100.	
71-43-2	Benzene	8300.	U	33.	U	18.	U	830.	U	760.	U	31.	U
71-55-6	1,1,1-Trichloroethane	8300.	U	33.	U	18.	U	830.	U	760.	U	31.	U
74-83-9	Bromomethane	17000.	U	67.	U	35.	U	1700.	U	1500.	U	62.	U
74-87-3	Chloromethane	17000.	U	67.	U	35.	U	1700.	U	1500.	U	62.	U
75-00-3	Chloroethane	17000.	U	67.	U	35.	U	1700.	U	1500.	U	62.	U
75-01-4	Vinyl chloride	8300.	U	33.	U	18.	U	830.	U	760.	U	31.	U
75-09-2	Methylene chloride	8300.	U	370.		340.		3500.	U	45000.		4100.	
75-15-0	Carbon disulfide	8300.	U	33.	U	18.	U	830.	U	760.	U	31.	U
75-25-2	Bromoform	8300.	U	33.	U	18.	U	830.	U	760.	U	31.	U
75-27-4	Bromodichloromethane	8300.	U	33.	U	18.	U	830.	U	760.	U	31.	U
75-34-3	1,1-Dichloroethane	8300.	U	33.	U	18.	U	830.	U	760.	U	31.	U
75-35-4	1,1-Dichloroethene	8300.	U	33.	U	18.	U	830.	U	760.	U	31.	U
78-87-5	1,2-Dichloropropane	8300.	U	33.	U	18.	U	830.	U	760.	U	31.	U
78-93-3	2-Butanone (MEK)	1700.		67.	U	35.	U	1700.	U	1500.	U	31.	U
79-00-5	1,1,2-Trichloroethane	8300.	U	33.	U	18.	U	830.	U	760.	U	31.	U
79-01-6	Trichloroethene	8300.	U	33.	U	18.	U	830.	U	760.	U	31.	U
79-34-5	1,1,2,2-Tetrachloroethane	8300.	U	33.	U	18.	U	830.	U	760.	U	31.	U

*** Validation Complete ***

CEDAR CHEMICAL CORPORATION
WEST HELENA, ARKANSAS
PHASE 1 SITE 2 SUBSURFACE SOIL DATA

VOA	SHORT ID --------->	2MW-1 (15-20')		2MW-1 (20-25')		2MW-1 (30-35')		2MW-2 (5-10')		2MW-2 (15-20')		2MW-3 (15-20')	
	ORIGINAL ID ----->	CED2SMW14		CED2SMW15		CED2SMW17		CED2-SMW2-2		CED2-SMW2-4		CED2-SMW3-4	
	SAMPLE DATE ----->	09/10/93		09/10/93		09/10/93		09/13/93		09/13/93		09/13/93	
	DATE ANALYZED --->	09/15/93		09/15/93		09/15/93		09/21/93		09/21/93		09/21/93	
	MATRIX ---------->	Soil		Soil		Soil		Soil		Soil		Soil	
	UNITS ---------->	UG/KG		UG/KG		UG/KG		UG/KG		UG/KG		UG/KG	
CAS #	Parameter	E008	VAL	E008	VAL	E008	VAL	E010	VAL	E010	VAL	ED10	VAL
100-41-4	Ethylbenzene	14.	U	830.	U	7.	U	6.	U	6.	U	6.	U
100-42-5	Styrene	14.	U	830.	U	7.	U	6.	U	6.	U	6.	U
10061-01-5	cis-1,3-Dichloropropene	14.	U	830.	U	7.	U	6.	U	6.	U	6.	U
10061-02-6	trans-1,3-Dichloropropene	14.	U	830.	U	7.	U	6.	U	6.	U	6.	U
107-06-2	1,2-Dichloroethane	43.		830.	U	7.	U	6.	U	6.	U	35.	
108-05-4	Vinyl acetate	14.	U	830.	U	7.	U	6.	U	6.	U	6.	U
108-10-1	4-Methyl-2-Pentanone (MIBK)	140.	U	8300.	U	33.		63.	U	62.	U	9.	
108-88-3	Toluene	14.	U	830.	U	7.	U	6.	U	6.	U	29.	
108-90-7	Chlorobenzene	14.	U	830.	U	7.	U	6.	U	6.	U	6.	U
124-48-1	Dibromochloromethane	14.	U	830.	U	7.	U	6.	U	6.	U	6.	U
127-18-4	Tetrachloroethene	14.	U	830.	U	7.	U	6.	U	6.	U	6.	U
1330-20-7	Xylene (total)	14.	U	830.	U	7.	U	6.	U	6.	U	3.	
540-59-0	1,2-Dichloroethene (total)	14.	U	830.	U	7.	U	6.	U	6.	U	6.	U
56-23-5	Carbon tetrachloride	14.	U	830.	U	7.	U	6.	U	6.	U	6.	U
591-78-6	2-Hexanone	140.	U	8300.	U	66.	U	63.	U	62.	U	64.	U
67-64-1	Acetone	27.	U	1700.	U	13.	U	13.	U	12.	U	35.	
67-66-3	Chloroform	14.	U	830.	U	7.	U	6.	U	6.	U	190.	
71-43-2	Benzene	14.	U	830.	U	7.	U	6.	U	6.	U	6.	U
71-55-6	1,1,1-Trichloroethane	14.	U	830.	U	7.	U	6.	U	6.	U	6.	U
74-83-9	Bromomethane	27.	U	1700.	U	13.	U	13.	U	12.	U	13.	U
74-87-3	Chloromethane	27.	U	1700.	U	13.	U	13.	U	12.	U	13.	U
75-00-3	Chloroethane	27.	U	1700.	U	13.	U	13.	U	12.	U	13.	U
75-01-4	Vinyl chloride	14.	U	830.	U	7.	U	6.	U	6.	U	6.	U
75-09-2	Methylene chloride	320.		25000.		160.		6.	U	6.	U	250.	
75-15-0	Carbon disulfide	14.	U	830.	U	7.	U	6.	U	6.	U	6.	U
75-25-2	Bromoform	14.	U	830.	U	7.	U	6.	U	6.	U	6.	U
75-27-4	Bromodichloromethane	14.	U	830.	U	7.	U	6.	U	6.	U	6.	U
75-34-3	1,1-Dichloroethane	14.	U	830.	U	7.	U	6.	U	6.	U	6.	U
75-35-4	1,1-Dichloroethene	14.	U	830.	U	7.	U	6.	U	6.	U	6.	U
78-87-5	1,2-Dichloropropane	14.	U	830.	U	7.	U	6.	U	6.	U	6.	U
78-93-3	2-Butanone (MEK)	27.	U	1700.	U	13.	U	13.	U	12.	U	13.	U
79-00-5	1,1,2-Trichloroethane	14.	U	830.	U	7.	U	6.	U	6.	U	6.	U
79-01-6	Trichloroethene	14.	U	830.	U	7.	U	6.	U	6.	U	6.	U
79-34-5	1,1,2,2-Tetrachloroethane	14.	U	830.	U	7.	U	6.	U	6.	U	6.	U

*** Validation Complete ***

CEDAR CHEMICAL CORPORATION
WEST HELENA, ARKANSAS
PHASE 1 SITE 2 SUBSURFACE SOIL DATA

VOA									
	SHORT ID -------->	2MW-3 (20-25')		2MW-3 (30-35')					
	ORIGINAL ID ----->	CED2-SMW3-5		CED2-SMW3-7					
	SAMPLE DATE ----->	09/13/93		09/15/93					
	DATE ANALYZED --->	09/24/93		09/24/93					
	MATRIX ---------->	Soil		Soil					
	UNITS ----------->	UG/KG		UG/KG					
CAS #	Parameter	E010	VAL	E010	VAL				
100-41-4	Ethylbenzene	31.	U	34.	U				
100-42-5	Styrene	31.	U	34.	U				
10061-01-5	cis-1,3-Dichloropropene	31.	U	34.	U				
10061-02-6	trans-1,3-Dichloropropene	31.	U	34.	U				
107-06-2	1,2-Dichloroethane	74.		110.					
108-05-4	Vinyl acetate	31.	U	34.	U				
108-10-1	4-Methyl-2-Pentanone (MIBK)	50.		1000.					
108-88-3	Toluene	140.		190.					
108-90-7	Chlorobenzene	31.	U	34.	U				
124-48-1	Dibromochloromethane	31.	U	34.	U				
127-18-4	Tetrachloroethene	31.	U	34.	U				
1330-20-7	Xylene (total)	31.	U	34.	U				
540-59-0	1,2-Dichloroethene (total)	31.	U	34.	U				
56-23-5	Carbon tetrachloride	31.	U	34.	U				
591-78-6	2-Hexanone	310.	U	340.	U				
67-64-1	Acetone	3100.		2700.					
67-66-3	Chloroform	390.		10.					
71-43-2	Benzene	31.	U	34.	U				
71-55-6	1,1,1-Trichloroethane	31.	U	34.	U				
74-83-9	Bromomethane	61.	U	68.	U				
74-87-3	Chloromethane	61.	U	68.	U				
75-00-3	Chloroethane	61.	U	68.	U				
75-01-4	Vinyl chloride	31.	U	34.	U				
75-09-2	Methylene chloride	890.		26.					
75-15-0	Carbon disulfide	31.	U	34.	U				
75-25-2	Bromoform	31.	U	34.	U				
75-27-4	Bromodichloromethane	31.	U	34.	U				
75-34-3	1,1-Dichloroethane	31.	U	34.	U				
75-35-4	1,1-Dichloroethene	31.	U	34.	U				
78-87-5	1,2-Dichloropropane	31.	U	34.	U				
78-93-3	2-Butanone (MEK)	35.		68.	U				
79-00-5	1,1,2-Trichloroethane	31.	U	34.	U				
79-01-6	Trichloroethene	31.	U	34.	U				
79-34-5	1,1,2,2-Tetrachloroethane	31.	U	34.	U				

*** Validation Complete ***

CEDAR CHEMICAL CORPORATION
WEST HELENA, ARKANSAS
SITE 2 PHASE I SUBSURFACE SOIL DATA

PEST		SHORT ID --------->	IMSB-1 (1-3')		IMSB-1 (3-8')		IMSB-1 (8-12')		IMSB-2 (1-5')		IMSB-2 (5-10')		IMSB-2 (10-15')	
		ORIGINAL ID ----->	IM-SB-01-1		IM-SB-01-2		IM-SB-01-3		IM-SB-02-1		IM-SB-02-2		IMSB023	
		SAMPLE DATE ----->	04/08/93		04/08/93		05/06/93		04/08/93		04/08/93		04/08/93	
		DATE ANALYZED --->	04/17/93		04/17/93		05/03/93		04/22/93		04/17/93		04/30/93	
		MATRIX ---------->	Soil		Soil		Soil		Soil		Soil		Soil	
		UNITS ---------->	UG/KG		UG/KG		UG/KG		UG/KG		UG/KG		UG/KG	
CAS #	Parameter		ES1	VAL	ES1	VAL	ES1	VAL	ES1	VAL	ES1	VAL	ES1	VAL
1024-57-3	Heptachlor Epoxide		2400.	U	70.	U	72.	U	150.	U	72.	U	720.	U
1031-07-8	Endosulfan Sulfate		1900.	U	55.	U	57.	U	120.	U	56.	U	570.	U
309-00-2	Aldrin		420.		3.4	U	3.5	U	7.2	U	3.5	U	35.	U
319-84-6	Alpha-BHC		84.	U	2.5	U	2.6	U	5.3	U	2.6	U	55.	
319-85-7	Beta-BHC		170.	U	5.	U	5.2	U	11.	U	10.		52.	U
319-86-8	Delta-BHC		250.	U	7.5	U	26.		16.	U	7.7	U	78.	U
33213-65-9	Endosulfan II		110.	U	3.4	U	3.5	U	7.2	U	3.5	U	35.	U
50-29-3	4,4'-DDT		890.		10.	U	10.	U	55.		10.	U	100.	U
5103-71-9	alpha-Chlordane		400.	U	12.	U	12.	U	25.	U	12.	U	120.	U
5103-74-2	gamma-Chlordane		400.	U	12.	U	12.	U	25.	U	12.	U	120.	U
53494-70-5	Endrin ketone		670.	U	20.	U	21.	U	43.	U	20.	U	210.	U
58-89-9	gamma-BHC (Lindane)		110.	U	3.4		3.5	U	7.2	U	3.5	U	35.	U
60-57-1	Dieldrin		55.	U	1.6	U	1.7	U	7.4		1.7	U	350.	
72-20-8	Endrin		250.		5.	U	5.2	U	11.	U	5.1	U	52.	U
72-43-5	Methoxychlor		5100.	U	150.	U	160.	U	600.		150.	U	1500.	U
72-54-8	4,4'-DDD		310.	U	9.2	U	9.5	U	20.	U	9.5	U	95.	U
72-55-9	4,4'-DDE		190.		3.4	U	3.5	U	7.2	U	3.5	U	35.	U
76-44-8	Heptachlor		84.	U	2.5	U	2.6	U	5.3	U	31.		26.	U
8001-35-2	Toxaphene		6700.	U	200.	U	210.	U	430.	U	200.	U	2100.	U
959-98-8	Endosulfan I		400.	U	12.	U	12.	U	7.2	U	12.	U	120.	U

*** Validation Complete ***

CEDAR CHEMICAL CORPORATION
WEST HELENA, ARKANSAS
SITE 2 PHASE I SUBSURFACE SOIL DATA

PEST	SHORT ID --------->	IMSB-3 (1-5')		IMSB-3 (5-10')		IMSB-3 (10-15')		IMSB-4 (1-5')		IMSB-4 (5-10')		IMSB-5 (1-5')	
	ORIGINAL ID ----->	IM-SB-03-1		IM-SB-03-2		IM-SB-03-3		IM-SB-04-1		IM-SB-04-2		IM-SB-05-1	
	SAMPLE DATE ----->	04/09/93		04/09/93		04/09/93		04/09/93		04/09/93		04/09/93	
	DATE ANALYZED --->	04/17/93		04/22/93		04/30/93		04/17/93		04/17/93		04/17/93	
	MATRIX ---------->	Soil		Soil		Soil		Soil		Soil		Soil	
	UNITS ----------->	UG/KG		UG/KG		UG/KG		UG/KG		UG/KG		UG/KG	
CAS #	Parameter	ES1	VAL	ES1	VAL	ES1	VAL	ES1	VAL	ES1	VAL	ES1	VAL
1024-57-3	Heptachlor Epoxide	68.	U	70.	U	72.	U	140.	U	71.	U	69.	U
1031-07-8	Endosulfan Sulfate	54.	U	55.	U	57.	U	110.	U	56.	U	54.	U
309-00-2	Aldrin	2.4	U	9.3		3.5	U	6.8	U	3.4	U	3.3	U
319-84-6	Alpha-BHC	2.4	U	2.5	U	2.6	U	5.1	U	2.5	U	2.5	U
319-85-7	Beta-BHC	4.9	U	37.		5.2	U	10.	U	5.1	U	4.9	U
319-86-8	Delta-BHC	7.3	U	7.5	U	7.8	U	15.	U	7.6	U	7.4	U
33213-65-9	Endosulfan II	3.3	U	3.4	U	3.5	U	6.8	U	3.4	U	3.3	U
50-29-3	4,4'-DDT	9.8	U	10.	U	10.	U	20.	U	10.	U	9.9	U
5103-71-9	alpha-Chlordane	11.	U	12.	U	12.	U	24.	U	12.	U	12.	U
5103-74-2	gamma-Chlordane	11.	U	12.	U	12.	U	24.	U	12.	U	12.	U
53494-70-5	Endrin ketone	20.	U	20.	U	21.	U	40.	U	20.	U	20.	U
58-89-9	gamma-BHC (Lindane)	3.3	U	3.4		3.5	U	6.8	U	3.4	U	3.3	U
60-57-1	Dieldrin	1.6	U	1.6	U	1.7	U	56.		1.6	U	13.	
72-20-8	Endrin	4.9	U	5.	U	5.2	U	10.	U	5.1	U	4.9	U
72-43-5	Methoxychlor	150.	U	150.	U	150.	U	300.	U	150.	U	290.	U
72-54-8	4,4'-DDD	9.	U	10.		9.5	U	19.	U	9.4	U	9.1	U
72-55-9	4,4'-DDE	3.3	U	3.4	U	3.5	U	6.8	U	3.4	U	3.3	U
76-44-8	Heptachlor	2.4	U	4.9		2.6	U	5.1	U	2.5	U	2.5	U
8001-35-2	Toxaphene	200.	U	200.	U	210.	U	400.	U	200.	U	200.	U
959-98-8	Endosulfan I	11.	U	12.	U	12.	U	24.	U	12.	U	12.	U

*** Validation Complete ***

CEDAR CHEMICAL CORPORATION
WEST HELENA, ARKANSAS
SITE 2 PHASE I SUBSURFACE SOIL DATA

PEST

SHORT ID --------->	IMSB-5 (5-10')
ORIGINAL ID ----->	IM-SB-05-2
SAMPLE DATE ----->	04/09/93
DATE ANALYZED --->	04/17/93
MATRIX ---------->	Soil
UNITS ----------->	UG/KG

CAS #	Parameter	ES1	VAL
1024-57-3	Heptachlor Epoxide	71.	U
1031-07-8	Endosulfan Sulfate	56.	U
309-00-2	Aldrin	3.4	U
319-84-6	Alpha-BHC	2.5	U
319-85-7	Beta-BHC	5.1	U
319-86-8	Delta-BHC	7.6	U
33213-65-9	Endosulfan II	3.4	U
50-29-3	4,4'-DDT	10.	U
5103-71-9	alpha-Chlordane	12.	U
5103-74-2	gamma-Chlordane	12.	U
53494-70-5	Endrin ketone	20.	U
58-89-9	gamma-BHC (Lindane)	3.4	U
60-57-1	Dieldrin	1.6	U
72-20-8	Endrin	5.1	U
72-43-5	Methoxychlor	150.	U
72-54-8	4,4'-DDD	9.4	U
72-55-9	4,4'-DDE	3.4	U
76-44-8	Heptachlor	2.5	U
8001-35-2	Toxaphene	200.	U
959-98-8	Endosulfan I	12.	U

*** Validation Complete ***

CEDAR CHEMICAL CORPORATION
WEST HELENA, ARKANSAS
SITE 2 PHASE I SUBSURFACE SOIL DATA

RCRA METAL	SHORT ID --------->	IMSB-1 (1-3')	IMSB-1 (3-8')	IMSB-2 (1-5')	IMSB-2 (5-10')	IMSB-3 (1-5')	IMSB-3 (5-10')
	ORIGINAL ID ----->	IM-SB-01-1	IM-SB-01-2	IM-SB-02-1	IM-SB-02-2	IM-SB-03-1	IM-SB-03-2
	SAMPLE DATE ----->	04/08/93	04/08/93	04/08/93	04/08/93	04/09/93	04/09/93
	DATE ANALYZED --->	04/19/93	04/19/93	04/19/93	04/19/93	04/19/93	04/19/93
	MATRIX ---------->	Soil	Soil	Soil	Soil	Soil	Soil
	UNITS ---------->	MG/KG	MG/KG	MG/KG	MG/KG	MG/KG	MG/KG

CAS #	Parameter	ES1	VAL	ES1	VAL	ES1	VAL	ES1	VAL	ES1	VAL	ES1	VAL
7440-38-2	Arsenic (As)	59.		9.3		3.4		7.4		7.4		7.3	
7440-39-3	Barium (Ba)	313.		143.		81.7		210.		130.		231.	
7440-43-9	Cadmium (Cd)	0.35	U	0.37	U	0.4	U	0.37	U	0.36	U	0.36	U
7440-47-3	Chromium (Cr)	12.4		9.2		8.2		9.9		12.5		14.2	
7439-92-1	Lead (Pb)	12.8		11.7		6.5		11.7		8.9		13.3	
7439-97-6	Mercury (Hg)	0.11	U	0.12	U	0.11	U	0.11	U	0.1	U	0.11	U
7782-49-2	Selenium (Se)	0.15		0.15		0.13	U	0.19		0.12	U	0.28	
7440-22-4	Silver (Ag)	0.83	U	0.85	U	0.93	U	0.87	U	0.85	U	0.85	U

*** Validation Complete ***

CEDAR CHEMICAL CORPORATION
WEST HELENA, ARKANSAS
SITE 2 PHASE I SUBSURFACE SOIL DATA

RCRA METAL									
	SHORT ID --------->	IMSB-4 (1-5')		IMSB-4 (5-10')		IMSB-5 (1-5')		IMSB-5 (5-10')	
	ORIGINAL ID ----->	IM-SB-04-1		IM-SB-04-2		IM-SB-05-1		IM-SB-05-2	
	SAMPLE DATE ----->	04/09/93		04/09/93		04/09/93		04/09/93	
	DATE ANALYZED --->	04/19/93		04/19/93		04/19/93		04/19/93	
	MATRIX ---------->	Soil		Soil		Soil		Soil	
	UNITS ---------->	MG/KG		MG/KG		MG/KG		MG/KG	
CAS #	Parameter	ES1	VAL	ES1	VAL	ES1	VAL	ES1	VAL
7440-38-2	Arsenic (As)	8.6		8.5		9.6		7.2	
7440-39-3	Barium (Ba)	130.		156.		146.		122.	
7440-43-9	Cadmium (Cd)	0.37	U	0.38	U	0.36	U	0.37	U
7440-47-3	Chromium (Cr)	13.8		16.9		12.		11.7	
7439-92-1	Lead (Pb)	9.8		13.		11.4		9.7	
7439-97-6	Mercury (Hg)	0.11	U	0.12	U	0.1	U	0.12	U
7782-49-2	Selenium (Se)	0.12	U	0.29		0.18		0.2	
7440-22-4	Silver (Ag)	0.86	U	0.88	U	0.85	U	0.87	U

*** Validation Complete ***

CEDAR CHEMICAL CORPORATION
WEST HELENA, ARKANSAS
SITE 2 PHASE I SUBSURFACE SOIL DATA

SVOA	SHORT ID -------->	IMSB-1 (1-3')		IMSB-1 (3-8')		IMSB-1 (8-12')		IMSB-2 (1-5')		IMSB-2 (5-10')		IMSB-2 (10-15')	
	ORIGINAL ID ------>	IM-SB-01-1		IM-SB-01-2		IM-SB-01-3		IM-SB-02-1		IM-SB-02-2		IM-SB-02-3	
	SAMPLE DATE ----->	04/08/93		04/08/93		04/08/93		04/08/93		04/08/93		04/08/93	
	DATE ANALYZED --->	04/20/93		04/22/93		04/20/93		04/20/93		04/20/93		04/21/93	
	MATRIX ---------->	Soil		Soil		Soil		Soil		Soil		Soil	
	UNITS ---------->	UG/KG		UG/L		UG/KG		UG/KG		UG/KG		UG/KG	
CAS #	Parameter	ES1	VAL	ES1	VAL	ES1	VAL	ES1	VAL	ES1	VAL	ES1	VAL
100-01-6	4-Nitroaniline	4000.	U	4100.	U	4300.	U	4400.	U	4200.	U	4300.	U
100-02-7	4-Nitrophenol	4000.	U	4100.	U	4300.	U	4400.	U	4200.	U	4300.	U
100-51-6	Benzyl alcohol	1600.	U	1600.	U	1700.	U	1700.	U	1700.	U	1700.	U
101-55-3	4-Bromophenyl-phenylether	800.	U	820.	U	860.	U	880.	U	850.	U	850.	U
105-67-9	2,4-Dimethylphenol	800.	U	820.	U	860.	U	880.	U	850.	U	850.	U
106-44-5	4-Methylphenol (p-Cresol)	800.	U	820.	U	860.	U	880.	U	850.	U	850.	U
106-46-7	1,4-Dichlorobenzene	800.	U	820.	U	860.	U	880.	U	850.	U	850.	U
106-47-8	4-Chloroaniline	1600.	U	1600.	U	1700.	U	1700.	U	1700.	U	1700.	U
108-60-1	bis(2-chloroisopropyl) ether	800.	U	820.	U	860.	U	880.	U	850.	U	850.	U
108-95-2	Phenol	800.	U	820.	U	860.	U	880.	U	850.	U	850.	U
111-44-4	bis(2-Chloroethyl)ether	800.	U	820.	U	860.	U	880.	U	850.	U	850.	U
111-91-1	bis(2-Chloroethoxy)methane	800.	U	820.	U	860.	U	880.	U	850.	U	850.	U
117-81-7	bis(2-Ethylhexyl)phthalate (BEHP)	800.	U	820.	U	860.	U	880.	U	850.	U	850.	U
117-84-0	Di-n-octylphthalate	800.	U	820.	U	860.	U	880.	U	850.	U	850.	U
118-74-1	Hexachlorobenzene	800.	U	820.	U	860.	U	880.	U	850.	U	850.	U
120-12-7	Anthracene	800.	U	820.	U	860.	U	880.	U	850.	U	850.	U
120-82-1	1,2,4-Trichlorobenzene	800.	U	820.	U	860.	U	880.	U	850.	U	850.	U
120-83-2	2,4-Dichlorophenol	800.	U	820.	U	860.	U	880.	U	850.	U	850.	U
121-14-2	2,4-Dinitrotoluene	800.	U	820.	U	860.	U	880.	U	850.	U	850.	U
129-00-0	Pyrene	800.	U	820.	U	860.	U	880.	U	850.	U	850.	U
131-11-3	Dimethylphthalate	800.	U	820.	U	860.	U	880.	U	850.	U	850.	U
132-64-9	Dibenzofuran	800.	U	820.	U	860.	U	880.	U	850.	U	850.	U
191-24-2	Benzo(g,h,i)perylene	800.	U	820.	U	860.	U	880.	U	850.	U	850.	U
193-39-5	Indeno(1,2,3-cd)pyrene	800.	U	820.	U	860.	U	880.	U	850.	U	850.	U
205-99-2	Benzo(b)fluoranthene	800.	U	820.	U	860.	U	880.	U	850.	U	850.	U
206-44-0	Fluoranthene	800.	U	820.	U	860.	U	880.	U	850.	U	850.	U
207-08-9	Benzo(k)fluoranthene	800.	U	820.	U	860.	U	880.	U	850.	U	850.	U
208-96-8	Acenaphthylene	800.	U	820.	U	860.	U	880.	U	850.	U	850.	U
218-01-9	Chrysene	800.	U	820.	U	860.	U	880.	U	850.	U	850.	U
50-32-8	Benzo(a)pyrene	800.	U	820.	U	860.	U	880.	U	850.	U	850.	U
51-28-5	2,4-Dinitrophenol	4000.	U	4100.	U	4300.	U	4400.	U	4200.	U	4300.	U
534-52-1	4,6-Dinitro-2-methylphenol	4000.	U	4100.	U	4300.	U	4400.	U	4200.	U	4300.	U
53-70-3	Dibenz(a,h)anthracene	800.	U	820.	U	860.	U	880.	U	850.	U	850.	U
541-73-1	1,3-Dichlorobenzene	800.	U	820.	U	860.	U	880.	U	850.	U	850.	U
56-55-3	Benzo(a)anthracene	800.	U	820.	U	860.	U	880.	U	850.	U	850.	U
59-50-7	4-Chloro-3-methylphenol	1600.	U	1600.	U	1700.	U	1700.	U	1700.	U	1700.	U
606-20-2	2,6-Dinitrotoluene	800.	U	820.	U	860.	U	880.	U	850.	U	850.	U
621-64-7	N-Nitroso-di-n-propylamine	800.	U	820.	U	860.	U	880.	U	850.	U	850.	U
65-85-0	Benzoic acid	4000.	U	4100.	U	4300.	U	4400.	U	4200.	U	4300.	U

*** Validation Complete ***

CEDAR CHEMICAL CORPORATION
WEST HELENA, ARKANSAS
SITE 2 PHASE I SUBSURFACE SOIL DATA

SVOA	SHORT ID -------->	IMSB-1 (1-3')		IMSB-1 (3-8')		IMSB-1 (8-12')		IMSB-2 (1-5')		IMSB-2 (5-10')		IMSB-2 (10-15')	
	ORIGINAL ID ----->	IM-SB-01-1		IM-SB-01-2		IM-SB-01-3		IM-SB-02-1		IM-SB-02-2		IM-SB-02-3	
	SAMPLE DATE ----->	04/08/93		04/08/93		04/08/93		04/08/93		04/08/93		04/08/93	
	DATE ANALYZED --->	04/20/93		04/22/93		04/20/93		04/20/93		04/20/93		04/21/93	
	MATRIX ---------->	Soil		Soil		Soil		Soil		Soil		Soil	
	UNITS ---------->	UG/KG		UG/L		UG/KG		UG/KG		UG/KG		UG/KG	
CAS #	Parameter	ES1	VAL	ES1	VAL	ES1	VAL	ES1	VAL	ES1	VAL	ES1	VAL
67-72-1	Hexachloroethane	800.	U	820.	U	860.	U	880.	U	850.	U	850.	U
7005-72-3	4-Chlorophenyl-phenylether	800.	U	820.	U	860.	U	880.	U	850.	U	850.	U
709-98-8	Propanil	4000.	U	4100.	U	4300.	U	4400.	U	4200.	U	8800.	
77-47-4	Hexachlorocyclopentadiene	800.	U	820.	U	860.	U	880.	U	850.	U	850.	U
78-59-1	Isophorone	800.	U	820.	U	860.	U	880.	U	850.	U	850.	U
83-32-9	Acenaphthene	800.	U	820.	U	860.	U	880.	U	850.	U	850.	U
84-66-2	Diethylphthalate	800.	U	820.	U	860.	U	880.	U	850.	U	850.	U
84-74-2	Di-n-butylphthalate	800.	U	820.	U	860.	U	880.	U	850.	U	850.	U
85-01-8	Phenanthrene	800.	U	820.	U	860.	U	880.	U	850.	U	850.	U
85-68-7	Butylbenzylphthalate	800.	U	820.	U	860.	U	880.	U	850.	U	850.	U
86-30-6	N-Nitrosodiphenylamine	800.	U	820.	U	860.	U	880.	U	850.	U	850.	U
86-73-7	Fluorene	800.	U	820.	U	860.	U	880.	U	850.	U	850.	U
87-68-3	Hexachlorobutadiene	800.	U	820.	U	860.	U	880.	U	850.	U	850.	U
87-86-5	Pentachlorophenol	4000.	U	4100.	U	4300.	U	4400.	U	4200.	U	4300.	U
88-06-2	2,4,6-Trichlorophenol	800.	U	820.	U	860.	U	880.	U	850.	U	850.	U
88-74-4	2-Nitroaniline	4000.	U	4100.	U	4300.	U	4400.	U	4200.	U	4300.	U
88-75-5	2-Nitrophenol	800.	U	820.	U	860.	U	880.	U	850.	U	850.	U
88-85-7	Dinoseb	1600.	U	63000.		1700.	U	1700.	U	2900.		1700.	U
91-20-3	Naphthalene	800.	U	820.	U	860.	U	880.	U	850.	U	850.	U
91-57-6	2-Methylnaphthalene	800.	U	820.	U	860.	U	880.	U	850.	U	850.	U
91-58-7	2-Chloronaphthalene	800.	U	820.	U	860.	U	880.	U	850.	U	850.	U
91-94-1	3,3'-Dichlorobenzidine	1600.	U	1600.	U	1700.	U	1700.	U	1700.	U	1700.	U
95-48-7	2-Methylphenol (o-Cresol)	800.	U	820.	U	860.	U	880.	U	850.	U	850.	U
95-50-1	1,2-Dichlorobenzene	800.	U	820.	U	860.	U	880.	U	850.	U	850.	U
95-57-8	2-Chlorophenol	800.	U	820.	U	860.	U	880.	U	850.	U	850.	U
95-76-1	3,4-Dichloroaniline	1600.	U	1600.	U	1700.	U	1700.	U	6700.		1700.	U
95-95-4	2,4,5-Trichlorophenol	800.	U	820.	U	860.	U	880.	U	850.	U	850.	U
98-95-3	Nitrobenzene	800.	U	820.	U	860.	U	880.	U	850.	U	850.	U
99-09-2	3-Nitroaniline	4000.	U	4100.	U	4300.	U	4400.	U	4200.	U	4300.	U

*** Validation Complete ***

CEDAR CHEMICAL CORPORATION
WEST HELENA, ARKANSAS
SITE 2 PHASE I SUBSURFACE SOIL DATA

SVOA	SHORT ID -------->	IMSB-3 (1-5')		IMSB-3 (5-10')		IMSB-3 (10-15')		IMSB-4 (1-5')		IMSB-4 (5-10')		IMSB-4 (10-15')	
	ORIGINAL ID ----->	IM-SB-03-1		IM-SB-03-2		IM-SB-03-3		IM-SB-04-1		IM-SB-04-2		IMSB043	
	SAMPLE DATE ----->	04/09/93		04/09/93		04/09/93		04/09/93		04/09/93		04/09/93	
	DATE ANALYZED --->	04/22/93		04/21/93		04/21/93		04/22/93		04/22/93		04/21/93	
	MATRIX ---------->	Soil		Soil		Soil		Soil		Soil		Soil	
	UNITS ----------->	UG/KG		UG/KG		UG/KG		UG/KG		UG/KG		UG/KG	
CAS #	Parameter	ES1	VAL	ES1	VAL	ES1	VAL	ES1	VAL	ES1	VAL	ES1	VAL
100-01-6	4-Nitroaniline	4000.	U	4100.	U	4200.	U	4200.	U	4200.	U	4300.	U
100-02-7	4-Nitrophenol	4000.	U	4100.	U	4200.	U	4200.	U	4200.	U	4300.	U
100-51-6	Benzyl alcohol	1600.	U	1600.	U	1700.	U	1600.	U	1600.	U	1700.	U
101-55-3	4-Bromophenyl-phenylether	800.	U	820.	U	850.	U	840.	U	840.	U	850.	U
105-67-9	2,4-Dimethylphenol	800.	U	820.	U	850.	U	840.	U	840.	U	850.	U
106-44-5	4-Methylphenol (p-Cresol)	800.	U	820.	U	850.	U	840.	U	840.	U	850.	U
106-46-7	1,4-Dichlorobenzene	800.	U	820.	U	850.	U	840.	U	840.	U	850.	U
106-47-8	4-Chloroaniline	1600.	U	1600.	U	1700.	U	1600.	U	1600.	U	1700.	U
108-60-1	bis(2-chloroisopropyl) ether	800.	U	820.	U	850.	U	840.	U	840.	U	850.	U
108-95-2	Phenol	800.	U	1000.		850.	U	840.	U	840.	U	850.	U
111-44-4	bis(2-Chloroethyl)ether	800.	U	820.	U	850.	U	840.	U	840.	U	850.	U
111-91-1	bis(2-Chloroethoxy)methane	800.	U	820.	U	850.	U	840.	U	840.	U	850.	U
117-81-7	bis(2-Ethylhexyl)phthalate (BEHP)	800.	U	820.	U	850.	U	840.	U	840.	U	850.	U
117-84-0	Di-n-octylphthalate	800.	U	820.	U	850.	U	840.	U	840.	U	850.	U
118-74-1	Hexachlorobenzene	800.	U	820.	U	850.	U	840.	U	840.	U	850.	U
120-12-7	Anthracene	800.	U	820.	U	850.	U	840.	U	840.	U	850.	U
120-82-1	1,2,4-Trichlorobenzene	800.	U	820.	U	850.	U	840.	U	840.	U	850.	U
120-83-2	2,4-Dichlorophenol	800.	U	820.	U	850.	U	840.	U	840.	U	850.	U
121-14-2	2,4-Dinitrotoluene	800.	U	820.	U	850.	U	840.	U	840.	U	850.	U
129-00-0	Pyrene	800.	U	820.	U	850.	U	840.	U	840.	U	850.	U
131-11-3	Dimethylphthalate	800.	U	820.	U	850.	U	840.	U	840.	U	850.	U
132-64-9	Dibenzofuran	800.	U	820.	U	850.	U	840.	U	840.	U	850.	U
191-24-2	Benzo(g,h,i)perylene	800.	U	820.	U	850.	U	840.	U	840.	U	850.	U
193-39-5	Indeno(1,2,3-cd)pyrene	800.	U	820.	U	850.	U	840.	U	840.	U	850.	U
205-99-2	Benzo(b)fluoranthene	800.	U	820.	U	850.	U	840.	U	840.	U	850.	U
206-44-0	Fluoranthene	800.	U	820.	U	850.	U	840.	U	840.	U	850.	U
207-08-9	Benzo(k)fluoranthene	800.	U	820.	U	850.	U	840.	U	840.	U	850.	U
208-96-8	Acenaphthylene	800.	U	820.	U	850.	U	840.	U	840.	U	850.	U
218-01-9	Chrysene	800.	U	820.	U	850.	U	840.	U	840.	U	850.	U
50-32-8	Benzo(a)pyrene	800.	U	820.	U	850.	U	840.	U	840.	U	850.	U
51-28-5	2,4-Dinitrophenol	4000.	U	4100.	U	4200.	U	4200.	U	4200.	U	4300.	U
534-52-1	4,6-Dinitro-2-methylphenol	4000.	U	4100.	U	4200.	U	4200.	U	4200.	U	4300.	U
53-70-3	Dibenz(a,h)anthracene	800.	U	820.	U	850.	U	840.	U	840.	U	850.	U
541-73-1	1,3-Dichlorobenzene	800.	U	820.	U	850.	U	840.	U	840.	U	850.	U
56-55-3	Benzo(a)anthracene	800.	U	820.	U	850.	U	840.	U	840.	U	850.	U
59-50-7	4-Chloro-3-methylphenol	1600.	U	1600.	U	1700.	U	1600.	U	1600.	U	1700.	U
606-20-2	2,6-Dinitrotoluene	800.	U	820.	U	850.	U	840.	U	840.	U	850.	U
621-64-7	N-Nitroso-di-n-propylamine	800.	U	820.	U	850.	U	840.	U	840.	U	850.	U
65-85-0	Benzoic acid	4000.	U	4100.	U	4200.	U	4200.	U	4200.	U	4300.	U

*** Validation Complete ***

CEDAR CHEMICAL CORPORATION
WEST HELENA, ARKANSAS
SITE 2 PHASE I SUBSURFACE SOIL DATA

SVOA	SHORT ID --------->	IMSB-3 (1-5')		IMSB-3 (5-10')		IMSB-3 (10-15')		IMSB-4 (1-5')		IMSB-4 (5-10')		IMSB-4 (10-15')	
	ORIGINAL ID ----->	IM-SB-03-1		IM-SB-03-2		IM-SB-03-3		IM-SB-04-1		IM-SB-04-2		IMSB043	
	SAMPLE DATE ----->	04/09/93		04/09/93		04/09/93		04/09/93		04/09/93		04/09/93	
	DATE ANALYZED --->	04/22/93		04/21/93		04/21/93		04/22/93		04/22/93		04/21/93	
	MATRIX ---------->	Soil		Soil		Soil		Soil		Soil		Soil	
	UNITS ---------->	UG/KG		UG/KG		UG/KG		UG/KG		UG/KG		UG/KG	
CAS #	Parameter	ES1	VAL	ES1	VAL	ES1	VAL	ES1	VAL	ES1	VAL	ES1	VAL
67-72-1	Hexachloroethane	800.	U	820.	U	850.	U	840.	U	840.	U	850.	U
7005-72-3	4-Chlorophenyl-phenylether	800.	U	820.	U	850.	U	840.	U	840.	U	850.	U
709-98-8	Propanil	4000.	U	4100.	U	4200.	U	4200.	U	4200.	U	4300.	U
77-47-4	Hexachlorocyclopentadiene	800.	U	820.	U	850.	U	840.	U	840.	U	850.	U
78-59-1	Isophorone	800.	U	820.	U	850.	U	840.	U	840.	U	850.	U
83-32-9	Acenaphthene	800.	U	820.	U	850.	U	840.	U	840.	U	850.	U
84-66-2	Diethylphthalate	800.	U	820.	U	850.	U	840.	U	840.	U	850.	U
84-74-2	Di-n-butylphthalate	800.	U	820.	U	850.	U	840.	U	840.	U	850.	U
85-01-8	Phenanthrene	800.	U	820.	U	850.	U	840.	U	840.	U	850.	U
85-68-7	Butylbenzylphthalate	800.	U	820.	U	850.	U	840.	U	840.	U	850.	U
86-30-6	N-Nitrosodiphenylamine	800.	U	820.	U	850.	U	840.	U	840.	U	850.	U
86-73-7	Fluorene	800.	U	820.	U	850.	U	840.	U	840.	U	850.	U
87-68-3	Hexachlorobutadiene	800.	U	820.	U	850.	U	840.	U	840.	U	850.	U
87-86-5	Pentachlorophenol	4000.	U	4100.	U	4200.	U	4200.	U	4200.	U	4300.	U
88-06-2	2,4,6-Trichlorophenol	800.	U	820.	U	850.	U	840.	U	840.	U	850.	U
88-74-4	2-Nitroaniline	4000.	U	4100.	U	4200.	U	4200.	U	4200.	U	4300.	U
88-75-5	2-Nitrophenol	800.	U	820.	U	850.	U	840.	U	840.	U	850.	U
88-85-7	Dinoseb	1600.	U	12000.		1700.	U	1600.	U	1600.	U	1700.	U
91-20-3	Naphthalene	800.	U	820.	U	850.	U	840.	U	840.	U	850.	U
91-57-6	2-Methylnaphthalene	800.	U	820.	U	850.	U	840.	U	840.	U	850.	U
91-58-7	2-Chloronaphthalene	800.	U	820.	U	850.	U	840.	U	840.	U	850.	U
91-94-1	3,3'-Dichlorobenzidine	1600.	U	1600.	U	1700.	U	1600.	U	1600.	U	1700.	U
95-48-7	2-Methylphenol (o-Cresol)	800.	U	820.	U	850.	U	840.	U	840.	U	850.	U
95-50-1	1,2-Dichlorobenzene	800.	U	820.	U	850.	U	840.	U	840.	U	850.	U
95-57-8	2-Chlorophenol	800.	U	820.	U	850.	U	840.	U	840.	U	850.	U
95-76-1	3,4-Dichloroaniline	1600.	U	2600.		1700.	U	1600.	U	1600.	U	1700.	U
95-95-4	2,4,5-Trichlorophenol	800.	U	820.	U	850.	U	840.	U	840.	U	850.	U
98-95-3	Nitrobenzene	800.	U	820.	U	850.	U	840.	U	840.	U	850.	U
99-09-2	3-Nitroaniline	4000.	U	4100.	U	4200.	U	4200.	U	4200.	U	4300.	U

*** Validation Complete ***

CEDAR CHEMICAL CORPORATION
WEST HELENA, ARKANSAS
SITE 2 PHASE I SUBSURFACE SOIL DATA

SVOA	SHORT ID -------->	IMSB-5 (1-5')		IMSB-5 (5-10')		IMSB-5 (10-15')	
	ORIGINAL ID ----->	IM-SB-05-1		IM-SB-05-2		IM-SB-05-3	
	SAMPLE DATE ----->	04/09/93		04/09/93		04/09/93	
	DATE ANALYZED --->	04/23/93		04/22/93		04/22/93	
	MATRIX ---------->	Soil		Soil		Soil	
	UNITS ---------->	UG/KG		UG/KG		UG/KG	
CAS #	Parameter	ES1	VAL	ES1	VAL	ES1	VAL
100-01-6	4-Nitroaniline	4100.	U	4200.	U	4200.	U
100-02-7	4-Nitrophenol	4100.	U	4200.	U	4200.	U
100-51-6	Benzyl alcohol	1600.	U	1600.	U	1600.	U
101-55-3	4-Bromophenyl-phenylether	810.	U	830.	U	830.	U
105-67-9	2,4-Dimethylphenol	810.	U	830.	U	830.	U
106-44-5	4-Methylphenol (p-Cresol)	810.	U	830.	U	830.	U
106-46-7	1,4-Dichlorobenzene	810.	U	830.	U	830.	U
106-47-8	4-Chloroaniline	1600.	U	1600.	U	1600.	U
108-60-1	bis(2-chloroisopropyl) ether	810.	U	830.	U	830.	U
108-95-2	Phenol	810.	U	830.	U	830.	U
111-44-4	bis(2-Chloroethyl)ether	810.	U	830.	U	830.	U
111-91-1	bis(2-Chloroethoxy)methane	810.	U	830.	U	830.	U
117-81-7	bis(2-Ethylhexyl)phthalate (BEHP)	810.	U	830.	U	830.	U
117-84-0	Di-n-octylphthalate	810.	U	830.	U	830.	U
118-74-1	Hexachlorobenzene	810.	U	830.	U	830.	U
120-12-7	Anthracene	810.	U	830.	U	830.	U
120-82-1	1,2,4-Trichlorobenzene	810.	U	830.	U	830.	U
120-83-2	2,4-Dichlorophenol	810.	U	830.	U	830.	U
121-14-2	2,4-Dinitrotoluene	810.	U	830.	U	830.	U
129-00-0	Pyrene	810.	U	830.	U	830.	U
131-11-3	Dimethylphthalate	810.	U	830.	U	830.	U
132-64-9	Dibenzofuran	810.	U	830.	U	830.	U
191-24-2	Benzo(g,h,i)perylene	810.	U	830.	U	830.	U
193-39-5	Indeno(1,2,3-cd)pyrene	810.	U	830.	U	830.	U
205-99-2	Benzo(b)fluoranthene	810.	U	830.	U	830.	U
206-44-0	Fluoranthene	810.	U	830.	U	830.	U
207-08-9	Benzo(k)fluoranthene	810.	U	830.	U	830.	U
208-96-8	Acenaphthylene	810.	U	830.	U	830.	U
218-01-9	Chrysene	810.	U	830.	U	830.	U
50-32-8	Benzo(a)pyrene	810.	U	830.	U	830.	U
51-28-5	2,4-Dinitrophenol	4100.	U	4200.	U	4200.	U
534-52-1	4,6-Dinitro-2-methylphenol	4100.	U	4200.	U	4200.	U
53-70-3	Dibenz(a,h)anthracene	810.	U	830.	U	830.	U
541-73-1	1,3-Dichlorobenzene	810.	U	830.	U	830.	U
56-55-3	Benzo(a)anthracene	810.	U	830.	U	830.	U
59-50-7	4-Chloro-3-methylphenol	1600.	U	1600.	U	1600.	U
606-20-2	2,6-Dinitrotoluene	810.	U	830.	U	830.	U
621-64-7	N-Nitroso-di-n-propylamine	810.	U	830.	U	830.	U
65-85-0	Benzoic acid	4100.	U	4200.	U	4200.	U

*** Validation Complete ***

CEDAR CHEMICAL CORPORATION
WEST HELENA, ARKANSAS
SITE 2 PHASE I SUBSURFACE SOIL DATA

SVOA											
	SHORT ID -------->	IMSB-5 (1-5')		IMSB-5 (5-10')		IMSB-5 (10-15')					
	ORIGINAL ID ----->	IM-SB-05-1		IM-SB-05-2		IM-SB-05-3					
	SAMPLE DATE ----->	04/09/93		04/09/93		04/09/93					
	DATE ANALYZED --->	04/23/93		04/22/93		04/22/93					
	MATRIX ---------->	Soil		Soil		Soil					
	UNITS ----------->	UG/KG		UG/KG		UG/KG					
CAS #	Parameter	ES1	VAL	ES1	VAL	ES1	VAL				
67-72-1	Hexachloroethane	810.	U	830.	U	830.	U				
7005-72-3	4-Chlorophenyl-phenylether	810.	U	830.	U	830.	U				
709-98-8	Propanil	4100.	U	4200.	U	4200.	U				
77-47-4	Hexachlorocyclopentadiene	810.	U	830.	U	830.	U				
78-59-1	Isophorone	810.	U	830.	U	830.	U				
83-32-9	Acenaphthene	810.	U	830.	U	830.	U				
84-66-2	Diethylphthalate	810.	U	830.	U	830.	U				
84-74-2	Di-n-butylphthalate	810.	U	830.	U	830.	U				
85-01-8	Phenanthrene	810.	U	830.	U	830.	U				
85-68-7	Butylbenzylphthalate	810.	U	830.	U	830.	U				
86-30-6	N-Nitrosodiphenylamine	810.	U	830.	U	830.	U				
86-73-7	Fluorene	810.	U	830.	U	830.	U				
87-68-3	Hexachlorobutadiene	810.	U	830.	U	830.	U				
87-86-5	Pentachlorophenol	4100.	U	4200.	U	4200.	U				
88-06-2	2,4,6-Trichlorophenol	810.	U	830.	U	830.	U				
88-74-4	2-Nitroaniline	4100.	U	4200.	U	4200.	U				
88-75-5	2-Nitrophenol	810.	U	830.	U	1600.	U				
88-85-7	Dinoseb	1600.	U	1600.	U	830.	U				
91-20-3	Naphthalene	810.	U	830.	U	830.	U				
91-57-6	2-Methylnaphthalene	810.	U	830.	U	830.	U				
91-58-7	2-Chloronaphthalene	810.	U	830.	U	830.	U				
91-94-1	3,3'-Dichlorobenzidine	1600.	U	1600.	U	1600.	U				
95-48-7	2-Methylphenol (o-Cresol)	810.	U	830.	U	830.	U				
95-50-1	1,2-Dichlorobenzene	810.	U	830.	U	830.	U				
95-57-8	2-Chlorophenol	810.	U	830.	U	830.	U				
95-76-1	3,4-Dichloroaniline	1600.	U	1600.	U	1600.	U				
95-95-4	2,4,5-Trichlorophenol	810.	U	830.	U	830.	U				
98-95-3	Nitrobenzene	810.	U	830.	U	830.	U				
99-09-2	3-Nitroaniline	4100.	U	4200.	U	4200.	U				

*** Validation Complete ***

CEDAR CHEMICAL CORPORATION
WEST HELENA, ARKANSAS
SITE 2 PHASE I SUBSURFACE SOIL DATA

VOA																					
	SHORT ID -------->	IMSB-1 (1-3')		IMSB-1 (3-8')		IMSB-2 (1-5')		IMSB-2 (5-10')		IMSB-2 (10-15')		IMSB-3 (1-5')									
	ORIGINAL ID ----->	IM-SB-01-1		IM-SB-01-2		IM-SB-02-1		IM-SB-02-2		IM-SB-02-3		IM-SB-03-1									
	SAMPLE DATE ----->	04/08/93		04/08/93		04/08/93		04/08/93		04/08/93		04/09/93									
	DATE ANALYZED --->	04/15/93		04/15/93		04/15/93		04/15/93		04/22/93		04/15/93									
	MATRIX ---------->	Soil		Soil		Soil		Soil		Soil		Soil									
	UNITS ---------->	UG/KG		UG/KG		UG/KG		UG/KG		UG/KG		UG/KG									
CAS #	Parameter	ES1	VAL	ES1	VAL	ES1	VAL	ES1	VAL	ES1	VAL	ES1	VAL								
100-41-4	Ethylbenzene	6.	U	6.	U	7.	U	7.	U	7.	U	6.	U								
100-42-5	Styrene	6.	U	6.	U	7.	U	7.	U	7.	U	6.	U								
10061-01-5	cis-1,3-Dichloropropene	6.	U	6.	U	7.	U	7.	U	7.	U	6.	U								
10061-02-6	trans-1,3-Dichloropropene	6.	U	6.	U	7.	U	7.	U	7.	U	6.	U								
107-06-2	1,2-Dichloroethane	6.	U	6.	U	7.	U	7.	U	10.		6.	U								
108-05-4	Vinyl acetate	60.	U	62.	U	65.	U	65.	U	68.	U	61.	U								
108-10-1	4-Methyl-2-Pentanone (MIBK)	60.	U	62.	U	65.	U	65.	U	68.	U	61.	U								
108-88-3	Toluene	6.	U	6.	U	7.	U	9.		7.	U	6.	U								
108-90-7	Chlorobenzene	6.	U	6.	U	7.	U	7.	U	7.	U	6.	U								
124-48-1	Dibromochloromethane	6.	U	6.	U	7.	U	7.	U	7.	U	6.	U								
127-18-4	Tetrachloroethene	6.	U	6.	U	7.	U	7.	U	7.	U	6.	U								
1330-20-7	Xylene (total)	6.	U	6.	U	7.	U	7.	U	7.	U	6.	U								
540-59-0	1,2-Dichloroethene (total)	6.	U	6.	U	7.	U	7.	U	7.	U	6.	U								
56-23-5	Carbon tetrachloride	6.	U	6.	U	7.	U	7.	U	7.	U	6.	U								
591-78-6	2-Hexanone	60.	U	62.	U	65.	U	65.	U	68.	U	61.	U								
67-64-1	Acetone	120.	U	200.		240.		320.		140.	U	120.	U								
67-66-3	Chloroform	6.	U	6.	U	7.	U	7.	U	7.	U	6.	U								
71-43-2	Benzene	6.	U	6.	U	7.	U	7.	U	7.	U	6.	U								
71-55-6	1,1,1-Trichloroethane	6.	U	6.	U	7.	U	7.	U	7.	U	6.	U								
74-83-9	Bromomethane	12.	U	12.	U	13.	U	13.	U	14.	U	12.	U								
74-87-3	Chloromethane	12.	U	12.	U	13.	U	13.	U	14.	U	12.	U								
75-00-3	Chloroethane	12.	U	12.	U	13.	U	13.	U	14.	U	12.	U								
75-01-4	Vinyl chloride	12.	U	12.	U	13.	U	13.	U	14.	U	12.	U								
75-09-2	Methylene chloride	6.	U	6.	U	7.	U	7.	U	66.		6.	U								
75-15-0	Carbon disulfide	120.	U	120.	U	130.	U	130.	U	140.	U	120.	U								
75-25-2	Bromoform	6.	U	6.	U	7.	U	7.	U	7.	U	6.	U								
75-27-4	Bromodichloromethane	6.	U	6.	U	7.	U	7.	U	7.	U	6.	U								
75-34-3	1,1-Dichloroethane	6.	U	6.	U	7.	U	7.	U	7.	U	6.	U								
75-35-4	1,1-Dichloroethene	6.	U	6.	U	7.	U	7.	U	7.	U	6.	U								
78-87-5	1,2-Dichloropropane	6.	U	6.	U	7.	U	7.	U	7.	U	6.	U								
78-93-3	2-Butanone (MEK)	120.	U	120.	U	130.	U	130.	U	140.	U	120.	U								
79-00-5	1,1,2-Trichloroethane	6.	U	6.	U	7.	U	7.	U	7.	U	6.	U								
79-01-6	Trichloroethene	6.	U	6.	U	7.	U	7.	U	7.	U	6.	U								
79-34-5	1,1,2,2-Tetrachloroethane	6.	U	6.	U	7.	U	7.	U	7.	U	6.	U								

*** Validation Complete ***

CEDAR CHEMICAL CORPORATION
WEST HELENA, ARKANSAS
SITE 2 PHASE I SUBSURFACE SOIL DATA

VOA																					
	SHORT ID -------->	IMSB-3 (5-10')		IMSB-4 (1-5')		IMSB-4 (5-10')		IMSB-5 (1-5')		IMSB-5 (5-10')											
	ORIGINAL ID ----->	IM-SB-03-2		IM-SB-04-1		IM-SB-04-2		IM-SB-05-1		IM-SB-05-2											
	SAMPLE DATE ----->	04/09/93		04/09/93		04/09/93		04/09/93		04/09/93											
	DATE ANALYZED --->	04/15/93		04/15/93		04/15/93		04/15/93		04/15/93											
	MATRIX ---------->	Soil		Soil		Soil		Soil		Soil											
	UNITS ----------->	UG/KG		UG/KG		UG/KG		UG/KG		UG/KG											
CAS #	Parameter	ES1	VAL	ES1	VAL	ES1	VAL	ES1	VAL	ES1	VAL										
100-41-4	Ethylbenzene	6.	U	6.	U	6.	U	6.	U	6.	U										
100-42-5	Styrene	6.	U	6.	U	6.	U	6.	U	6.	U										
10061-01-5	cis-1,3-Dichloropropene	6.	U	6.	U	6.	U	6.	U	6.	U										
10061-02-6	trans-1,3-Dichloropropene	6.	U	6.	U	6.	U	6.	U	6.	U										
107-06-2	1,2-Dichloroethane	6.	U	6.	U	6.	U	6.	U	6.	U										
108-05-4	Vinyl acetate	62.	U	60.	U	63.	U	62.	U	65.	U										
108-10-1	4-Methyl-2-Pentanone (MIBK)	62.	U	60.	U	63.	U	62.	U	65.	U										
108-88-3	Toluene	6.	U	6.	U	6.	U	6.	U	6.	U										
108-90-7	Chlorobenzene	6.	U	6.	U	6.	U	6.	U	6.	U										
124-48-1	Dibromochloromethane	6.	U	6.	U	6.	U	6.	U	6.	U										
127-18-4	Tetrachloroethene	6.	U	6.	U	6.	U	6.	U	6.	U										
1330-20-7	Xylene (total)	6.	U	6.	U	6.	U	6.	U	6.	U										
540-59-0	1,2-Dichloroethene (total)	6.	U	6.	U	6.	U	6.	U	6.	U										
56-23-5	Carbon tetrachloride	6.	U	6.	U	6.	U	6.	U	6.	U										
591-78-6	2-Hexanone	62.	U	60.	U	63.	U	62.	U	65.	U										
67-64-1	Acetone	120.	U	120.	U	130.	U	120.	U	130.	U										
67-66-3	Chloroform	6.	U	6.	U	6.	U	6.	U	6.	U										
71-43-2	Benzene	6.	U	6.	U	6.	U	6.	U	6.	U										
71-55-6	1,1,1-Trichloroethane	6.	U	6.	U	6.	U	6.	U	6.	U										
74-83-9	Bromomethane	12.	U	12.	U	13.	U	12.	U	13.	U										
74-87-3	Chloromethane	12.	U	12.	U	13.	U	12.	U	13.	U										
75-00-3	Chloroethane	12.	U	12.	U	13.	U	12.	U	13.	U										
75-01-4	Vinyl chloride	12.	U	12.	U	13.	U	12.	U	13.	U										
75-09-2	Methylene chloride	12.		6.	U	6.	U	6.	U	6.	U										
75-15-0	Carbon disulfide	120.	U	120.	U	130.	U	120.	U	130.	U										
75-25-2	Bromoform	6.	U	6.	U	6.	U	6.	U	6.	U										
75-27-4	Bromodichloromethane	6.	U	6.	U	6.	U	6.	U	6.	U										
75-34-3	1,1-Dichloroethane	6.	U	6.	U	6.	U	6.	U	6.	U										
75-35-4	1,1-Dichloroethene	6.	U	6.	U	6.	U	6.	U	6.	U										
78-87-5	1,2-Dichloropropane	6.	U	6.	U	6.	U	6.	U	6.	U										
78-93-3	2-Butanone (MEK)	120.	U	120.	U	130.	U	120.	U	130.	U										
79-00-5	1,1,2-Trichloroethane	6.	U	6.	U	6.	U	6.	U	6.	U										
79-01-6	Trichloroethene	6.	U	6.	U	6.	U	6.	U	6.	U										
79-34-5	1,1,2,2-Tetrachloroethane	6.	U	6.	U	6.	U	6.	U	6.	U										

*** Validation Complete ***

CEDAR CHEMICAL CORPORATION
WEST HELENA, ARKANSAS
SITE 2 PHASE II SURFACE SOIL DATA

ARSENIC	SHORT ID --------->	2MW-5 (0-1')	2MW-7 (0-5')	2HA-10 (0-1')	2SB-13 (0-2')		
	ORIGINAL ID ----->	002S000501	002S000701	002S001001	002S001301		
	SAMPLE DATE ----->	11/30/94	12/09/94	11/30/94	12/06/94		
	DATE EXTRACTED -->	12/02/94	12/14/94	12/02/94	12/14/94		
	DATE ANALYZED --->	12/03/94	12/15/94	12/03/94	12/15/94		
	MATRIX ---------->	Soil	Soil	Soil	Soil		
	UNITS ----------->	MG/KG	MG/KG	MG/KG	MG/KG		

CAS #	Parameter	10834	VAL	11008	VAL	10834	VAL	11008	VAL				
7440-38-2	Arsenic (As)	0.2	U	5.	U	0.2	U	5.	U				

*** Validation Complete ***

CEDAR CHEMICAL CORPORATION
WEST HELENA, ARKANSAS
SITE 2 PHASE II SURFACE SOIL DATA

CATION EXC		SHORT ID --------->	2MW-5 (0-1')	2HA-10 (0-1')				
		ORIGINAL ID ----->	002S000501	002S001001				
		SAMPLE DATE ----->	11/30/94	11/30/94				
		DATE EXTRACTED -->	12/06/94	12/06/94				
		DATE ANALYZED --->	12/08/94	12/08/94				
		MATRIX ---------->	Soil	Soil				
		UNITS ---------->	MEQ/1	MEQ/1				
CAS #	Parameter		10834 VAL	10834 VAL				
9999900-02-6	Cation-Exchange Capacity		14.	14.				

*** Validation Complete ***

CEDAR CHEMICAL CORPORATION
WEST HELENA, ARKANSAS
SITE 2 PHASE II SURFACE SOIL DATA

CHLORIDE	SHORT ID -------->	2MW-5 (0-1')		2HA-10 (0-1')				
	ORIGINAL ID ----->	002S000501		002S001001				
	SAMPLE DATE ----->	11/30/94		11/30/94				
	DATE EXTRACTED -->	12/02/94		12/02/94				
	DATE ANALYZED --->	12/02/94		12/02/94				
	MATRIX ---------->	Soil		Soil				
	UNITS ----------->	MG/KG		MG/KG				
CAS #	Parameter	10834	VAL	10834	VAL			
16887-00-6	Chloride	82.		5.1				

*** Validation Complete ***

CEDAR CHEMICAL CORPORATION
WEST HELENA, ARKANSAS
SITE 2 PHASE II SURFACE SOIL DATA

PEST		SHORT ID --------->	2MW-5 (0-1')		2MW-7 (0-5')		2HA-10 (0-1')		2SB-13 (0-2')			
		ORIGINAL ID ----->	002S000501		002S000701		002S001001		002S001301			
		SAMPLE DATE ----->	11/30/94		12/09/94		11/30/94		12/06/94			
		DATE EXTRACTED -->	12/03/94		12/12/94		12/03/94		12/12/94			
		DATE ANALYZED --->	12/05/94		12/15/94		12/05/94		12/15/94			
		MATRIX ---------->	Soil		Soil		Soil		Soil			
		UNITS ----------->	UG/KG		UG/KG		UG/KG		UG/KG			
CAS #	Parameter		10834	VAL	11008	VAL	10834	VAL	11008	VAL		
319-84-6	Alpha-BHC		2.	U	2.	U	2.	U	2.	U		
319-85-7	Beta-BHC		4.	U	4.	U	4.	U	4.	U		
319-86-8	Delta-BHC		6.	U	6.	U	6.	U	6.	U		
58-89-9	gamma-BHC (Lindane)		0.0002	U	2.7	U	0.0002	U	2.7	U		
76-44-8	Heptachlor		2.	U	2.	U	2.	U	2.	U		
309-00-2	Aldrin		58.		2.7	U	2.7	U	2.7	U		
1024-57-3	Heptachlor Epoxide		56.	U	56.	U	56.	U	56.	U		
959-98-8	Endosulfan I		9.4	U	9.4	U	9.4	U	9.4	U		
60-57-1	Dieldrin		1.3	U	1.3	U	1.3	U	1.3	U		
72-55-9	4,4'-DDE		2.7	U	2.7	U	2.7	U	2.7	U		
72-20-8	Endrin		4.	U	4.	U	4.	U	4.	U		
33213-65-9	Endosulfan II		2.7	U	2.7	U	2.7	U	2.7	U		
72-54-8	4,4'-DDD		7.	U	7.	U	7.	U	7.	U		
7421-93-4	Endrin aldehyde		15.	U	15.	U	15.	U	15.	U		
1031-07-8	Endosulfan Sulfate		44.	U	44.	U	44.	U	44.	U		
50-29-3	4,4'-DDT		190.		8.	U	8.	U	8.	U		
72-43-5	Methoxychlor		15000.		180.		1200.		260.			
57-74-9	Chlordane		9.4	U	9.4	U	9.4	U	9.4	U		
8001-35-2	Toxaphene		160.	U	160.	U	160.	U	160.	U		
12674-11-2	Aroclor-1016		60.	U	60.	U	60.	U	60.	U		
11104-28-2	Aroclor-1221		180.	U	180.	U	180.	U	180.	U		
11141-16-5	Aroclor-1232		32.	U	32.	U	32.	U	32.	U		
53469-21-9	Aroclor-1242		44.	U	44.	U	44.	U	44.	U		
12672-29-6	Aroclor-1248		170.	U	170.	U	170.	U	170.	U		
11097-69-1	Aroclor-1254		80.	U	80.	U	80.	U	80.	U		
11096-82-5	Aroclor-1260		24.	U	24.	U	24.	U	24.	U		

*** Validation Complete ***

CEDAR CHEMICAL CORPORATION
WEST HELENA, ARKANSAS
SITE 2 PHASE II SURFACE SOIL DATA

SOIL PH								
	SHORT ID --------->	2MW-5 (0-1')		2HA-10 (0-1')				
	ORIGINAL ID ----->	002S000501		002S001001				
	SAMPLE DATE ----->	11/30/94		11/30/94				
	DATE EXTRACTED -->	12/05/94		12/05/94				
	DATE ANALYZED --->	12/05/94		12/05/94				
	MATRIX ---------->	Soil		Soil				
	UNITS ----------->	UNITS		UNITS				
CAS #	Parameter	10834	VAL	10834	VAL			
9999900-02-7	pH	7.6		7.7				

*** Validation Complete ***

CEDAR CHEMICAL CORPORATION
WEST HELENA, ARKANSAS
SITE 2 PHASE II SURFACE SOIL DATA

SULFATE							
	SHORT ID -------->	2MW-5 (0-1')	2HA-10 (0-1')				
	ORIGINAL ID ----->	002S000501	002S001001				
	SAMPLE DATE ----->	11/30/94	11/30/94				
	DATE EXTRACTED -->	12/02/94	12/02/94				
	DATE ANALYZED --->	12/02/94	12/02/94				
	MATRIX ---------->	Soil	Soil				
	UNITS ----------->	MG/KG	MG/KG				
CAS #	Parameter	10834 VAL	10834 VAL				
14808-79-8	Sulfate	190.	34.				

*** Validation Complete ***

CEDAR CHEMICAL CORPORATION
WEST HELENA, ARKANSAS
SITE 2 PHASE II SURFACE SOIL DATA

SVOA									
	SHORT ID --------->	2MW-5 (0-1')		2MW-7 (0-5')		2HA-10 (0-1')		2SB-13 (0-2')	
	ORIGINAL ID ----->	002S000501		002S000701		002S001001		002S001301	
	SAMPLE DATE ----->	11/30/94		12/09/94		11/30/94		12/06/94	
	DATE EXTRACTED -->	12/02/94		12/13/94		12/02/94		12/12/94	
	DATE ANALYZED --->	12/08/94		12/16/94		12/07/94		12/14/94	
	MATRIX ---------->	Soil		Soil		Soil		Soil	
	UNITS ---------->	UG/KG		UG/KG		UG/KG		UG/KG	
CAS #	Parameter	10834	VAL	11008	VAL	10834	VAL	11008	VAL
108-95-2	Phenol	660.	U	660.	U	660.	U	660.	U
111-44-4	bis(2-Chloroethyl)ether	660.	U	660.	U	660.	U	660.	U
95-57-8	2-Chlorophenol	660.	U	660.	U	660.	U	660.	U
541-73-1	1,3-Dichlorobenzene	660.	U	660.	U	660.	U	660.	U
106-46-7	1,4-Dichlorobenzene	660.	U	660.	U	660.	U	660.	U
100-51-6	Benzyl alcohol	1300.	U	1300.	U	1300.	U	1300.	U
95-50-1	1,2-Dichlorobenzene	660.	U	660.	U	660.	U	660.	U
95-48-7	2-Methylphenol (o-Cresol)	660.	U	660.	U	660.	U	660.	U
108-60-1	bis(2-chloroisopropyl) ether	660.	U	660.	U	660.	U	660.	U
106-44-5	4-Methylphenol (p-Cresol)	660.	U	660.	U	660.	U	660.	U
621-64-7	N-Nitroso-di-n-propylamine	660.	U	660.	U	660.	U	660.	U
67-72-1	Hexachloroethane	660.	U	660.	U	660.	U	660.	U
98-95-3	Nitrobenzene	660.	U	660.	U	660.	U	660.	U
78-59-1	Isophorone	660.	U	660.	U	660.	U	660.	U
88-75-5	2-Nitrophenol	660.	U	660.	U	660.	U	660.	U
105-67-9	2,4-Dimethylphenol	660.	U	660.	U	660.	U	660.	U
111-91-1	bis(2-Chloroethoxy)methane	660.	U	660.	U	660.	U	660.	U
120-83-2	2,4-Dichlorophenol	660.	U	660.	U	660.	U	660.	U
120-82-1	1,2,4-Trichlorobenzene	660.	U	660.	U	660.	U	660.	U
91-20-3	Naphthalene	660.	U	660.	U	660.	U	660.	U
87-68-3	Hexachlorobutadiene	660.	U	660.	U	660.	U	660.	U
59-50-7	4-Chloro-3-methylphenol	1300.	U	1300.	U	1300.	U	1300.	U
91-57-6	2-Methylnaphthalene	660.	U	660.	U	660.	U	660.	U
77-47-4	Hexachlorocyclopentadiene	660.	U	660.	U	660.	U	660.	U
88-06-2	2,4,6-Trichlorophenol	660.	U	660.	U	660.	U	660.	U
95-95-4	2,4,5-Trichlorophenol	660.	U	660.	U	660.	U	660.	U
91-58-7	2-Chloronaphthalene	660.	U	660.	U	660.	U	660.	U
88-74-4	2-Nitroaniline	3300.	U	3300.	U	3300.	U	3300.	U
131-11-3	Dimethylphthalate	660.	U	660.	U	660.	U	660.	U
208-96-8	Acenaphthylene	660.	U	660.	U	660.	U	660.	U
99-09-2	3-Nitroaniline	3300.	U	3300.	U	3300.	U	3300.	U
83-32-9	Acenaphthene	660.	U	660.	U	660.	U	660.	U
51-28-5	2,4-Dinitrophenol	3300.	U	3300.	U	3300.	U	3300.	U
100-02-7	4-Nitrophenol	3300.	U	3300.	U	3300.	U	3300.	U
132-64-9	Dibenzofuran	660.	U	660.	U	660.	U	660.	U
121-14-2	2,4-Dinitrotoluene	660.	U	660.	U	660.	U	660.	U
606-20-2	2,6-Dinitrotoluene	660.	U	660.	U	660.	U	660.	U
84-66-2	Diethylphthalate	660.	U	660.	U	660.	U	660.	U

*** Validation Complete ***

CEDAR CHEMICAL CORPORATION
WEST HELENA, ARKANSAS
SITE 2 PHASE II SURFACE SOIL DATA

SVOA									
	SHORT ID -------->	2MW-5 (0-1')		2MW-7 (0-5')		2HA-10 (0-1')		2SB-13 (0-2')	
	ORIGINAL ID ----->	002S000501		002S000701		002S001001		002S001301	
	SAMPLE DATE ----->	11/30/94		12/09/94		11/30/94		12/06/94	
	DATE EXTRACTED -->	12/02/94		12/13/94		12/02/94		12/12/94	
	DATE ANALYZED --->	12/08/94		12/16/94		12/07/94		12/14/94	
	MATRIX ---------->	Soil		Soil		Soil		Soil	
	UNITS ----------->	UG/KG		UG/KG		UG/KG		UG/KG	
CAS #	Parameter	10834	VAL	11008	VAL	10834	VAL	11008	VAL
7005-72-3	4-Chlorophenyl-phenylether	660.	U	660.	U	660.	U	660.	U
86-73-7	Fluorene	660.	U	660.	U	660.	U	660.	U
100-01-6	4-Nitroaniline	3300.	U	3300.	U	3300.	U	3300.	U
534-52-1	4,6-Dinitro-2-methylphenol	3300.	U	3300.	U	3300.	U	3300.	U
86-30-6	N-Nitrosodiphenylamine	660.	U	660.	U	660.	U	660.	U
101-55-3	4-Bromophenyl-phenylether	660.	U	660.	U	660.	U	660.	U
118-74-1	Hexachlorobenzene	660.	U	660.	U	660.	U	660.	U
87-86-5	Pentachlorophenol	3300.	U	3300.	U	3300.	U	3300.	U
85-01-8	Phenanthrene	660.	U	660.	U	660.	U	660.	U
120-12-7	Anthracene	660.	U	660.	U	660.	U	660.	U
206-44-0	Fluoranthene	660.	U	660.	U	660.	U	660.	U
129-00-0	Pyrene	660.	U	660.	U	660.	U	660.	U
85-68-7	Butylbenzylphthalate	660.	U	660.	U	660.	U	660.	U
91-94-1	3,3'-Dichlorobenzidine	1300.	U	1300.	U	1300.	U	1300.	U
56-55-3	Benzo(a)anthracene	660.	U	660.	U	660.	U	660.	U
117-81-7	bis(2-Ethylhexyl)phthalate (BEHP)	660.	U	660.	U	660.	U	660.	U
218-01-9	Chrysene	660.	U	660.	U	660.	U	660.	U
117-84-0	Di-n-octylphthalate	660.	U	660.	U	660.	U	660.	U
205-99-2	Benzo(b)fluoranthene	660.	U	660.	U	660.	U	660.	U
207-08-9	Benzo(k)fluoranthene	660.	U	660.	U	660.	U	660.	U
50-32-8	Benzo(a)pyrene	660.	U	660.	U	660.	U	660.	U
193-39-5	Indeno(1,2,3-cd)pyrene	660.	U	660.	U	660.	U	660.	U
53-70-3	Dibenz(a,h)anthracene	660.	U	660.	U	660.	U	660.	U
191-24-2	Benzo(g,h,i)perylene	660.	U	660.	U	660.	U	660.	U
88-85-7	Dinoseb	100000.		462.	U	462.	U	462.	U
65-85-0	Benzoic acid	3300.	U	3300.	U	3300.	U	3300.	U
106-47-8	4-Chloroaniline	1300.	U	1300.	U	1300.	U	1300.	U
84-74-2	Di-n-butylphthalate	660.	U	660.	U	660.	U	660.	U

*** Validation Complete ***

CEDAR CHEMICAL CORPORATION
WEST HELENA, ARKANSAS
SITE 2 PHASE II SURFACE SOIL DATA

VOA								
SHORT ID -------->	2MW-5 (0-1')		2MW-7 (0-5')		2HA-10 (0-1')		2SB-13 (0-2')	
ORIGINAL ID ----->	002S000501		002S000701		002S001001		002S001301	
SAMPLE DATE ----->	11/30/94		12/09/94		11/30/94		12/06/94	
DATE EXTRACTED -->	12/04/94		12/20/94		12/04/94		12/11/94	
DATE ANALYZED --->	12/02/94		12/20/94		12/02/94		12/11/94	
MATRIX ---------->	Soil		Soil		Soil		Soil	
UNITS ----------->	UG/KG		UG/KG		UG/KG		UG/KG	
CAS #	Parameter	10834 VAL	11008 VAL		10834 VAL		11008 VAL	
74-87-3	Chloromethane	10. U	10. U		10. U		10. U	
74-83-9	Bromomethane	10. U	10. U		10. U		10. U	
75-01-4	Vinyl chloride	10. U	10. U		10. U		10. U	
75-00-3	Chloroethane	10. U	10. U		10. U		10. U	
75-09-2	Methylene chloride	20. U	20. U		20. U		20. U	
67-64-1	Acetone	200.	100. U		1900.		100. U	
75-15-0	Carbon disulfide	100. U	100. U		100. U		100. U	
75-35-4	1,1-Dichloroethene	5. U	5. U		5. U		5. U	
75-34-3	1,1-Dichloroethane	5. U	5. U		5. U		5. U	
156-60-5	trans-1,2-Dichloroethene	5. U	5. U		5. U		5. U	
67-66-3	Chloroform	5. U	5. U		5. U		5. U	
107-06-2	1,2-Dichloroethane	5. U	5. U		5. U		5. U	
78-93-3	2-Butanone (MEK)	100. U	100. U		100. U		100. U	
71-55-6	1,1,1-Trichloroethane	5. U	5. U		5. U		5. U	
56-23-5	Carbon tetrachloride	5. U	5. U		5. U		5. U	
108-05-4	Vinyl acetate	50. U	50. U		50. U		50. U	
75-27-4	Bromodichloromethane	5. U	5. U		5. U		5. U	
79-34-5	1,1,2,2-Tetrachloroethane	5. U	5. U		5. U		5. U	
78-87-5	1,2-Dichloropropane	5. U	5. U		5. U		5. U	
10061-02-6	trans-1,3-Dichloropropene	5. U	5. U		5. U		5. U	
79-01-6	Trichloroethene	5. U	5. U		5. U		5. U	
124-48-1	Dibromochloromethane	5. U	5. U		5. U		5. U	
79-00-5	1,1,2-Trichloroethane	5. U	5. U		5. U		5. U	
71-43-2	Benzene	5. U	5. U		5. U		5. U	
10061-01-5	cis-1,3-Dichloropropene	5. U	5. U		5. U		5. U	
110-75-8	2-Chloroethylvinylether	10. U	10. U		10. U		10. U	
75-25-2	Bromoform	5. U	5. U		5. U		5. U	
591-78-6	2-Hexanone	50. U	50. U		50. U		50. U	
108-10-1	4-Methyl-2-Pentanone (MIBK)	50. U	50. U		50. U		50. U	
127-18-4	Tetrachloroethene	5. U	5. U		5. U		5. U	
108-88-3	Toluene	5. U	5. U		5. U		5. U	
108-90-7	Chlorobenzene	5. U	5. U		5. U		5. U	
100-41-4	Ethylbenzene	5. U	5. U		5. U		5. U	
100-42-5	Styrene	5. U	5. U		5. U		5. U	
1330-20-7	Xylene (total)	5. U	5. U		5. U		5. U	

*** Validation Complete ***

CEDAR CHEMICAL CORPORATION
WEST HELENA, ARKANSAS
SITE 2 PHASE II SUBSURFACE SOIL DATA

ARSENIC	SHORT ID -------->	2MW-7 (5-10')	2MW-7 (20-25')	2SB-13 (8-10')	2SB-13 (10-12')		
	ORIGINAL ID ----->	002S000702	002S000705	002S001305	002S001306		
	SAMPLE DATE ----->	12/09/94	12/09/94	12/06/94	12/06/94		
	DATE EXTRACTED -->	12/14/94	12/14/94	12/14/94	12/14/94		
	DATE ANALYZED --->	12/15/94	12/15/94	12/15/94	12/15/94		
	MATRIX ---------->	Soil	Soil	Soil	Soil		
	UNITS ----------->	MG/KG	MG/KG	MG/KG	MG/KG		

CAS #	Parameter	11008	VAL	11008	VAL	11008	VAL	11008	VAL				
7440-38-2	Arsenic (As)	5.	U	5.	U	5.	U	5.	U				

*** Validation Complete ***

CEDAR CHEMICAL CORPORATION
WEST HELENA, ARKANSAS
SITE 2 PHASE II SUBSURFACE SOIL DATA

PEST									
	SHORT ID -------->	2MW-7 (5-10')		2MW-7 (20-25')		2SB-13 (8-10')		2SB-13 (10-12')	
	ORIGINAL ID ----->	002S000702		002S000705		002S001305		002S001306	
	SAMPLE DATE ----->	12/09/94		12/09/94		12/06/94		12/06/94	
	DATE EXTRACTED -->	12/12/94		12/12/94		12/12/94		12/12/94	
	DATE ANALYZED --->	12/15/94		12/15/94		12/15/94		12/15/94	
	MATRIX ---------->	Soil		Soil		Soil		Soil	
	UNITS ----------->	UG/KG		UG/KG		UG/KG		UG/KG	
CAS #	Parameter	11008	VAL	11008	VAL	11008	VAL	11008	VAL
319-84-6	Alpha-BHC	2.	U	2.	U	2.	U	2.	U
319-85-7	Beta-BHC	4.	U	4.	U	4.	U	4.	U
319-86-8	Delta-BHC	6.	U	6.	U	6.	U	6.	U
58-89-9	gamma-BHC (Lindane)	2.7	U	2.7	U	2.7	U	2.7	U
76-44-8	Heptachlor	2.	U	2.	U	2.	U	2.	U
309-00-2	Aldrin	2.7	U	2.7	U	2.7	U	2.7	U
1024-57-3	Heptachlor Epoxide	56.	U	56.	U	56.	U	56.	U
959-98-8	Endosulfan I	9.4	U	9.4	U	9.4	U	9.4	U
60-57-1	Dieldrin	1.3	U	1.3	U	1.3	U	1.3	U
72-55-9	4,4'-DDE	2.7	U	2.7	U	2.7	U	2.7	U
72-20-8	Endrin	4.	U	4.	U	4.	U	4.	U
33213-65-9	Endosulfan II	2.7	U	2.7	U	2.7	U	2.7	U
72-54-8	4,4'-DDD	49.		7.	U	7.	U	7.	U
7421-93-4	Endrin aldehyde	15.	U	15.	U	15.	U	15.	U
1031-07-8	Endosulfan Sulfate	44.	U	44.	U	44.	U	44.	U
50-29-3	4,4'-DDT	8.	U	8.	U	8.	U	8.	U
72-43-5	Methoxychlor	280000.		120.	U	120.	U	120.	U
57-74-9	Chlordane	9.4	U	9.4	U	9.4	U	9.4	U
8001-35-2	Toxaphene	160.	U	160.	U	160.	U	160.	U
12674-11-2	Aroclor-1016	60.	U	60.	U	60.	U	60.	U
11104-28-2	Aroclor-1221	180.	U	180.	U	180.	U	180.	U
11141-16-5	Aroclor-1232	32.	U	32.	U	32.	U	32.	U
53469-21-9	Aroclor-1242	44.	U	44.	U	44.	U	44.	U
12672-29-6	Aroclor-1248	170.	U	170.	U	170.	U	170.	U
11097-69-1	Aroclor-1254	80.	U	80.	U	80.	U	80.	U
11096-82-5	Aroclor-1260	24.	U	24.	U	24.	U	24.	U

*** Validation Complete ***

CEDAR CHEMICAL CORPORATION
WEST HELENA, ARKANSAS
SITE 2 PHASE II SUBSURFACE SOIL DATA

SVOA	SHORT ID -------->	2MW-7 (5-10')		2MW-7 (20-25')		2SB-13 (8-10')		2SB-13 (10-12')			
	ORIGINAL ID ----->	002S000702		002S000705		002S001305		002S001306			
	SAMPLE DATE ----->	12/09/94		12/09/94		12/06/94		12/06/94			
	DATE EXTRACTED -->	12/13/94		12/13/94		12/12/94		12/12/94			
	DATE ANALYZED --->	12/16/94		12/16/94		12/14/94		12/14/94			
	MATRIX ---------->	Soil		Soil		Soil		Soil			
	UNITS ----------->	UG/KG		UG/KG		UG/KG		UG/KG			
CAS #	Parameter	11008	VAL	11008	VAL	11008	VAL	11008	VAL		
108-95-2	Phenol	660.	U	660.	U	660.	U	660.	U		
111-44-4	bis(2-Chloroethyl)ether	660.	U	660.	U	660.	U	660.	U		
95-57-8	2-Chlorophenol	660.	U	660.	U	660.	U	660.	U		
541-73-1	1,3-Dichlorobenzene	660.	U	660.	U	660.	U	660.	U		
106-46-7	1,4-Dichlorobenzene	660.	U	660.	U	660.	U	660.	U		
100-51-6	Benzyl alcohol	1300.	U	1300.	U	1300.	U	1300.	U		
95-50-1	1,2-Dichlorobenzene	660.	U	660.	U	660.	U	660.	U		
95-48-7	2-Methylphenol (o-Cresol)	660.	U	660.	U	660.	U	660.	U		
108-60-1	bis(2-chloroisopropyl) ether	660.	U	660.	U	660.	U	660.	U		
106-44-5	4-Methylphenol (p-Cresol)	660.	U	660.	U	660.	U	660.	U		
621-64-7	N-Nitroso-di-n-propylamine	660.	U	660.	U	660.	U	660.	U		
67-72-1	Hexachloroethane	660.	U	660.	U	660.	U	660.	U		
98-95-3	Nitrobenzene	660.	U	660.	U	660.	U	660.	U		
78-59-1	Isophorone	660.	U	660.	U	660.	U	660.	U		
88-75-5	2-Nitrophenol	660.	U	660.	U	660.	U	660.	U		
105-67-9	2,4-Dimethylphenol	660.	U	660.	U	660.	U	660.	U		
111-91-1	bis(2-Chloroethoxy)methane	660.	U	660.	U	660.	U	660.	U		
120-83-2	2,4-Dichlorophenol	660.	U	660.	U	660.	U	660.	U		
120-82-1	1,2,4-Trichlorobenzene	660.	U	660.	U	660.	U	660.	U		
91-20-3	Naphthalene	660.	U	660.	U	660.	U	660.	U		
87-68-3	Hexachlorobutadiene	660.	U	660.	U	660.	U	660.	U		
59-50-7	4-Chloro-3-methylphenol	1300.	U	1300.	U	1300.	U	1300.	U		
91-57-6	2-Methylnaphthalene	660.	U	660.	U	660.	U	660.	U		
77-47-4	Hexachlorocyclopentadiene	660.	U	660.	U	660.	U	660.	U		
88-06-2	2,4,6-Trichlorophenol	660.	U	660.	U	660.	U	660.	U		
95-95-4	2,4,5-Trichlorophenol	660.	U	660.	U	660.	U	660.	U		
91-58-7	2-Chloronaphthalene	660.	U	660.	U	660.	U	660.	U		
88-74-4	2-Nitroaniline	3300.	U	3300.	U	3300.	U	3300.	U		
131-11-3	Dimethylphthalate	660.	U	660.	U	660.	U	660.	U		
208-96-8	Acenaphthylene	660.	U	660.	U	660.	U	660.	U		
99-09-2	3-Nitroaniline	3300.	U	3300.	U	3300.	U	3300.	U		
83-32-9	Acenaphthene	660.	U	660.	U	660.	U	660.	U		
51-28-5	2,4-Dinitrophenol	3300.	U	3300.	U	3300.	U	3300.	U		
100-02-7	4-Nitrophenol	3300.	U	3300.	U	3300.	U	3300.	U		
132-64-9	Dibenzofuran	660.	U	660.	U	660.	U	660.	U		
121-14-2	2,4-Dinitrotoluene	660.	U	660.	U	660.	U	660.	U		
606-20-2	2,6-Dinitrotoluene	660.	U	660.	U	660.	U	660.	U		
84-66-2	Diethylphthalate	660.	U	660.	U	660.	U	660.	U		

*** Validation Complete ***

CEDAR CHEMICAL CORPORATION
WEST HELENA, ARKANSAS
SITE 2 PHASE II SUBSURFACE SOIL DATA

SVOA	SHORT ID --------->	2MW-7 (5-10')		2MW-7 (20-25')		2SB-13 (8-10')		2SB-13 (10-12')			
	ORIGINAL ID ----->	002S000702		002S000705		002S001305		002S001306			
	SAMPLE DATE ----->	12/09/94		12/09/94		12/06/94		12/06/94			
	DATE EXTRACTED -->	12/13/94		12/13/94		12/12/94		12/12/94			
	DATE ANALYZED --->	12/16/94		12/16/94		12/14/94		12/14/94			
	MATRIX ---------->	Soil		Soil		Soil		Soil			
	UNITS ----------->	UG/KG		UG/KG		UG/KG		UG/KG			
CAS #	Parameter	11008	VAL	11008	VAL	11008	VAL	11008	VAL		
7005-72-3	4-Chlorophenyl-phenylether	660.	U	660.	U	660.	U	660.	U		
86-73-7	Fluorene	660.	U	660.	U	660.	U	660.	U		
100-01-6	4-Nitroaniline	3300.	U	3300.	U	3300.	U	3300.	U		
534-52-1	4,6-Dinitro-2-methylphenol	3300.	U	3300.	U	3300.	U	3300.	U		
86-30-6	N-Nitrosodiphenylamine	660.	U	660.	U	660.	U	660.	U		
101-55-3	4-Bromophenyl-phenylether	660.	U	660.	U	660.	U	660.	U		
118-74-1	Hexachlorobenzene	660.	U	660.	U	660.	U	660.	U		
87-86-5	Pentachlorophenol	3300.	U	3300.	U	3300.	U	3300.	U		
85-01-8	Phenanthrene	660.	U	660.	U	660.	U	660.	U		
120-12-7	Anthracene	660.	U	660.	U	660.	U	660.	U		
206-44-0	Fluoranthene	660.	U	660.	U	660.	U	660.	U		
129-00-0	Pyrene	660.	U	660.	U	660.	U	660.	U		
85-68-7	Butylbenzylphthalate	660.	U	660.	U	660.	U	660.	U		
91-94-1	3,3'-Dichlorobenzidine	1300.	U	1300.	U	1300.	U	1300.	U		
56-55-3	Benzo(a)anthracene	660.	U	660.	U	660.	U	660.	U		
117-81-7	bis(2-Ethylhexyl)phthalate (BEHP)	660.	U	660.	U	660.	U	660.	U		
218-01-9	Chrysene	660.	U	660.	U	660.	U	660.	U		
117-84-0	Di-n-octylphthalate	660.	U	660.	U	660.	U	660.	U		
205-99-2	Benzo(b)fluoranthene	660.	U	660.	U	660.	U	660.	U		
207-08-9	Benzo(k)fluoranthene	660.	U	660.	U	660.	U	660.	U		
50-32-8	Benzo(a)pyrene	660.	U	660.	U	660.	U	660.	U		
193-39-5	Indeno(1,2,3-cd)pyrene	660.	U	660.	U	660.	U	660.	U		
53-70-3	Dibenz(a,h)anthracene	660.	U	660.	U	660.	U	660.	U		
191-24-2	Benzo(g,h,i)perylene	660.	U	660.	U	660.	U	660.	U		
88-85-7	Dinoseb	462.	U	462.	U	580.		462.	U		
65-85-0	Benzoic acid	3300.	U	3300.	U	3300.	U	3300.	U		
106-47-8	4-Chloroaniline	1300.	U	1300.	U	1300.	U	1300.	U		
84-74-2	Di-n-butylphthalate	660.	U	660.	U	660.	U	660.	U		

*** Validation Complete ***

CEDAR CHEMICAL CORPORATION
WEST HELENA, ARKANSAS
SITE 2 PHASE II SUBSURFACE SOIL DATA

VOA								
SHORT ID --------->	2MW-7 (5-10')		2MW-7 (20-25')		2SB-13 (8-10')		2SB-13 (10-12')	
ORIGINAL ID ----->	002S000702		002S000705		002S001305		002S001306	
SAMPLE DATE ----->	12/09/94		12/09/94		12/06/94		12/06/94	
DATE EXTRACTED -->	12/20/94		12/20/94		12/11/94		12/13/94	
DATE ANALYZED --->	12/20/94		12/20/94		12/11/94		12/12/94	
MATRIX ---------->	Soil		Soil		Soil		Soil	
UNITS ---------->	UG/KG		UG/KG		UG/KG		UG/KG	
CAS #	Parameter	11008 VAL	11008 VAL		11008 VAL		11008 VAL	
74-87-3	Chloromethane	10. U	10. U		46. U		50. U	
74-83-9	Bromomethane	10. U	10. U		46. U		50. U	
75-01-4	Vinyl chloride	10. U	10. U		46. U		50. U	
75-00-3	Chloroethane	10. U	10. U		46. U		50. U	
75-09-2	Methylene chloride	20. U	20. U		4000.		3600.	
67-64-1	Acetone	840.	1200.		820.		1600.	
75-15-0	Carbon disulfide	100. U	100. U		460. U		500. U	
75-35-4	1,1-Dichloroethene	5. U	5. U		23. U		25. U	
75-34-3	1,1-Dichloroethane	5. U	5. U		23. U		25. U	
156-60-5	trans-1,2-Dichloroethene	5. U	5. U		23. U		25. U	
67-66-3	Chloroform	5. U	5. U		23. U		25. U	
107-06-2	1,2-Dichloroethane	5. U	5. U		810.		740.	
78-93-3	2-Butanone (MEK)	100. U	100. U		460. U		500. U	
71-55-6	1,1,1-Trichloroethane	5. U	5. U		23. U		25. U	
56-23-5	Carbon tetrachloride	5. U	5. U		23. U		25. U	
108-05-4	Vinyl acetate	50. U	50. U		230. U		250. U	
75-27-4	Bromodichloromethane	5. U	5. U		23. U		25. U	
79-34-5	1,1,2,2-Tetrachloroethane	5. U	5. U		23. U		25. U	
78-87-5	1,2-Dichloropropane	5. U	5. U		23. U		25. U	
10061-02-6	trans-1,3-Dichloropropene	5. U	5. U		23. U		25. U	
79-01-6	Trichloroethene	5. U	5. U		23. U		25. U	
124-48-1	Dibromochloromethane	5. U	5. U		23. U		25. U	
79-00-5	1,1,2-Trichloroethane	5. U	5. U		23. U		25. U	
71-43-2	Benzene	5. U	5. U		23. U		25. U	
10061-01-5	cis-1,3-Dichloropropene	5. U	5. U		23. U		25. U	
110-75-8	2-Chloroethylvinylether	10. U	10. U		46. U		50. U	
75-25-2	Bromoform	5. U	5. U		23. U		25. U	
591-78-6	2-Hexanone	50. U	50. U		230. U		250. U	
108-10-1	4-Methyl-2-Pentanone (MIBK)	50. U	50. U		230. U		250. U	
127-18-4	Tetrachloroethene	5. U	5. U		23. U		25. U	
108-88-3	Toluene	5. U	5. U		23. U		25. U	
108-90-7	Chlorobenzene	5. U	5. U		24.		30.	
100-41-4	Ethylbenzene	5. U	5. U		23. U		25. U	
100-42-5	Styrene	5. U	5. U		23. U		25. U	
1330-20-7	Xylene (total)	5. U	5. U		38.		25. U	

*** Validation Complete ***

CEDAR CHEMICAL CORPORATION
CEDAR CHEMICAL - PHASE 3 DATA
SITE 2 PHASE III SURFACE SOIL DATA

PEST								
	SHORT ID -------->	2SB-14 (8-10')		2SB-15 (8-10')				
	ORIGINAL ID ----->	002S001405		002S001505				
	SAMPLE DATE ----->	09/29/95		09/29/95				
	DATE EXTRACTED -->	10/04/95		10/04/95				
	DATE ANALYZED --->	10/09/95		10/09/95				
	MATRIX ---------->	Soil		Soil				
	UNITS ----------->	UG/KG		UG/KG				
CAS #	Parameter	G114-5	VAL	G114-5	VAL			
319-84-6	Alpha-BHC	4.1	U	4.2	U			
319-85-7	Beta-BHC	4.1	U	4.2	U			
319-86-8	Delta-BHC	4.1	U	4.2	U			
58-89-9	gamma-BHC (Lindane)	4.1	U	4.2	U			
76-44-8	Heptachlor	4.1	U	4.2	U			
309-00-2	Aldrin	4.1	U	16.				
1024-57-3	Heptachlor Epoxide	4.1	U	4.2	U			
959-98-8	Endosulfan I	4.1	U	4.2	U			
60-57-1	Dieldrin	4.1	U	9.5				
72-55-9	4,4'-DDE	4.1	U	4.2	U			
72-20-8	Endrin	4.1	U	4.2	U			
72-54-8	4,4'-DDD	4.1	U	4.2	U			
33213-65-9	Endosulfan II	20.	U	21.	U			
50-29-3	4,4'-DDT	4.1	U	11.				
72-43-5	Methoxychlor	20.	U	21.	U			
8001-35-2	Toxaphene	41.	U	42.	U			
57-74-9	Chlordane	41.	U	42.	U			
7421-93-4	Endrin aldehyde	4.1	U	4.2	U			
1031-07-8	Endosulfan Sulfate	4.1	U	17.				
53494-70-5	Endrin ketone	4.1	U	6.4				

*** Validation Complete ***

CEDAR CHEMICAL CORPORATION
CEDAR CHEMICAL - PHASE 3 DATA
SITE 2 PHASE III SUBSURFACE SOIL DATA

PEST											
	SHORT ID --------->	2SB-14 (8-10')		2SB-15 (8-10')							
	ORIGINAL ID ----->	002S001405		002S001505							
	SAMPLE DATE ----->	09/29/95		09/29/95							
	DATE EXTRACTED -->	10/04/95		10/04/95							
	DATE ANALYZED --->	10/09/95		10/09/95							
	MATRIX ---------->	Soil		Soil							
	UNITS ---------->	UG/KG		UG/KG							
CAS #	Parameter	G114-5	VAL	G114-5	VAL						
319-84-6	Alpha-BHC	4.1	U	4.2	U						
319-85-7	Beta-BHC	4.1	U	4.2	U						
319-86-8	Delta-BHC	4.1	U	4.2	U						
58-89-9	gamma-BHC (Lindane)	4.1	U	4.2	U						
76-44-8	Heptachlor	4.1	U	4.2	U						
309-00-2	Aldrin	4.1	U	16.							
1024-57-3	Heptachlor Epoxide	4.1	U	4.2	U						
959-98-8	Endosulfan I	4.1	U	4.2	U						
60-57-1	Dieldrin	4.1	U	9.5							
72-55-9	4,4'-DDE	4.1	U	4.2	U						
72-20-8	Endrin	4.1	U	4.2	U						
72-54-8	4,4'-DDD	4.1	U	4.2	U						
33213-65-9	Endosulfan II	20.	U	21.	U						
50-29-3	4,4'-DDT	4.1	U	11.							
72-43-5	Methoxychlor	20.	U	21.	U						
8001-35-2	Toxaphene	41.	U	42.	U						
57-74-9	Chlordane	41.	U	42.	U						
7421-93-4	Endrin aldehyde	4.1	U	4.2	U						
1031-07-8	Endosulfan Sulfate	4.1	U	17.							
53494-70-5	Endrin ketone	4.1	U	6.4							

*** Validation Complete ***

CEDAR CHEMICAL CORPORATION
CEDAR CHEMICAL - PHASE 3 DATA
SITE 2 PHASE III SURFACE SOIL DATA

PEST

SHORT ID -------->	2SB-15 (0-2')
ORIGINAL ID ----->	002S001501
SAMPLE DATE ----->	09/29/95
DATE EXTRACTED -->	10/04/95
DATE ANALYZED --->	10/09/95
MATRIX ---------->	Soil
UNITS ----------->	UG/KG

CAS #	Parameter	G114-5	VAL
319-84-6	Alpha-BHC	3.8	U
319-85-7	Beta-BHC	3.8	U
319-86-8	Delta-BHC	3.8	U
58-89-9	gamma-BHC (Lindane)	3.8	U
76-44-8	Heptachlor	3.8	U
309-00-2	Aldrin	11.	
1024-57-3	Heptachlor Epoxide	3.8	U
959-98-8	Endosulfan I	3.8	U
60-57-1	Dieldrin	3.8	U
72-55-9	4,4'-DDE	11.	
72-20-8	Endrin	7.	
72-54-8	4,4'-DDD	15.	
33213-65-9	Endosulfan II	19.	U
50-29-3	4,4'-DDT	20.	
72-43-5	Methoxychlor	55.	
8001-35-2	Toxaphene	38.	U
57-74-9	Chlordane	38.	U
7421-93-4	Endrin aldehyde	3.8	U
1031-07-8	Endosulfan Sulfate	3.8	U
53494-70-5	Endrin ketone	3.8	U

*** Validation Complete ***

CEDAR CHEMICAL CORPORATION
CEDAR CHEMICAL - PHASE 3 DATA
SITE 3 PHASE III SUBSURFACE SOIL DATA

SVOA									
	SHORT ID -------->	3SB-1 (4-6')		3SB-1 (6-12')					
	ORIGINAL ID ----->	003SSB0103		003SSB0106					
	SAMPLE DATE ----->	09/29/95		09/29/95					
	DATE EXTRACTED -->	10/02/95		10/02/95					
	DATE ANALYZED --->	10/03/95		10/12/95					
	MATRIX ---------->	Soil		Soil					
	UNITS ----------->	UG/KG		UG/KG					
CAS #	Parameter	G114-5	VAL	G114-5	VAL				
83-32-9	Acenaphthene	19000.	U	390.	U				
208-96-8	Acenaphthylene	19000.	U	390.	U				
120-12-7	Anthracene	19000.	U	390.	U				
56-55-3	Benzo(a)anthracene	19000.	U	390.	U				
50-32-8	Benzo(a)pyrene	19000.	U	390.	U				
205-99-2	Benzo(b)fluoranthene	19000.	U	390.	U				
191-24-2	Benzo(g,h,i)perylene	19000.	U	390.	U				
207-08-9	Benzo(k)fluoranthene	19000.	U	390.	U				
65-85-0	Benzoic acid	38000.	U	780.	U				
100-51-6	Benzyl alcohol	19000.	U	390.	U				
111-91-1	bis(2-Chloroethoxy)methane	19000.	U	390.	U				
111-44-4	bis(2-Chloroethyl)ether	19000.	U	390.	U				
39638-32-9	2,2'-Oxybis(2-chloro)propane	19000.	U	390.	U				
117-81-7	bis(2-Ethylhexyl)phthalate (BEHP)	19000.	U	390.	U				
101-55-3	4-Bromophenyl-phenylether	19000.	U	390.	U				
85-68-7	Butylbenzylphthalate	19000.	U	390.	U				
106-47-8	4-Chloroaniline	19000.	U	390.	U				
59-50-7	4-Chloro-3-methylphenol	19000.	U	390.	U				
91-58-7	2-Chloronaphthalene	19000.	U	390.	U				
95-57-8	2-Chlorophenol	19000.	U	390.	U				
7005-72-3	4-Chlorophenyl-phenylether	19000.	U	390.	U				
218-01-9	Chrysene	19000.	U	390.	U				
84-74-2	Di-n-butylphthalate	19000.	U	390.	U				
117-84-0	Di-n-octylphthalate	19000.	U	390.	U				
53-70-3	Dibenz(a,h)anthracene	19000.	U	390.	U				
132-64-9	Dibenzofuran	19000.	U	390.	U				
95-76-1	3,4-Dichloroaniline	19000.	U	390.	U				
95-50-1	1,2-Dichlorobenzene	19000.	U	390.	U				
541-73-1	1,3-Dichlorobenzene	19000.	U	390.	U				
106-46-7	1,4-Dichlorobenzene	19000.	U	390.	U				
91-94-1	3,3'-Dichlorobenzidine	38000.	U	780.	U				
120-83-2	2,4-Dichlorophenol	19000.	U	390.	U				
84-66-2	Diethylphthalate	19000.	U	390.	U				
105-67-9	2,4-Dimethylphenol	19000.	U	390.	U				
131-11-3	Dimethylphthalate	19000.	U	390.	U				
534-52-1	4,6-Dinitro-2-methylphenol	95000.	U	2000.	U				
51-28-5	2,4-Dinitrophenol	95000.	U	2000.	U				
121-14-2	2,4-Dinitrotoluene	19000.	U	390.	U				

*** Validation Complete ***

CEDAR CHEMICAL CORPORATION
CEDAR CHEMICAL - PHASE 3 DATA
SITE 3 PHASE III SUBSURFACE SOIL DATA

SVOA									
	SHORT ID --------->	3SB-1 (4-6')		3SB-1 (6-12')					
	ORIGINAL ID ----->	003SSB0103		003SSB0106					
	SAMPLE DATE ----->	09/29/95		09/29/95					
	DATE EXTRACTED -->	10/02/95		10/02/95					
	DATE ANALYZED --->	10/03/95		10/12/95					
	MATRIX ---------->	Soil		Soil					
	UNITS ---------->	UG/KG		UG/KG					
CAS #	Parameter	G114-5	VAL	G114-5	VAL				
606-20-2	2,6-Dinitrotoluene	19000.	U	390.	U				
88-85-7	Dinoseb	180000.		630.					
206-44-0	Fluoranthene	19000.	U	390.	U				
86-73-7	Fluorene	19000.	U	390.	U				
118-74-1	Hexachlorobenzene	19000.	U	390.	U				
87-68-3	Hexachlorobutadiene	19000.	U	390.	U				
77-47-4	Hexachlorocyclopentadiene	38000.	U	780.	U				
67-72-1	Hexachloroethane	19000.	U	390.	U				
193-39-5	Indeno(1,2,3-cd)pyrene	19000.	U	390.	U				
78-59-1	Isophorone	19000.	U	390.	U				
91-57-6	2-Methylnaphthalene	19000.	U	390.	U				
95-48-7	2-Methylphenol (o-Cresol)	19000.	U	390.	U				
106-44-5	4-Methylphenol (p-Cresol)	19000.	U	390.	U				
621-64-7	N-Nitroso-di-n-propylamine	19000.	U	390.	U				
86-30-6	N-Nitrosodiphenylamine	19000.	U	390.	U				
91-20-3	Naphthalene	19000.	U	390.	U				
88-74-4	2-Nitroaniline	19000.	U	390.	U				
99-09-2	3-Nitroaniline	19000.	U	390.	U				
100-01-6	4-Nitroaniline	19000.	U	390.	U				
98-95-3	Nitrobenzene	19000.	U	390.	U				
88-75-5	2-Nitrophenol	19000.	U	390.	U				
100-02-7	4-Nitrophenol	95000.	U	2000.	U				
87-86-5	Pentachlorophenol	95000.	U	2000.	U				
85-01-8	Phenanthrene	19000.	U	390.	U				
108-95-2	Phenol	19000.	U	390.	U				
709-98-8	Propanil	19000.	U	390.	U				
129-00-0	Pyrene	19000.	U	390.	U				
120-82-1	1,2,4-Trichlorobenzene	19000.	U	390.	U				
95-95-4	2,4,5-Trichlorophenol	19000.	U	390.	U				
88-06-2	2,4,6-Trichlorophenol	19000.	U	390.	U				

*** Validation Complete ***

CEDAR CHEMICAL CORPORATION
WEST HELENA, ARKANSAS
PHASE 1 SITE 3 SEDIMENT DATA

PEST	SHORT ID --------->	3SED-1		3SED-2		3SED-3		3SED-4		3SED-5		3SED-6	
	ORIGINAL ID ----->	CED3-SED-1		CED3-SED-2		CED3-SED-3		CED3-SED-4		CED3-SED-5		CED3-SED-6	
	SAMPLE DATE ----->	09/13/93		09/13/93		09/13/93		09/13/93		09/14/93		09/14/93	
	DATE ANALYZED --->	10/06/93		10/06/93		10/06/93		10/06/93		10/06/93		10/06/93	
	MATRIX ---------->	Sediment		Sediment		Sediment		Sediment		Sediment		Sediment	
	UNITS ---------->	UG/KG		UG/KG		UG/KG		UG/KG		UG/KG		UG/KG	
CAS #	Parameter	E010	VAL	E010	VAL	E010	VAL	E010	VAL	E010	VAL	E010	VAL
1024-57-3	Heptachlor Epoxide	690.	U	70.	U	670.	U	77.	U	210.	U	260.	U
1031-07-8	Endosulfan Sulfate	540.	U	56.	U	540.	U	61.	U	170.	U	210.	U
309-00-2	Aldrin	33.	U	3.4	U	354.		3.7	U	10.	U	13.	U
319-84-6	Alpha-BHC	25.	U	2.5	U	24.	U	2.8	U	7.7	U	9.5	U
319-85-7	Beta-BHC	50.	U	5.1	U	49.	U	5.5	U	15.	U	19.	U
319-86-8	Delta-BHC	74.	U	7.6	U	73.	U	8.3	U	23.	U	29.	U
33213-65-9	Endosulfan II	33.	U	3.4	U	33.	U	3.7	U	10.	U	13.	U
50-29-3	4,4'-DDT	99.	U	10.	U	8.		11.	U	31.	U	38.	U
5103-71-9	alpha-Chlordane	120.	U	12.	U	110.	U	13.	U	36.	U	44.	U
5103-74-2	gamma-Chlordane	120.	U	12.	U	110.	U	13.	U	36.	U	44.	U
53494-70-5	Endrin ketone	200.	U	20.	U	200.	U	22.	U	61.	U	76.	U
58-89-9	gamma-BHC (Lindane)	33.	U	3.4	U	33.	U	3.7	U	10.	U	13.	U
60-57-1	Dieldrin	17.	U	12.		3400.		2.9		57.		86.	
72-20-8	Endrin	50.	U	5.1	U	49.	U	5.5	U	15.	U	19.	U
72-43-5	Methoxychlor	3600.		260.		2400.		170.	U	460.	U	740.	
72-54-8	4,4'-DDD	91.	U	39.		89.	U	10.	U	28.	U	35.	U
72-55-9	4,4'-DDE	33.	U	6.6		33.	U	7.9		10.	U	13.	U
76-44-8	Heptachlor	25.	U	2.5	U	24.	U	2.8	U	7.7	U	9.5	U
8001-35-2	Toxaphene	2000.	U	200.	U	2000.	U	220.	U	610.	U	760.	U
959-98-8	Endosulfan I	120.	U	12.	U	110.	U	13.	U	36.	U	44.	U

*** Validation Complete ***

CEDAR CHEMICAL CORPORATION
WEST HELENA, ARKANSAS
PHASE 1 SITE 3 SEDIMENT DATA

PEST													
	SHORT ID --------->	3SED-7		3SED-8		3SED-9		3SED-10					
	ORIGINAL ID ----->	CED3-SED-7		CED3-SED-8		CED3-SED-9		CED3-SED-10					
	SAMPLE DATE ----->	09/14/93		09/14/93		09/14/93		09/16/93					
	DATE ANALYZED --->	10/06/93		10/06/93		10/06/93		10/07/93					
	MATRIX ---------->	Sediment		Sediment		Sediment		Sediment					
	UNITS ---------->	UG/KG		UG/KG		UG/KG		UG/KG					
CAS #	Parameter	E010	VAL	E010	VAL	E010	VAL	E011	VAL				
1024-57-3	Heptachlor Epoxide	330.	U	310.	U	72.	U	65.	U				
1031-07-8	Endosulfan Sulfate	260.	U	240.	U	57.	U	51.	U				
309-00-2	Aldrin	16.	U	15.	U	3.5	U	3.1	U				
319-84-6	Alpha-BHC	12.	U	11.	U	2.6	U	2.3	U				
319-85-7	Beta-BHC	24.	U	22.	U	5.2	U	4.7	U				
319-86-8	Delta-BHC	36.	U	33.	U	7.8	U	7.	U				
33213-65-9	Endosulfan II	16.	U	15.	U	3.5	U	3.1	U				
50-29-3	4,4'-DDT	48.	U	44.	U	10.	U	12.					
5103-71-9	alpha-Chlordane	56.	U	52.	U	12.	U	11.	U				
5103-74-2	gamma-Chlordane	56.	U	52.	U	12.	U	11.	U				
53494-70-5	Endrin ketone	95.	U	89.	U	21.	U	19.					
58-89-9	gamma-BHC (Lindane)	16.	U	15.	U	3.5	U	3.1	U				
60-57-1	Dieldrin	200.		34.		4.5		1.6	U				
72-20-8	Endrin	24.	U	22.	U	5.2	U	4.7	U				
72-43-5	Methoxychlor	890.		1300.		160.	U	140.	U				
72-54-8	4,4'-DDD	44.	U	41.	U	9.5	U	29.					
72-55-9	4,4'-DDE	16.	U	15.	U	3.5	U	26.					
76-44-8	Heptachlor	12.	U	11.	U	2.6	U	2.3	U				
8001-35-2	Toxaphene	950.	U	890.	U	210.	U	190.	U				
959-98-8	Endosulfan I	56.	U	52.	U	12.	U	11.	U				

*** Validation Complete ***

CEDAR CHEMICAL CORPORATION
WEST HELENA, ARKANSAS
PHASE 1 SITE 3 SEDIMENT DATA

RCRA METAL												
	SHORT ID --------->	3SED-1		3SED-2		3SED-3		3SED-4		3SED-5		3SED-6	
	ORIGINAL ID ----->	CED3-SED-1		CED3-SED-2		CED3-SED-3		CED3-SED-4		CED3-SED-5		CED3-SED-6	
	SAMPLE DATE ----->	09/13/93		09/13/93		09/13/93		09/13/93		09/14/93		09/14/93	
	DATE ANALYZED --->	10/01/93		10/01/93		10/01/93		10/01/93		10/01/93		10/01/93	
	MATRIX ---------->	Sediment		Sediment		Sediment		Sediment		Sediment		Sediment	
	UNITS ----------->	MG/KG		MG/KG		MG/KG		MG/KG		MG/KG		MG/KG	
CAS #	Parameter	E010	VAL	E010	VAL	E010	VAL	E010	VAL	E010	VAL	E010	VAL
7440-38-2	Arsenic (As)	6.5		6.6		4.5		3.6		7.2		12.5	
7440-39-3	Barium (Ba)	114.		138.		95.6		87.2		114.		123.	
7440-43-9	Cadmium (Cd)	0.36	U	0.38	U	0.37	U	0.41	U	0.37	U	0.35	U
7440-47-3	Chromium (Cr)	9.5		16.6		16.1		12.3		11.2		19.1	
7439-92-1	Lead (Pb)	7.4		13.9		9.5		9.		9.9		12.2	
7439-97-6	Mercury (Hg)	0.12	U	0.12	U	0.12	U	0.13	U	0.13	U	0.11	U
7782-49-2	Selenium (Se)	0.61	U	0.64	U	0.61	U	0.69	U	0.62	U	0.58	U
7440-22-4	Silver (Ag)	0.36	U	0.38	U	0.37	U	0.41	U	0.37	U	0.35	U

*** Validation Complete ***

CEDAR CHEMICAL CORPORATION
WEST HELENA, ARKANSAS
PHASE 1 SITE 3 SEDIMENT DATA

RCRA METAL												
	SHORT ID --------->	3SED-7		3SED-8		3SED-9		3SED-10				
	ORIGINAL ID ----->	CED3-SED-7		CED3-SED-8		CED3-SED-9		CED3-SED-10				
	SAMPLE DATE ----->	09/14/93		09/14/93		09/14/93		09/16/93				
	DATE ANALYZED --->	10/01/93		10/01/93		10/01/93		10/11/93				
	MATRIX ---------->	Sediment		Sediment		Sediment		Sediment				
	UNITS ----------->	MG/KG		MG/KG		MG/KG		MG/KG				
CAS #	Parameter	ED10	VAL	ED10	VAL	ED10	VAL	ED11	VAL			
7440-38-2	Arsenic (As)	6.6		9.3		222.		4.3				
7440-39-3	Barium (Ba)	143.		112.		150.		215.				
7440-43-9	Cadmium (Cd)	0.35	U	0.4	U	0.38	U	0.34	U			
7440-47-3	Chromium (Cr)	15.8		10.3		12.1		8.				
7439-92-1	Lead (Pb)	11.5		7.5		10.9		11.				
7439-97-6	Mercury (Hg)	0.11	U	0.14	U	0.13	U	0.11	U			
7782-49-2	Selenium (Se)	0.59	U	0.67	U	0.63	U	0.57	U			
7440-22-4	Silver (Ag)	0.35	U	0.4	U	0.38	U	0.34	U			

*** Validation Complete ***

CEDAR CHEMICAL CORPORATION
WEST HELENA, ARKANSAS
PHASE 1 SITE 3 SEDIMENT DATA

SVOA																							
	SHORT ID -------->	3SED-1				3SED-2				3SED-3				3SED-4				3SED-5				3SED-6			
	ORIGINAL ID ----->	CED3SED-1				CED3SED-2				CED3SED-3				CED3SED-4				CED3-SED5				CED3-SED6			
	SAMPLE DATE ----->	09/13/93				09/13/93				09/13/93				09/13/93				09/14/93				09/14/93			
	DATE ANALYZED --->	10/18/93				10/18/93				10/18/93				10/18/93				10/19/93				10/19/93			
	MATRIX ---------->	Sediment				Sediment				Sediment				Sediment				Sediment				Sediment			
	UNITS ---------->	UG/KG				UG/KG				UG/KG				UG/KG				UG/KG				UG/KG			
CAS #	Parameter	ED10			VAL	ED10			VAL	ED10			VAL	ED10			VAL	ED10			VAL	ED10			VAL
100-01-6	4-Nitroaniline	4100.			U	4200.			U	4100.			U	4600.			U	4300.			U	4000.			U
100-02-7	4-Nitrophenol	350.				4200.			U	4100.			U	4600.			U	4300.			U	4000.			U
100-51-6	Benzyl alcohol	830.			U	850.			U	810.			U	930.			U	850.			U	790.			U
101-55-3	4-Bromophenyl-phenylether	830.			U	850.			U	810.			U	930.			U	850.			U	790.			U
105-67-9	2,4-Dimethylphenol	830.			U	850.			U	810.			U	930.			U	850.			U	790.			U
106-44-5	4-Methylphenol (p-Cresol)	830.			U	850.			U	810.			U	930.			U	850.			U	790.			U
106-46-7	1,4-Dichlorobenzene	830.			U	850.			U	810.			U	930.			U	850.			U	790.			U
106-47-8	4-Chloroaniline	830.			U	190.				500.				930.			U	850.			U	790.			U
108-60-1	bis(2-chloroisopropyl) ether	830.			U	850.			U	810.			U	930.			U	850.			U	790.			U
108-95-2	Phenol	830.			U	850.			U	810.			U	930.			U	850.			U	790.			U
111-44-4	bis(2-Chloroethyl)ether	830.			U	850.			U	810.			U	930.			U	850.			U	790.			U
111-91-1	bis(2-Chloroethoxy)methane	830.			U	850.			U	810.			U	930.			U	850.			U	790.			U
117-81-7	bis(2-Ethylhexyl)phthalate (BEHP)	830.			U	850.			U	810.			U	930.			U	850.			U	790.			U
117-84-0	Di-n-octylphthalate	830.			U	850.			U	810.			U	930.			U	850.			U	790.			U
118-74-1	Hexachlorobenzene	830.			U	850.			U	810.			U	930.			U	850.			U	790.			U
120-12-7	Anthracene	830.			U	850.			U	810.			U	930.			U	850.			U	790.			U
120-82-1	1,2,4-Trichlorobenzene	830.			U	230.				92.				930.			U	850.			U	790.			U
120-83-2	2,4-Dichlorophenol	830.			U	850.			U	810.			U	930.			U	850.			U	790.			U
121-14-2	2,4-Dinitrotoluene	830.			U	850.			U	810.			U	930.			U	850.			U	790.			U
129-00-0	Pyrene	830.			U	850.			U	810.			U	930.			U	850.			U	790.			U
131-11-3	Dimethylphthalate	830.			U	850.			U	810.			U	930.			U	850.			U	790.			U
132-64-9	Dibenzofuran	830.			U	850.			U	810.			U	930.			U	850.			U	790.			U
191-24-2	Benzo(g,h,i)perylene	830.			U	850.			U	810.			U	930.			U	850.			U	790.			U
193-39-5	Indeno(1,2,3-cd)pyrene	830.			U	850.			U	810.			U	930.			U	850.			U	790.			U
205-99-2	Benzo(b)fluoranthene	830.			U	850.			U	810.			U	930.			U	850.			U	790.			U
206-44-0	Fluoranthene	830.			U	850.			U	810.			U	930.			U	850.			U	790.			U
207-08-9	Benzo(k)fluoranthene	830.			U	850.			U	810.			U	930.			U	850.			U	790.			U
208-96-8	Acenaphthylene	830.			U	850.			U	810.			U	930.			U	850.			U	790.			U
218-01-9	Chrysene	830.			U	850.			U	810.			U	930.			U	850.			U	790.			U
50-32-8	Benzo(a)pyrene	830.			U	850.			U	810.			U	930.			U	850.			U	790.			U
51-28-5	2,4-Dinitrophenol	4100.			U	4200.			U	4100.			U	4600.			U	4300.			U	4000.			U
534-52-1	4,6-Dinitro-2-methylphenol	4100.			U	4200.			U	4100.			U	4600.			U	4300.			U	4000.			U
53-70-3	Dibenz(a,h)anthracene	830.			U	850.			U	810.			U	930.			U	850.			U	790.			U
541-73-1	1,3-Dichlorobenzene	830.			U	850.			U	810.			U	930.			U	850.			U	790.			U
56-55-3	Benzo(a)anthracene	830.			U	850.			U	810.			U	930.			U	850.			U	790.			U
59-50-7	4-Chloro-3-methylphenol	830.			U	850.			U	810.			U	930.			U	850.			U	790.			U
606-20-2	2,6-Dinitrotoluene	830.			U	850.			U	810.			U	930.			U	850.			U	790.			U
621-64-7	N-Nitroso-di-n-propylamine	830.			U	850.			U	810.			U	930.			U	850.			U	790.			U
65-85-0	Benzoic acid	4100.			U	4200.			U	4100.			U	4600.			U	4300.			U	4000.			U

*** Validation Complete ***

CEDAR CHEMICAL CORPORATION
WEST HELENA, ARKANSAS
PHASE 1 SITE 3 SEDIMENT DATA

SVOA													
	SHORT ID -------->	3SED-1		3SED-2		3SED-3		3SED-4		3SED-5		3SED-6	
	ORIGINAL ID ----->	CED3SED-1		CED3SED-2		CED3SED-3		CED3SED-4		CED3-SED5		CED3-SED6	
	SAMPLE DATE ----->	09/13/93		09/13/93		09/13/93		09/13/93		09/14/93		09/14/93	
	DATE ANALYZED --->	10/18/93		10/18/93		10/18/93		10/18/93		10/19/93		10/19/93	
	MATRIX ---------->	Sediment		Sediment		Sediment		Sediment		Sediment		Sediment	
	UNITS ---------->	UG/KG		UG/KG		UG/KG		UG/KG		UG/KG		UG/KG	
CAS #	Parameter	E010	VAL	E010	VAL	E010	VAL	E010	VAL	E010	VAL	E010	VAL
67-72-1	Hexachloroethane	830.	U	850.	U	810.	U	930.	U	850.	U	790.	U
7005-72-3	4-Chlorophenyl-phenylether	830.	U	850.	U	810.	U	930.	U	850.	U	790.	U
709-98-8	Propanil	830.	U	110.		44.		930.	U	850.	U	790.	U
77-47-4	Hexachlorocyclopentadiene	830.	U	850.	U	810.	U	930.	U	850.	U	790.	U
78-59-1	Isophorone	830.	U	850.	U	810.	U	930.	U	850.	U	790.	U
83-32-9	Acenaphthene	830.	U	850.	U	810.	U	930.	U	850.	U	790.	U
84-66-2	Diethylphthalate	830.	U	850.	U	810.	U	930.	U	850.	U	790.	U
84-74-2	Di-n-butylphthalate	830.	U	850.	U	810.	U	930.	U	850.	U	790.	U
85-01-8	Phenanthrene	830.	U	850.	U	810.	U	930.	U	850.	U	790.	U
85-68-7	Butylbenzylphthalate	830.	U	850.	U	810.	U	930.	U	850.	U	790.	U
86-30-6	N-Nitrosodiphenylamine	830.	U	850.	U	810.	U	930.	U	850.	U	790.	U
86-73-7	Fluorene	830.	U	850.	U	810.	U	930.	U	850.	U	790.	U
87-68-3	Hexachlorobutadiene	830.	U	850.	U	810.	U	930.	U	850.	U	790.	U
87-86-5	Pentachlorophenol	5300.		200.		4100.	U	4600.	U	4300.	U	4000.	U
88-06-2	2,4,6-Trichlorophenol	830.	U	850.	U	810.	U	930.	U	850.	U	790.	U
88-74-4	2-Nitroaniline	4100.	U	4200.	U	4100.	U	4600.	U	4300.	U	4000.	U
88-75-5	2-Nitrophenol	830.	U	850.	U	810.	U	930.	U	850.	U	790.	U
88-85-7	Dinoseb	6300.	U	4200.	U	4100.	U	4600.	U	1700.	U	4000.	U
91-20-3	Naphthalene	830.	U	850.	U	810.	U	930.	U	86.		790.	U
91-57-6	2-Methylnaphthalene	830.	U	850.	U	810.	U	930.	U	550.		790.	U
91-58-7	2-Chloronaphthalene	830.	U	850.	U	810.	U	930.	U	850.	U	790.	U
91-94-1	3,3'-Dichlorobenzidine	1700.	U	1700.	U	1600.	U	1900.	U	1700.	U	1600.	U
95-48-7	2-Methylphenol (o-Cresol)	830.	U	850.	U	810.	U	930.	U	850.	U	790.	U
95-50-1	1,2-Dichlorobenzene	830.	U	850.	U	300.		930.	U	120.		790.	U
95-57-8	2-Chlorophenol	830.	U	850.	U	810.	U	930.	U	850.	U	790.	U
95-76-1	3,4-Dichloroaniline	830.	U	2800.		1300.		440.		100000.		400.	
95-95-4	2,4,5-Trichlorophenol	4100.	U	4200.	U	4100.	U	4600.	U	4300.	U	4000.	U
98-95-3	Nitrobenzene	830.	U	850.	U	810.	U	930.	U	850.	U	790.	U
99-09-2	3-Nitroaniline	4100.	U	4200.	U	4100.	U	4600.	U	4300.	U	4000.	U

*** Validation Complete ***

CEDAR CHEMICAL CORPORATION
WEST HELENA, ARKANSAS
PHASE 1 SITE 3 SEDIMENT DATA

SVOA													
	SHORT ID --------->	3SED-7		3SED-8		3SED-9		3SED-10					
	ORIGINAL ID ----->	CED3-SED7		CED3-SED8		CED3-SED9		CED3SED10					
	SAMPLE DATE ----->	09/14/93		09/14/93		09/14/93		09/16/93					
	DATE ANALYZED --->	10/19/93		10/19/93		10/19/93		10/15/93					
	MATRIX ---------->	Sediment		Sediment		Sediment		Sediment					
	UNITS ----------->	UG/KG		UG/KG		UG/KG		UG/KG					
CAS #	Parameter	E010	VAL	E010	VAL	E010	VAL	E011	VAL				
100-01-6	4-Nitroaniline	4000.	U	4600.	U	4300.	U	930.	U				
100-02-7	4-Nitrophenol	4000.	U	4600.	U	4300.	U	930.	U				
100-51-6	Benzyl alcohol	800.	U	920.	U	870.	U	NR					
101-55-3	4-Bromophenyl-phenylether	800.	U	920.	U	870.	U	380.	U				
105-67-9	2,4-Dimethylphenol	800.	U	920.	U	870.	U	380.	U				
106-44-5	4-Methylphenol (p-Cresol)	800.	U	920.	U	870.	U	380.	U				
106-46-7	1,4-Dichlorobenzene	800.	U	920.	U	870.	U	380.	U				
106-47-8	4-Chloroaniline	800.	U	920.	U	870.	U	380.	U				
108-60-1	bis(2-chloroisopropyl) ether	800.	U	920.	U	870.	U	380.	U				
108-95-2	Phenol	800.	U	920.	U	870.	U	380.	U				
111-44-4	bis(2-Chloroethyl)ether	800.	U	920.	U	870.	U	380.	U				
111-91-1	bis(2-Chloroethoxy)methane	800.	U	920.	U	870.	U	380.	U				
117-81-7	bis(2-Ethylhexyl)phthalate (BEHP)	800.	U	920.	U	870.	U	380.	U				
117-84-0	Di-n-octylphthalate	800.	U	180.		870.	U	380.	U				
118-74-1	Hexachlorobenzene	800.	U	920.	U	870.	U	380.	U				
120-12-7	Anthracene	800.	U	920.	U	870.	U	380.	U				
120-82-1	1,2,4-Trichlorobenzene	800.	U	920.	U	870.	U	380.	U				
120-83-2	2,4-Dichlorophenol	800.	U	920.	U	870.	U	380.	U				
121-14-2	2,4-Dinitrotoluene	800.	U	920.	U	870.	U	380.	U				
129-00-0	Pyrene	800.	U	920.	U	870.	U	380.	U				
131-11-3	Dimethylphthalate	800.	U	920.	U	870.	U	380.	U				
132-64-9	Dibenzofuran	800.	U	920.	U	870.	U	380.	U				
191-24-2	Benzo(g,h,i)perylene	800.	U	920.	U	870.	U	380.	U				
193-39-5	Indeno(1,2,3-cd)pyrene	800.	U	920.	U	870.	U	380.	U				
205-99-2	Benzo(b)fluoranthene	800.	U	920.	U	870.	U	380.	U				
206-44-0	Fluoranthene	800.	U	920.	U	870.	U	380.	U				
207-08-9	Benzo(k)fluoranthene	800.	U	920.	U	870.	U	380.	U				
208-96-8	Acenaphthylene	800.	U	920.	U	870.	U	380.	U				
218-01-9	Chrysene	800.	U	920.	U	870.	U	380.	U				
50-32-8	Benzo(a)pyrene	800.	U	920.	U	870.	U	380.	U				
51-28-5	2,4-Dinitrophenol	4000.	U	4600.	U	4300.	U	930.	U				
534-52-1	4,6-Dinitro-2-methylphenol	4000.	U	4600.	U	4300.	U	930.	U				
53-70-3	Dibenz(a,h)anthracene	800.	U	920.	U	870.	U	380.	U				
541-73-1	1,3-Dichlorobenzene	800.	U	920.	U	870.	U	380.	U				
56-55-3	Benzo(a)anthracene	800.	U	920.	U	870.	U	380.	U				
59-50-7	4-Chloro-3-methylphenol	800.	U	920.	U	870.	U	380.	U				
606-20-2	2,6-Dinitrotoluene	800.	U	920.	U	870.	U	380.	U				
621-64-7	N-Nitroso-di-n-propylamine	800.	U	920.	U	870.	U	380.	U				
65-85-0	Benzoic acid	4000.	U	4600.	U	4300.	U	NR					

*** Validation Complete ***

CEDAR CHEMICAL CORPORATION
WEST HELENA, ARKANSAS
PHASE 1 SITE 3 SEDIMENT DATA

SVOA													
	SHORT ID --------->	3SED-7		3SED-8		3SED-9		3SED-10					
	ORIGINAL ID ----->	CED3-SED7		CED3-SED8		CED3-SED9		CED3SED10					
	SAMPLE DATE ----->	09/14/93		09/14/93		09/14/93		09/16/93					
	DATE ANALYZED --->	10/19/93		10/19/93		10/19/93		10/15/93					
	MATRIX ---------->	Sediment		Sediment		Sediment		Sediment					
	UNITS ---------->	UG/KG		UG/KG		UG/KG		UG/KG					
CAS #	Parameter	E010	VAL	E010	VAL	E010	VAL	E011	VAL				
67-72-1	Hexachloroethane	800.	U	920.	U	870.	U	380.	U				
7005-72-3	4-Chlorophenyl-phenylether	800.	U	920.	U	870.	U	380.	U				
709-98-8	Propanil	800.	U	920.	U	870.	U	930.	U				
77-47-4	Hexachlorocyclopentadiene	800.	U	920.	U	870.	U	380.	U				
78-59-1	Isophorone	800.	U	920.	U	870.	U	380.	U				
83-32-9	Acenaphthene	800.	U	920.	U	870.	U	380.	U				
84-66-2	Diethylphthalate	800.	U	920.	U	870.	U	380.	U				
84-74-2	Di-n-butylphthalate	800.	U	920.	U	870.	U	380.	U				
85-01-8	Phenanthrene	800.	U	920.	U	870.	U	380.	U				
85-68-7	Butylbenzylphthalate	800.	U	920.	U	870.	U	380.	U				
86-30-6	N-Nitrosodiphenylamine	800.	U	920.	U	870.	U	380.	U				
86-73-7	Fluorene	800.	U	920.	U	870.	U	380.	U				
87-68-3	Hexachlorobutadiene	800.	U	920.	U	870.	U	380.	U				
87-86-5	Pentachlorophenol	4000.	U	4600.	U	4300.	U	930.	U				
88-06-2	2,4,6-Trichlorophenol	800.	U	920.	U	870.	U	380.	U				
88-74-4	2-Nitroaniline	4000.	U	4600.	U	4300.	U	930.	U				
88-75-5	2-Nitrophenol	800.	U	920.	U	870.	U	380.	U				
88-85-7	Dinoseb	4000.		4600.	U	4300.	U	930.	U				
91-20-3	Naphthalene	800.	U	920.	U	870.	U	380.	U				
91-57-6	2-Methylnaphthalene	800.	U	920.	U	870.	U	380.	U				
91-58-7	2-Chloronaphthalene	800.	U	920.	U	870.	U	380.	U				
91-94-1	3,3'-Dichlorobenzidine	1600.	U	1800.	U	1700.	U	380.	U				
95-48-7	2-Methylphenol (o-Cresol)	800.	U	920.	U	870.	U	380.	U				
95-50-1	1,2-Dichlorobenzene	800.	U	920.	U	870.	U	380.	U				
95-57-8	2-Chlorophenol	800.	U	920.	U	870.	U	380.	U				
95-76-1	3,4-Dichloroaniline	370.		840.		310.		930.	U				
95-95-4	2,4,5-Trichlorophenol	4000.	U	4600.	U	4300.	U	930.	U				
98-95-3	Nitrobenzene	800.	U	920.	U	870.	U	380.	U				
99-09-2	3-Nitroaniline	4000.	U	4600.	U	4300.	U	NR					

*** Validation Complete ***

CEDAR CHEMICAL CORPORATION
WEST HELENA, ARKANSAS
PHASE 1 SITE 3 SEDIMENT DATA

VOA																							
	SHORT ID --------->	3SED-1				3SED-2				3SED-3				3SED-4				3SED-5				3SED-6	
	ORIGINAL ID ----->	CED3-SED-1				CED3-SED-2				CED3-SED-3				CED3-SED-4				CED3-SED-5				CED3-SED-6	
	SAMPLE DATE ----->	09/13/93				09/13/93				09/13/93				09/13/93				09/14/93				09/14/93	
	DATE ANALYZED --->	09/20/93				09/20/93				09/21/93				09/21/93				09/24/93				09/21/93	
	MATRIX ---------->	Sediment				Sediment				Sediment				Sediment				Sediment				Sediment	
	UNITS ---------->	UG/KG				UG/KG				UG/KG				UG/KG				UG/KG				UG/KG	
CAS #	Parameter	ED10		VAL		ED10		VAL		ED10		VAL		ED10		VAL		ED10		VAL		ED10	VAL
100-41-4	Ethylbenzene	6.		U		6.		U		6.		U		7.		U		7.				6.	U
100-42-5	Styrene	6.		U		6.		U		6.		U		7.		U		6.		U		6.	U
10061-01-5	cis-1,3-Dichloropropene	6.		U		6.		U		6.		U		7.		U		6.		U		6.	U
10061-02-6	trans-1,3-Dichloropropene	6.		U		6.		U		6.		U		7.		U		6.		U		6.	U
107-06-2	1,2-Dichloroethane	6.		U		6.		U		6.		U		7.		U		6.		U		6.	U
108-05-4	Vinyl acetate	6.		U		6.		U		6.		U		7.		U		6.		U		6.	U
108-10-1	4-Methyl-2-Pentanone (MIBK)	59.		U		60.		U		59.		U		71.		U		64.		U		60.	U
108-88-3	Toluene	6.		U		6.		U		6.		U		7.		U		6.		U		6.	U
108-90-7	Chlorobenzene	6.		U		34.				11.				7.		U		6.		U		6.	U
124-48-1	Dibromochloromethane	6.		U		6.		U		6.		U		7.		U		6.		U		6.	U
127-18-4	Tetrachloroethene	6.		U		6.		U		6.		U		7.		U		6.		U		6.	U
1330-20-7	Xylene (total)	6.		U		6.		U		6.		U		7.		U		44.				6.	U
540-59-0	1,2-Dichloroethene (total)	6.		U		6.		U		6.		U		7.		U		6.		U		6.	U
56-23-5	Carbon tetrachloride	6.		U		6.		U		6.		U		7.		U		6.		U		6.	U
591-78-6	2-Hexanone	59.		U		60.		U		59.		U		71.		U		64.		U		60.	U
67-64-1	Acetone	12.		U		12.		U		130.				14.		U		13.		U		12.	U
67-66-3	Chloroform	6.		U		6.		U		6.		U		7.		U		6.		U		6.	U
71-43-2	Benzene	6.		U		6.		U		6.		U		7.		U		6.		U		6.	U
71-55-6	1,1,1-Trichloroethane	6.		U		6.		U		6.		U		7.		U		6.		U		6.	U
74-83-9	Bromomethane	12.		U		12.		U		12.		U		14.		U		13.		U		12.	U
74-87-3	Chloromethane	12.		U		12.		U		12.		U		14.		U		13.		U		12.	U
75-00-3	Chloroethane	12.		U		12.		U		12.		U		14.		U		13.		U		12.	U
75-01-4	Vinyl chloride	6.		U		6.		U		6.		U		7.		U		6.		U		6.	U
75-09-2	Methylene chloride	6.		U		6.		U		6.		U		7.		U		2.				6.	U
75-15-0	Carbon disulfide	6.		U		6.		U		6.		U		7.		U		6.		U		6.	U
75-25-2	Bromoform	6.		U		6.		U		6.		U		7.		U		6.		U		6.	U
75-27-4	Bromodichloromethane	6.		U		6.		U		6.		U		7.		U		6.		U		6.	U
75-34-3	1,1-Dichloroethane	6.		U		6.		U		6.		U		7.		U		6.		U		6.	U
75-35-4	1,1-Dichloroethene	6.		U		6.		U		6.		U		7.		U		6.		U		6.	U
78-87-5	1,2-Dichloropropane	6.		U		6.		U		6.		U		7.		U		6.		U		6.	U
78-93-3	2-Butanone (MEK)	12.		U		12.		U		12.		U		14.		U		13.		U		12.	U
79-00-5	1,1,2-Trichloroethane	6.		U		6.		U		6.		U		7.		U		6.		U		6.	U
79-01-6	Trichloroethene	6.		U		6.		U		6.		U		7.		U		6.		U		6.	U
79-34-5	1,1,2,2-Tetrachloroethane	6.		U		6.		U		6.		U		7.		U		6.		U		6.	U

*** Validation Complete ***

CEDAR CHEMICAL CORPORATION
WEST HELENA, ARKANSAS
PHASE 1 SITE 3 SEDIMENT DATA

VOA								
	SHORT ID --------->	3SED-7		3SED-8		3SED-9		3SED-10	
	ORIGINAL ID ----->	CED3-SED-7		CED3-SED-8		CED3-SED-9		CED3-SED-10	
	SAMPLE DATE ----->	09/14/93		09/14/93		09/14/93		09/16/93	
	DATE ANALYZED --->	09/21/93		09/21/93		09/21/93		09/28/93	
	MATRIX ---------->	Sediment		Sediment		Sediment		Sediment	
	UNITS ---------->	UG/KG		UG/KG		UG/KG		UG/KG	
CAS #	Parameter	E010	VAL	E010	VAL	E010	VAL	E011	VAL
100-41-4	Ethylbenzene	6.	U	7.	U	6.	U	2.	
100-42-5	Styrene	6.	U	7.	U	6.	U	6.	U
10061-01-5	cis-1,3-Dichloropropene	6.	U	7.	U	6.	U	6.	U
10061-02-6	trans-1,3-Dichloropropene	6.	U	7.	U	6.	U	6.	U
107-06-2	1,2-Dichloroethane	6.	U	7.	U	6.	U	43.	
108-05-4	Vinyl acetate	6.	U	7.	U	6.	U	6.	U
108-10-1	4-Methyl-2-Pentanone (MIBK)	56.	U	69.	U	61.	U	60.	U
108-88-3	Toluene	6.	U	7.	U	6.	U	6.	U
108-90-7	Chlorobenzene	6.	U	7.	U	6.	U	6.	U
124-48-1	Dibromochloromethane	6.	U	7.	U	6.	U	6.	U
127-18-4	Tetrachloroethene	6.	U	7.	U	6.	U	6.	U
1330-20-7	Xylene (total)	6.	U	7.	U	6.	U	12.	
540-59-0	1,2-Dichloroethene (total)	6.	U	7.	U	6.	U	6.	U
56-23-5	Carbon tetrachloride	6.	U	7.	U	6.	U	6.	U
591-78-6	2-Hexanone	56.	U	69.	U	61.	U	60.	U
67-64-1	Acetone	11.	U	14.	U	12.	U	12.	U
67-66-3	Chloroform	6.	U	7.	U	6.	U	6.	U
71-43-2	Benzene	6.	U	7.	U	6.	U	6.	U
71-55-6	1,1,1-Trichloroethane	6.	U	7.	U	6.	U	6.	U
74-83-9	Bromomethane	11.	U	14.	U	12.	U	12.	U
74-87-3	Chloromethane	11.	U	14.	U	12.	U	12.	U
75-00-3	Chloroethane	11.	U	14.	U	12.	U	12.	U
75-01-4	Vinyl chloride	6.	U	7.	U	6.	U	6.	U
75-09-2	Methylene chloride	6.	U	7.	U	6.	U	160.	
75-15-0	Carbon disulfide	6.	U	7.	U	6.	U	6.	U
75-25-2	Bromoform	6.	U	7.	U	6.	U	6.	U
75-27-4	Bromodichloromethane	6.	U	7.	U	6.	U	6.	U
75-34-3	1,1-Dichloroethane	6.	U	7.	U	6.	U	6.	U
75-35-4	1,1-Dichloroethene	6.	U	7.	U	6.	U	6.	U
78-87-5	1,2-Dichloropropane	6.	U	7.	U	6.	U	6.	U
78-93-3	2-Butanone (MEK)	11.	U	14.	U	12.	U	12.	U
79-00-5	1,1,2-Trichloroethane	6.	U	7.	U	6.	U	6.	U
79-01-6	Trichloroethene	6.	U	7.	U	6.	U	6.	U
79-34-5	1,1,2,2-Tetrachloroethane	6.	U	7.	U	6.	U	6.	U

*** Validation Complete ***

CEDAR CHEMICAL CORPORATION
WEST HELENA, ARKANSAS
SITE 3 PHASE II SEDIMENT DATA

ARSENIC	SHORT ID -------->	3SED-11-S		3SED-12-S		3SED-13-S		3SED-14-S		3SED-15-S		3SED-16-S	
	ORIGINAL ID ----->	003M000101		003M000201		003M000301		003M000401		003M000501		003M000601	
	SAMPLE DATE ----->	11/29/94		11/29/94		11/29/94		11/29/94		11/29/94		11/29/94	
	DATE EXTRACTED -->	12/02/94		12/02/94		12/02/94		12/02/94		12/02/94		12/02/94	
	DATE ANALYZED --->	12/02/94		12/02/94		12/02/94		12/02/94		12/02/94		12/02/94	
	MATRIX ---------->	Sediment		Sediment		Sediment		Sediment		Sediment		Sediment	
	UNITS ---------->	MG/KG		MG/KG		MG/KG		MG/KG		MG/KG		MG/KG	
CAS #	Parameter	10834	VAL	10834	VAL	10834	VAL	10834	VAL	10834	VAL	10834	VAL
7440-38-2	Arsenic (As)	5.	U	5.	U	5.	U	5.	U	5.	U	5.	U

*** Validation Complete ***

CEDAR CHEMICAL CORPORATION
WEST HELENA, ARKANSAS
SITE 3 PHASE II SEDIMENT DATA

ARSENIC	SHORT ID ---------->	3SED-17-S		3SED-18-S		3SED-19-S		3SED-20-S		3SED-20-S DUP		3SED-21-S	
	ORIGINAL ID ----->	003M000701		003M000801		003M000901		003M001001		003N001001		003M001101	
	SAMPLE DATE ----->	11/29/94		11/29/94		11/29/94		11/29/94		11/29/94		11/29/94	
	DATE EXTRACTED -->	12/02/94		12/02/94		12/02/94		12/02/94		12/02/94		12/02/94	
	DATE ANALYZED --->	12/02/94		12/02/94		12/02/94		12/02/94		12/02/94		12/03/94	
	MATRIX ---------->	Sediment		Sediment		Sediment		Sediment		Sediment		Sediment	
	UNITS ---------->	MG/KG		MG/KG		MG/KG		MG/KG		MG/KG		MG/KG	
CAS #	Parameter	10834	VAL	10834	VAL	10834	VAL	10834	VAL	10834	VAL	10834	VAL
7440-38-2	Arsenic (As)	5.	U	5.	U	5.	U	5.	U	5.	U	5.	U

*** Validation Complete ***

CEDAR CHEMICAL CORPORATION
WEST HELENA, ARKANSAS
SITE 3 PHASE II SEDIMENT DATA

ARSENIC	SHORT ID --------->	3SED-22-S						
	ORIGINAL ID ----->	003M001201						
	SAMPLE DATE ----->	11/29/94						
	DATE EXTRACTED -->	12/02/94						
	DATE ANALYZED --->	12/03/94						
	MATRIX ---------->	Sediment						
	UNITS ----------->	MG/KG						
CAS #	Parameter	10834	VAL					
7440-38-2	Arsenic (As)	5.	U					

*** Validation Complete ***

CEDAR CHEMICAL CORPORATION
WEST HELENA, ARKANSAS
SITE 3 PHASE II SEDIMENT DATA

PEST	SHORT ID ------>	3SED-11-S		3SED-12-S		3SED-13-S		3SED-14-S		3SED-15-S		3SED-16-S	
	ORIGINAL ID ----->	003M000101		003M000201		003M000301		003M000401		003M000501		003M000601	
	SAMPLE DATE ----->	11/29/94		11/29/94		11/29/94		11/29/94		11/29/94		11/29/94	
	DATE EXTRACTED -->	12/03/94		12/03/94		12/03/94		12/03/94		12/03/94		12/03/94	
	DATE ANALYZED --->	12/04/94		12/04/94		12/04/94		12/04/94		12/04/94		12/04/94	
	MATRIX ---------->	Sediment		Sediment		Sediment		Sediment		Sediment		Sediment	
	UNITS ----------->	UG/KG		UG/KG		UG/KG		UG/KG		UG/KG		UG/KG	
CAS #	Parameter	10834	VAL	10834	VAL	10834	VAL	10834	VAL	10834	VAL	10834	VAL
319-84-6	Alpha-BHC	2.	U	2.	U	2.	U	2.	U	20.	U	2.	U
319-85-7	Beta-BHC	4.	U	4.	U	4.	U	4.	U	40.	U	4.	U
319-86-8	Delta-BHC	6.	U	6.	U	6.	U	6.	U	60.	U	6.	U
58-89-9	gamma-BHC (Lindane)	2.7	U	2.7	U	2.7	U	2.7	U	27.	U	2.7	U
76-44-8	Heptachlor	2.	U	2.	U	2.	U	2.	U	20.	U	2.	U
309-00-2	Aldrin	2.7	U	2.7	U	2.7	U	2.7	U	27.	U	2.7	U
1024-57-3	Heptachlor Epoxide	56.	U	56.	U	56.	U	56.	U	560.	U	56.	U
959-98-8	Endosulfan I	9.4	U	9.4	U	9.4	U	9.4	U	94.	U	9.4	U
60-57-1	Dieldrin	1.3	U	1.3	U	1.3	U	5.6		13.	U	1.3	U
72-55-9	4,4'-DDE	5.1		2.7	U	2.7	U	2.7	U	27.	U	2.7	U
72-20-8	Endrin	4.	U	4.	U	4.	U	4.	U	40.	U	4.	U
33213-65-9	Endosulfan II	2.7	U	2.7	U	2.7	U	2.7	U	27.	U	2.7	U
72-54-8	4,4'-DDD	7.	U	7.	U	76.		7.	U	70.	U	27.	
7421-93-4	Endrin aldehyde	15.	U	15.	U	15.	U	15.	U	150.	U	15.	U
1031-07-8	Endosulfan Sulfate	44.	U	44.	U	44.	U	44.	U	440.	U	44.	U
50-29-3	4,4'-DDT	15.		8.	U	8.	U	8.	U	80.	U	8.	U
72-43-5	Methoxychlor	120.	U	630.		380.		120.	U	2400.		410.	
57-74-9	Chlordane	9.4	U	9.4	U	9.4	U	9.4	U	94.	U	9.4	U
8001-35-2	Toxaphene	160.	U	160.	U	160.	U	160.	U	1600.	U	160.	U
12674-11-2	Aroclor-1016	60.	U	60.	U	60.	U	60.	U	600.	U	60.	U
11104-28-2	Aroclor-1221	180.	U	180.	U	180.	U	180.	U	1800.	U	180.	U
11141-16-5	Aroclor-1232	32.	U	32.	U	32.	U	32.	U	320.	U	32.	U
53469-21-9	Aroclor-1242	44.	U	44.	U	44.	U	44.	U	440.	U	44.	U
12672-29-6	Aroclor-1248	170.	U	170.	U	170.	U	170.	U	1700.	U	170.	U
11097-69-1	Aroclor-1254	80.	U	80.	U	80.	U	80.	U	800.	U	80.	U
11096-82-5	Aroclor-1260	24.	U	24.	U	24.	U	24.	U	240.	U	24.	U

*** Validation Complete ***

CEDAR CHEMICAL CORPORATION
WEST HELENA, ARKANSAS
SITE 3 PHASE II SEDIMENT DATA

PEST		SHORT ID --------->	3SED-17-S		3SED-18-S		3SED-19-S		3SED-20-S		3SED-20-S DUP		3SED-21-S	
		ORIGINAL ID ----->	003M000701		003M000801		003M000901		003M001001		003N001001		003M001101	
		SAMPLE DATE ----->	11/29/94		11/29/94		11/29/94		11/29/94		11/29/94		11/29/94	
		DATE EXTRACTED -->	12/03/94		12/03/94		12/03/94		12/03/94		12/03/94		12/03/94	
		DATE ANALYZED --->	12/04/94		12/05/94		12/05/94		12/05/94		12/05/94		12/05/94	
		MATRIX ---------->	Sediment		Sediment		Sediment		Sediment		Sediment		Sediment	
		UNITS ---------->	UG/KG		UG/KG		UG/KG		UG/KG		UG/KG		UG/KG	
CAS #	Parameter		10834	VAL	10834	VAL	10834	VAL	10834	VAL	10834	VAL	10834	VAL
319-84-6	Alpha-BHC		2.	U	2.	U	2.	U	2.	U	2.	U	2.	U
319-85-7	Beta-BHC		4.	U	4.	U	4.	U	4.	U	4.	U	4.	U
319-86-8	Delta-BHC		6.	U	6.	U	6.	U	6.	U	6.	U	6.	U
58-89-9	gamma-BHC (Lindane)		2.7	U	2.7	U	2.7	U	2.7	U	2.7	U	2.7	U
76-44-8	Heptachlor		2.	U	2.	U	2.	U	2.	U	2.	U	2.	U
309-00-2	Aldrin		2.8		2.7	U	2.7	U	27.		58.		2.7	U
1024-57-3	Heptachlor Epoxide		56.	U	56.	U	56.	U	56.	U	56.	U	56.	U
959-98-8	Endosulfan I		9.4	U	9.4	U	9.4	U	9.4	U	9.4	U	9.4	U
60-57-1	Dieldrin		1.3	U	1.3	U	1.3	U	220.		550.		1.3	U
72-55-9	4,4'-DDE		2.7	U	2.7	U	2.7	U	2.7	U	78.		2.7	U
72-20-8	Endrin		4.	U	4.	U	4.	U	4.	U	4.	U	76.	
33213-65-9	Endosulfan II		2.7	U	2.7	U	2.7	U	2.7	U	2.7	U	2.7	U
72-54-8	4,4'-DDD		21.		7.	U	7.	U	36.		180.		7.	U
7421-93-4	Endrin aldehyde		15.	U	15.	U	15.	U	15.	U	15.	U	15.	U
1031-07-8	Endosulfan Sulfate		44.	U	44.	U	44.	U	44.	U	44.	U	44.	U
50-29-3	4,4'-DDT		8.	U	8.	U	8.	U	8.	U	8.	U	91.	
72-43-5	Methoxychlor		2500.		1900.		130.		2000.		1200.		1700.	
57-74-9	Chlordane		9.4	U	9.4	U	9.4	U	9.4	U	9.4	U	9.4	U
8001-35-2	Toxaphene		160.	U	160.	U	160.	U	160.	U	160.	U	1600.	
12674-11-2	Aroclor-1016		60.	U	60.	U	60.	U	60.	U	60.	U	60.	U
11104-28-2	Aroclor-1221		180.	U	180.	U	180.	U	180.	U	180.	U	180.	U
11141-16-5	Aroclor-1232		32.	U	32.	U	32.	U	32.	U	32.	U	32.	U
53469-21-9	Aroclor-1242		44.	U	44.	U	44.	U	44.	U	44.	U	44.	U
12672-29-6	Aroclor-1248		170.	U	170.	U	170.	U	170.	U	170.	U	170.	U
11097-69-1	Aroclor-1254		80.	U	80.	U	80.	U	80.	U	80.	U	80.	U
11096-82-5	Aroclor-1260		24.	U	24.	U	24.	U	24.	U	24.	U	24.	U

*** Validation Complete ***

CEDAR CHEMICAL CORPORATION
WEST HELENA, ARKANSAS
SITE 3 PHASE II SEDIMENT DATA

PEST

SHORT ID -------->	3SED-22-S
ORIGINAL ID ----->	003M001201
SAMPLE DATE ----->	11/29/94
DATE EXTRACTED -->	12/03/94
DATE ANALYZED --->	12/05/94
MATRIX ---------->	Sediment
UNITS ----------->	UG/KG

CAS #	Parameter	10834	VAL
319-84-6	Alpha-BHC	2.	U
319-85-7	Beta-BHC	4.	U
319-86-8	Delta-BHC	6.	U
58-89-9	gamma-BHC (Lindane)	2.7	U
76-44-8	Heptachlor	2.	U
309-00-2	Aldrin	2.7	U
1024-57-3	Heptachlor Epoxide	56.	U
959-98-8	Endosulfan I	9.4	U
60-57-1	Dieldrin	1.3	U
72-55-9	4,4'-DDE	2.7	U
72-20-8	Endrin	4.	U
33213-65-9	Endosulfan II	2.7	U
72-54-8	4,4'-DDD	7.	U
7421-93-4	Endrin aldehyde	15.	U
1031-07-8	Endosulfan Sulfate	44.	U
50-29-3	4,4'-DDT	8.	U
72-43-5	Methoxychlor	750.	
57-74-9	Chlordane	9.4	U
8001-35-2	Toxaphene	160.	U
12674-11-2	Aroclor-1016	60.	U
11104-28-2	Aroclor-1221	180.	U
11141-16-5	Aroclor-1232	32.	U
53469-21-9	Aroclor-1242	44.	U
12672-29-6	Aroclor-1248	170.	U
11097-69-1	Aroclor-1254	80.	U
11096-82-5	Aroclor-1260	24.	U

*** Validation Complete ***

CEDAR CHEMICAL CORPORATION
WEST HELENA, ARKANSAS
SITE 4 PHASE I SURFACE SOIL DATA

PEST	SHORT ID --------->	4HA-1 (0-1')		4HA-2 (0-1')		4HA-3 (0-1')		4HA-4 (0-1')		4HA-5 (0-1')		4HA-6 (0-1')	
	ORIGINAL ID ----->	CED4SHA-1-1		CED4SHA-2-1		CED4SHA-3-1		CED4SHA-4-1		CED4-HA5-1		CED4SHA-6-1	
	SAMPLE DATE ----->	09/02/93		09/02/93		09/03/93		09/03/93		09/15/93		09/03/93	
	DATE ANALYZED --->	09/11/93		09/11/93		09/15/93		09/15/93		10/06/93		09/15/93	
	MATRIX ---------->	Soil		Soil		Soil		Soil		Soil		Soil	
	UNITS ---------->	UG/KG		UG/KG		UG/KG		UG/KG		UG/KG		UG/KG	
CAS #	Parameter	E002	VAL	E002	VAL	E003	VAL	E003	VAL	E010	VAL	E003	VAL
1024-57-3	Heptachlor Epoxide	60.	U	620.	U	58.	U	59.	U	130.	U	190.	U
1031-07-8	Endosulfan Sulfate	48.	U	490.	U	46.	U	46.	U	100.	U	150.	U
309-00-2	Aldrin	2.9	U	30.	U	2.8	U	2.8	U	6.2	U	9.	U
319-84-6	Alpha-BHC	2.2	U	22.	U	2.1	U	2.1	U	4.6	U	14.	
319-85-7	Beta-BHC	4.4	U	44.	U	4.2	U	4.3	U	9.2	U	14.	U
319-86-8	Delta-BHC	6.5	U	67.	U	6.3	U	6.4	U	14.	U	20.	U
33213-65-9	Endosulfan II	2.9	U	30.	U	2.8	U	3.4		6.2	U	9.	U
50-29-3	4,4'-DDT	8.7	U	260.		8.4	U	8.4	U	18.	U	100.	
5103-71-9	alpha-Chlordane	10.	U	100.	U	9.8	U	10.	U	22.	U	32.	U
5103-74-2	gamma-Chlordane	10.	U	100.	U	9.8	U	10.	U	22.	U	32.	U
53494-70-5	Endrin ketone	17.	U	180.	U	17.	U	17.	U	37.	U	54.	U
58-89-9	gamma-BHC (Lindane)	2.9	U	30.	U	2.8	U	2.8	U	6.2	U	9.	U
60-57-1	Dieldrin	1.5	U	15.	U	1.4	U	1.6		3.1	U	190.	
72-20-8	Endrin	4.4	U	44.	U	4.2	U	4.3	U	9.2	U	14.	U
72-43-5	Methoxychlor	130.	U	15000.		8400.		12000.		3200.		9400.	
72-54-8	4,4'-DDD	8.	U	82.	U	7.7	U	7.8	U	44.		33.	
72-55-9	4,4'-DDE	6.5		56.		5.2		25.		19.		36.	
76-44-8	Heptachlor	2.2	U	22.	U	2.1	U	2.1	U	12.		6.8	U
8001-35-2	Toxaphene	170.	U	1800.	U	170.	U	170.	U	370.	U	540.	U
959-98-8	Endosulfan I	10.	U	100.	U	9.8	U	10.	U	22.	U	32.	

*** Validation Complete ***

CEDAR CHEMICAL CORPORATION
WEST HELENA, ARKANSAS
SITE 4 PHASE I SURFACE SOIL DATA

PEST

SHORT ID --------->	4HA-7 (5-6')	4HA-8 (5-6')	4MW-2 (0-5')
ORIGINAL ID ----->	CED4SHA-7-1	CED4SHA-8-1	CED4-SMW2-1
SAMPLE DATE ----->	09/03/93	09/03/93	09/16/93
DATE ANALYZED --->	09/15/93	09/15/93	10/07/93
MATRIX ---------->	Soil	Soil	Soil
UNITS ----------->	UG/KG	UG/KG	UG/KG

CAS #	Parameter	E003	VAL	E003	VAL	E011	VAL
1024-57-3	Heptachlor Epoxide	69.	U	68.	U	66.	U
1031-07-8	Endosulfan Sulfate	55.	U	54.	U	52.	U
309-00-2	Aldrin	3.3	U	3.3	U	3.2	U
319-84-6	Alpha-BHC	2.5	U	2.4	U	2.4	U
319-85-7	Beta-BHC	5.	U	4.9	U	4.7	U
319-86-8	Delta-BHC	7.5	U	7.3	U	7.1	U
33213-65-9	Endosulfan II	3.3	U	3.3	U	3.2	U
50-29-3	4,4'-DDT	10.	U	9.8	U	9.5	U
5103-71-9	alpha-Chlordane	12.	U	11.	U	11.	U
5103-74-2	gamma-Chlordane	12.	U	11.	U	11.	U
53494-70-5	Endrin ketone	20.	U	20.	U	19.	U
58-89-9	gamma-BHC (Lindane)	3.3	U	3.3	U	3.2	U
60-57-1	Dieldrin	1.7	U	1.6	U	1.6	U
72-20-8	Endrin	5.	U	4.9	U	4.8	U
72-43-5	Methoxychlor	150.	U	150.	U	140.	U
72-54-8	4,4'-DDD	9.2	U	8.9	U	8.7	U
72-55-9	4,4'-DDE	3.3	U	3.3	U	3.2	U
76-44-8	Heptachlor	2.5	U	2.4	U	2.4	U
8001-35-2	Toxaphene	200.	U	200.	U	190.	U
959-98-8	Endosulfan I	12.	U	11.	U	11.	U

*** Validation Complete ***

CEDAR CHEMICAL CORPORATION
WEST HELENA, ARKANSAS
SITE 4 PHASE I SURFACE SOIL DATA

RCRA METAL	SHORT ID --------->	4HA-1 (0-1')		4HA-2 (0-1')		4HA-3 (0-1')		4HA-4 (0-1')		4HA-5 (0-1')		4HA-6 (0-1')	
	ORIGINAL ID ----->	CED4SHA-1-1		CED4SHA-2-1		CED4SHA-3-1		CED4SHA-4-1		CED4-HA5-1		CED4SHA-6-1	
	SAMPLE DATE ----->	09/02/93		09/02/93		09/03/93		09/03/93		09/15/93		09/03/93	
	DATE ANALYZED --->	09/16/93		09/16/93		10/01/93		10/01/93		10/01/93		10/01/93	
	MATRIX ---------->	Soil		Soil		Soil		Soil		Soil		Soil	
	UNITS ---------->	MG/KG		MG/KG		MG/KG		MG/KG		MG/KG		MG/KG	
CAS #	Parameter	E002	VAL	E002	VAL	E003	VAL	E003	VAL	E010	VAL	E003	VAL
7440-38-2	Arsenic (As)	5.2		3.8		3.4		4.1		4.6		4.4	
7440-39-3	Barium (Ba)	101.		94.1		54.		52.6		75.3		76.2	
7440-43-9	Cadmium (Cd)	0.32	U	0.32	U	0.44		0.44		0.35	U	0.37	
7440-47-3	Chromium (Cr)	11.7		14.3		10.6		10.2		19.1		13.9	
7439-92-1	Lead (Pb)	5.6		7.7		3.9		5.5		13.		10.2	
7439-97-6	Mercury (Hg)	0.1	U	0.11	U	0.1	U	0.1	U	0.12	U	0.1	U
7782-49-2	Selenium (Se)	0.53	U	0.54	U	0.52	U	0.51	U	0.58	U	0.56	U
7440-22-4	Silver (Ag)	0.32	U	0.32	U	0.31	U	0.31	U	0.35	U	0.33	U

*** Validation Complete ***

CEDAR CHEMICAL CORPORATION
WEST HELENA, ARKANSAS
SITE 4 PHASE I SURFACE SOIL DATA

RCRA METAL											
	SHORT ID --------->	4HA-7 (5-6')		4HA-8 (5-6')		4MW-2 (0-5')					
	ORIGINAL ID ----->	CED4SHA-7-1		CED4SHA-8-1		CED4-SMW2-1					
	SAMPLE DATE ----->	09/03/93		09/03/93		09/16/93					
	DATE ANALYZED --->	10/01/93		10/01/93		10/11/93					
	MATRIX ---------->	Soil		Soil		Soil					
	UNITS ---------->	MG/KG		MG/KG		MG/KG					
CAS #	Parameter	E003	VAL	E003	VAL	E011	VAL				
7440-38-2	Arsenic (As)	6.8		7.		6.					
7440-39-3	Barium (Ba)	106.		113.		112.					
7440-43-9	Cadmium (Cd)	0.37	U	0.35	U	0.35	U				
7440-47-3	Chromium (Cr)	17.8		18.2		10.9					
7439-92-1	Lead (Pb)	10.5		11.4		9.1					
7439-97-6	Mercury (Hg)	0.11	U	0.11	U	0.12	U				
7782-49-2	Selenium (Se)	0.62	U	0.59	U	0.58	U				
7440-22-4	Silver (Ag)	0.37	U	0.35	U	0.35	U				

*** Validation Complete ***

CEDAR CHEMICAL CORPORATION
WEST HELENA, ARKANSAS
SITE 4 PHASE I SURFACE SOIL DATA

SVOA													
	SHORT ID --------->	4HA-1 (0-1')		4HA-2 (0-1')		4HA-3 (0-1')		4HA-4 (0-1')		4HA-5 (0-1')		4HA-6 (0-1')	
	ORIGINAL ID ----->	CED4SHA-1-1		CED4SHA-2-1		CED4SHA-3-1		CED4SHA-4-1		CED4HA5-1		CED4SHA-6-1	
	SAMPLE DATE ----->	09/02/93		09/02/93		09/03/93		09/03/93		09/15/93		09/03/93	
	DATE ANALYZED --->	09/24/93		10/01/93		10/05/93		10/06/93		10/19/93		10/05/93	
	MATRIX ---------->	Soil		Soil		Soil		Soil		Soil		Soil	
	UNITS ---------->	UG/KG		UG/KG		UG/KG		UG/KG		UG/KG		UG/KG	
CAS #	Parameter	E002	VAL	E002	VAL	E003	VAL	E003	VAL	E010	VAL	E003	VAL
100-01-6	4-Nitroaniline	1400.	U	72000.	U	1400.	U	1400.	U	15000.	U	2900.	U
100-02-7	4-Nitrophenol	3600.	U	180000.	U	3500.	U	3500.	U	15000.	U	7400.	U
100-51-6	Benzyl alcohol	1400.	U	72000.	U	1400.	U	1400.	U	3100.	U	2900.	U
101-55-3	4-Bromophenyl-phenylether	720.	U	37000.	U	690.	U	700.	U	3100.	U	1500.	U
105-67-9	2,4-Dimethylphenol	720.	U	37000.	U	690.	U	700.	U	3100.	U	1500.	U
106-44-5	4-Methylphenol (p-Cresol)	720.	U	37000.	U	690.	U	700.	U	3100.	U	1500.	U
106-46-7	1,4-Dichlorobenzene	720.	U	37000.	U	690.	U	700.	U	3100.	U	1500.	U
106-47-8	4-Chloroaniline	1400.	U	72000.	U	1400.	U	700.	U	8600.		2900.	U
108-60-1	bis(2-chloroisopropyl) ether	720.	U	37000.	U	690.	U	700.	U	3100.	U	1500.	U
108-95-2	Phenol	720.	U	37000.	U	690.	U	700.	U	3100.	U	1500.	U
111-44-4	bis(2-Chloroethyl)ether	720.	U	37000.	U	690.	U	700.	U	3100.	U	1500.	U
111-91-1	bis(2-Chloroethoxy)methane	720.	U	37000.	U	690.	U	700.	U	3100.	U	1500.	U
117-81-7	bis(2-Ethylhexyl)phthalate (BEHP)	720.	U	37000.	U	690.	U	700.	U	1200.		1700.	U
117-84-0	Di-n-octylphthalate	720.	U	37000.	U	690.	U	700.	U	3100.	U	1500.	U
118-74-1	Hexachlorobenzene	720.	U	37000.	U	690.	U	700.	U	3100.	U	1500.	U
120-12-7	Anthracene	720.	U	37000.	U	690.	U	700.	U	3100.	U	1500.	U
120-82-1	1,2,4-Trichlorobenzene	720.	U	37000.	U	690.	U	700.	U	3100.	U	1500.	U
120-83-2	2,4-Dichlorophenol	720.	U	37000.	U	690.	U	700.	U	3100.	U	1500.	U
121-14-2	2,4-Dinitrotoluene	720.	U	37000.	U	690.	U	700.	U	3100.	U	1500.	U
129-00-0	Pyrene	720.	U	37000.	U	690.	U	700.	U	3100.	U	1500.	U
131-11-3	Dimethylphthalate	720.	U	37000.	U	690.	U	94.		3100.	U	1500.	U
132-64-9	Dibenzofuran	720.	U	37000.	U	690.	U	700.	U	3100.	U	1500.	U
191-24-2	Benzo(g,h,i)perylene	NR		NR		NR		NR		3100.	U	NR	
193-39-5	Indeno(1,2,3-cd)pyrene	720.	U	37000.	U	690.	U	700.	U	3100.	U	1500.	U
205-99-2	Benzo(b)fluoranthene	720.	U	37000.	U	690.	U	700.	U	3100.	U	1500.	U
206-44-0	Fluoranthene	720.	U	37000.	U	690.	U	700.	U	3100.	U	1500.	U
207-08-9	Benzo(k)fluoranthene	720.	U	37000.	U	690.	U	700.	U	3100.	U	1500.	U
208-96-8	Acenaphthylene	720.	U	37000.	U	690.	U	700.	U	3100.	U	1500.	U
218-01-9	Chrysene	720.	U	37000.	U	690.	U	700.	U	3100.	U	1500.	U
50-32-8	Benzo(a)pyrene	720.	U	37000.	U	690.	U	700.	U	3100.	U	1500.	U
51-28-5	2,4-Dinitrophenol	720.	U	37000.	U	690.	U	700.	U	15000.	U	1500.	U
534-52-1	4,6-Dinitro-2-methylphenol	3600.	U	180000.	U	3500.	U	3500.	U	15000.	U	7400.	U
53-70-3	Dibenz(a,h)anthracene	NR		NR		NR		NR		3100.	U	NR	
541-73-1	1,3-Dichlorobenzene	720.	U	37000.	U	690.	U	700.	U	3100.	U	1500.	U
56-55-3	Benzo(a)anthracene	720.	U	37000.	U	690.	U	700.	U	3100.	U	1500.	U
59-50-7	4-Chloro-3-methylphenol	1400.	U	72000.	U	1400.	U	1400.	U	3100.	U	2900.	U
606-20-2	2,6-Dinitrotoluene	720.	U	37000.	U	690.	U	700.	U	3100.	U	1500.	U
621-64-7	N-Nitroso-di-n-propylamine	720.	U	37000.	U	690.	U	700.	U	3100.	U	1500.	U
65-85-0	Benzoic acid	3600.	U	180000.	U	3500.	U	3500.	U	15000.	U	7400.	U

*** Validation Complete ***

CEDAR CHEMICAL CORPORATION
WEST HELENA, ARKANSAS
SITE 4 PHASE I SURFACE SOIL DATA

SVOA													
	SHORT ID -------->	4HA-1 (0-1')		4HA-2 (0-1')		4HA-3 (0-1')		4HA-4 (0-1')		4HA-5 (0-1')		4HA-6 (0-1')	
	ORIGINAL ID ----->	CED4SHA-1-1		CED4SHA-2-1		CED4SHA-3-1		CED4SHA-4-1		CED4HA5-1		CED4SHA-6-1	
	SAMPLE DATE ---->	09/02/93		09/02/93		09/03/93		09/03/93		09/15/93		09/03/93	
	DATE ANALYZED --->	09/24/93		10/01/93		10/05/93		10/06/93		10/19/93		10/05/93	
	MATRIX ---------->	Soil		Soil		Soil		Soil		Soil		Soil	
	UNITS ---------->	UG/KG		UG/KG		UG/KG		UG/KG		UG/KG		UG/KG	
CAS #	Parameter	E002	VAL	E002	VAL	E003	VAL	E003	VAL	E010	VAL	E003	VAL
67-72-1	Hexachloroethane	720.	U	37000.	U	690.	U	700.	U	3100.	U	1500.	U
7005-72-3	4-Chlorophenyl-phenylether	720.	U	37000.	U	690.	U	700.	U	3100.	U	1500.	U
709-98-8	Propanil	720.	U	37000.	U	690.	U	700.	U	690.		2500.	
77-47-4	Hexachlorocyclopentadiene	720.	U	37000.	U	690.	U	700.	U	3100.	U	1500.	U
78-59-1	Isophorone	720.	U	37000.	U	690.	U	700.	U	3100.	U	1500.	U
83-32-9	Acenaphthene	720.	U	37000.	U	690.	U	700.	U	3100.	U	1500.	U
84-66-2	Diethylphthalate	720.	U	37000.	U	690.	U	700.	U	3100.	U	1500.	U
84-74-2	Di-n-butylphthalate	720.	U	37000.	U	690.	U	700.	U	540.		400.	
85-01-8	Phenanthrene	720.	U	37000.	U	690.	U	700.	U	3100.	U	1500.	U
85-68-7	Butylbenzylphthalate	720.	U	37000.	U	690.	U	700.	U	3100.	U	1500.	U
86-30-6	N-Nitrosodiphenylamine	720.	U	37000.	U	690.	U	700.	U	3100.	U	1500.	U
86-73-7	Fluorene	720.	U	37000.	U	690.	U	700.	U	3100.	U	1500.	U
87-68-3	Hexachlorobutadiene	720.	U	37000.	U	690.	U	700.	U	3100.	U	1500.	U
87-86-5	Pentachlorophenol	3600.	U	180000.	U	3500.	U	3500.	U	15000.	U	7400.	U
88-06-2	2,4,6-Trichlorophenol	720.	U	37000.	U	690.	U	700.	U	3100.	U	1500.	U
88-74-4	2-Nitroaniline	3600.	U	180000.	U	3500.	U	3500.	U	15000.	U	7400.	U
88-75-5	2-Nitrophenol	720.	U	37000.	U	690.	U	700.	U	3100.	U	1500.	U
88-85-7	Dinoseb	720.	U	500000.		690.	U	700.	U	1400.		190000.	
91-20-3	Naphthalene	720.	U	37000.	U	690.	U	700.	U	3100.	U	1500.	U
91-57-6	2-Methylnaphthalene	720.	U	37000.	U	690.	U	700.	U	3100.	U	1500.	U
91-58-7	2-Chloronaphthalene	720.	U	37000.	U	690.	U	700.	U	3100.	U	1500.	U
91-94-1	3,3'-Dichlorobenzidine	1400.	U	72000.	U	1400.	U	1400.	U	6200.	U	2900.	U
95-48-7	2-Methylphenol (o-Cresol)	720.	U	37000.	U	690.	U	700.	U	3100.	U	1500.	U
95-50-1	1,2-Dichlorobenzene	720.	U	37000.	U	690.	U	700.	U	1500.		3700.	
95-57-8	2-Chlorophenol	720.	U	37000.	U	690.	U	700.	U	3100.	U	1500.	U
95-76-1	3,4-Dichloroaniline	720.	U	37000.	U	690.	U	700.	U	85000.		1500.	U
95-95-4	2,4,5-Trichlorophenol	720.	U	37000.	U	690.	U	700.	U	15000.	U	1500.	U
98-95-3	Nitrobenzene	720.	U	37000.	U	690.	U	700.	U	3100.	U	1500.	U
99-09-2	3-Nitroaniline	3600.	U	180000.	U	3500.	U	3500.	U	15000.	U	7400.	U

*** Validation Complete ***

CEDAR CHEMICAL CORPORATION
WEST HELENA, ARKANSAS
SITE 4 PHASE I SURFACE SOIL DATA

SVOA	SHORT ID --------->	4HA-7 (5-6')		4HA-8 (5-6')		4MW-2 (0-5')				
	ORIGINAL ID ----->	CED4SHA-7-1		CED4SHA-8-1		CED4SMW21				
	SAMPLE DATE ----->	09/03/93		09/03/93		09/16/93				
	DATE ANALYZED --->	10/06/93		10/05/93		10/16/93				
	MATRIX ---------->	Soil		Soil		Soil				
	UNITS ---------->	UG/KG		UG/KG		UG/KG				
CAS #	Parameter	E003	VAL	E003	VAL	E011	VAL			
100-01-6	4-Nitroaniline	1600.	U	1600.	U	9500.	U			
100-02-7	4-Nitrophenol	4100.	U	4000.	U	9500.	U			
100-51-6	Benzyl alcohol	1600.	U	1600.	U	NR				
101-55-3	4-Bromophenyl-phenylether	820.	U	800.	U	3900.	U			
105-67-9	2,4-Dimethylphenol	820.	U	800.	U	3900.	U			
106-44-5	4-Methylphenol (p-Cresol)	820.	U	800.	U	3900.	U			
106-46-7	1,4-Dichlorobenzene	820.	U	800.	U	3900.	U			
106-47-8	4-Chloroaniline	1600.	U	1600.	U	3900.	U			
108-60-1	bis(2-chloroisopropyl) ether	820.	U	800.	U	3900.	U			
108-95-2	Phenol	820.	U	800.	U	3900.	U			
111-44-4	bis(2-Chloroethyl)ether	820.	U	800.	U	3900.	U			
111-91-1	bis(2-Chloroethoxy)methane	820.	U	800.	U	3900.	U			
117-81-7	bis(2-Ethylhexyl)phthalate (BEHP)	820.	U	800.	U	3900.	U			
117-84-0	Di-n-octylphthalate	820.	U	800.	U	3900.	U			
118-74-1	Hexachlorobenzene	820.	U	800.	U	3900.	U			
120-12-7	Anthracene	820.	U	800.	U	3900.	U			
120-82-1	1,2,4-Trichlorobenzene	820.	U	800.	U	3900.	U			
120-83-2	2,4-Dichlorophenol	820.	U	800.	U	3900.	U			
121-14-2	2,4-Dinitrotoluene	820.	U	800.	U	3900.	U			
129-00-0	Pyrene	820.	U	800.	U	3900.	U			
131-11-3	Dimethylphthalate	180.		800.	U	3900.	U			
132-64-9	Dibenzofuran	820.	U	800.	U	3900.	U			
191-24-2	Benzo(g,h,i)perylene	NR		NR		3900.	U			
193-39-5	Indeno(1,2,3-cd)pyrene	820.	U	800.	U	3900.	U			
205-99-2	Benzo(b)fluoranthene	820.	U	800.	U	3900.	U			
206-44-0	Fluoranthene	820.	U	800.	U	3900.	U			
207-08-9	Benzo(k)fluoranthene	820.	U	800.	U	3900.	U			
208-96-8	Acenaphthylene	820.	U	800.	U	3900.	U			
218-01-9	Chrysene	820.	U	800.	U	3900.	U			
50-32-8	Benzo(a)pyrene	820.	U	800.	U	3900.	U			
51-28-5	2,4-Dinitrophenol	820.	U	800.	U	9500.	U			
534-52-1	4,6-Dinitro-2-methylphenol	4100.	U	4000.	U	9500.	U			
53-70-3	Dibenz(a,h)anthracene	NR		NR		3900.	U			
541-73-1	1,3-Dichlorobenzene	820.	U	800.	U	3900.	U			
56-55-3	Benzo(a)anthracene	820.	U	800.	U	3900.	U			
59-50-7	4-Chloro-3-methylphenol	1600.	U	1600.	U	3900.	U			
606-20-2	2,6-Dinitrotoluene	820.	U	800.	U	3900.	U			
621-64-7	N-Nitroso-di-n-propylamine	820.	U	800.	U	3900.	U			
65-85-0	Benzoic acid	4100.	U	4000.	U	NR				

*** Validation Complete ***

CEDAR CHEMICAL CORPORATION
WEST HELENA, ARKANSAS
SITE 4 PHASE I SURFACE SOIL DATA

SVOA											
	SHORT ID --------->	4HA-7 (5-6')		4HA-8 (5-6')		4MW-2 (0-5')					
	ORIGINAL ID ----->	CED4SHA-7-1		CED4SHA-8-1		CED4SMW21					
	SAMPLE DATE ----->	09/03/93		09/03/93		09/16/93					
	DATE ANALYZED --->	10/06/93		10/05/93		10/16/93					
	MATRIX ---------->	Soil		Soil		Soil					
	UNITS ----------->	UG/KG		UG/KG		UG/KG					
CAS #	Parameter	E003	VAL	E003	VAL	E011	VAL				
67-72-1	Hexachloroethane	820.	U	800.	U	3900.	U				
7005-72-3	4-Chlorophenyl-phenylether	820.	U	800.	U	3900.	U				
709-98-8	Propanil	820.	U	800.	U	9500.	U				
77-47-4	Hexachlorocyclopentadiene	820.	U	800.	U	3900.	U				
78-59-1	Isophorone	820.	U	800.	U	3900.	U				
83-32-9	Acenaphthene	820.	U	800.	U	3900.	U				
84-66-2	Diethylphthalate	820.	U	800.	U	3900.	U				
84-74-2	Di-n-butylphthalate	820.	U	800.	U	3900.	U				
85-01-8	Phenanthrene	820.	U	800.	U	3900.	U				
85-68-7	Butylbenzylphthalate	820.	U	800.	U	3900.	U				
86-30-6	N-Nitrosodiphenylamine	820.	U	800.	U	3900.	U				
86-73-7	Fluorene	820.	U	800.	U	3900.	U				
87-68-3	Hexachlorobutadiene	820.	U	800.	U	3900.	U				
87-86-5	Pentachlorophenol	4100.	U	4000.	U	9500.	U				
88-06-2	2,4,6-Trichlorophenol	820.	U	800.	U	3900.	U				
88-74-4	2-Nitroaniline	4100.	U	4000.	U	9500.	U				
88-75-5	2-Nitrophenol	820.	U	800.	U	3900.	U				
88-85-7	Dinoseb	840000.		91000.		18000.					
91-20-3	Naphthalene	820.	U	800.	U	3900.	U				
91-57-6	2-Methylnaphthalene	820.	U	800.	U	3900.	U				
91-58-7	2-Chloronaphthalene	820.	U	800.	U	3900.	U				
91-94-1	3,3'-Dichlorobenzidine	1600.	U	1600.	U	3900.	U				
95-48-7	2-Methylphenol (o-Cresol)	820.	U	800.	U	3900.	U				
95-50-1	1,2-Dichlorobenzene	120.		800.	U	3900.	U				
95-57-8	2-Chlorophenol	820.	U	800.	U	3900.	U				
95-76-1	3,4-Dichloroaniline	820.	U	800.	U	9500.	U				
95-95-4	2,4,5-Trichlorophenol	820.	U	800.	U	9500.	U				
98-95-3	Nitrobenzene	820.	U	800.	U	3900.	U				
99-09-2	3-Nitroaniline	4100.	U	4000.	U	NR					

*** Validation Complete ***

CEDAR CHEMICAL CORPORATION
WEST HELENA, ARKANSAS
SITE 4 PHASE I SURFACE SOIL DATA

VOA	SHORT ID -------->	4HA-1 (0-1')		4HA-2 (0-1')		4HA-3 (0-1')		4HA-4 (0-1')		4HA-5 (0-1')		4HA-6 (0-1')	
	ORIGINAL ID ----->	CED4SHA-1-1		CED4SHA-2-1		CED4SHA-3-1		CED4SHA-4-1		CED4-HA5-1		CED4SHA-6-1	
	SAMPLE DATE ----->	09/02/93		09/02/93		09/03/93		09/03/93		09/15/93		09/03/93	
	DATE ANALYZED --->	09/09/93		09/09/93		09/09/93		09/10/93		09/24/93		09/10/93	
	MATRIX ---------->	Soil		Soil		Soil		Soil		Soil		Soil	
	UNITS ---------->	UG/KG		UG/KG		UG/KG		UG/KG		UG/KG		UG/KG	
CAS #	Parameter	E002	VAL	E002	VAL	E003	VAL	E003	VAL	E010	VAL	E003	VAL
100-41-4	Ethylbenzene	6.	U	4.		5.	U	5.	U	7.		6.	U
100-42-5	Styrene	6.	U	5.	U	5.	U	5.	U	10.	U	6.	U
10061-01-5	cis-1,3-Dichloropropene	6.	U	5.	U	5.	U	5.	U	10.	U	6.	U
10061-02-6	trans-1,3-Dichloropropene	6.	U	5.	U	5.	U	5.	U	10.	U	6.	U
107-06-2	1,2-Dichloroethane	6.	U	5.	U	5.	U	5.	U	10.	U	6.	U
108-05-4	Vinyl acetate	6.	U	5.	U	5.	U	5.	U	10.	U	6.	U
108-10-1	4-Methyl-2-Pentanone (MIBK)	56.	U	54.	U	53.	U	51.	U	19.		58.	U
108-88-3	Toluene	6.	U	8.		5.	U	5.	U	350.		5.	
108-90-7	Chlorobenzene	6.	U	5.	U	5.	U	5.	U	3.		6.	U
124-48-1	Dibromochloromethane	6.	U	5.	U	5.	U	5.	U	10.	U	6.	U
127-18-4	Tetrachloroethene	6.	U	5.	U	5.	U	5.	U	10.	U	6.	U
1330-20-7	Xylene (total)	6.	U	13.	U	5.	U	5.	U	76.		36.	
540-59-0	1,2-Dichloroethene (total)	6.	U	5.	U	5.	U	5.	U	10.	U	6.	U
56-23-5	Carbon tetrachloride	6.	U	5.	U	5.	U	5.	U	10.	U	6.	U
591-78-6	2-Hexanone	56.	U	54.	U	53.	U	51.	U	97.	U	58.	U
67-64-1	Acetone	11.	U	19.		11.	U	170.		25.		12.	U
67-66-3	Chloroform	6.	U	5.	U	5.	U	5.	U	10.	U	6.	U
71-43-2	Benzene	6.	U	5.	U	5.	U	5.	U	10.	U	6.	U
71-55-6	1,1,1-Trichloroethane	6.	U	5.	U	5.	U	5.	U	10.	U	6.	U
74-83-9	Bromomethane	11.	U	11.	U	11.	U	10.	U	19.	U	12.	U
74-87-3	Chloromethane	11.	U	11.	U	11.	U	10.	U	19.	U	12.	U
75-00-3	Chloroethane	11.	U	11.	U	11.	U	10.	U	19.	U	12.	U
75-01-4	Vinyl chloride	6.	U	5.	U	5.	U	5.	U	10.	U	6.	U
75-09-2	Methylene chloride	6.	U	5.	U	5.	U	5.	U	10.	U	6.	U
75-15-0	Carbon disulfide	6.	U	5.	U	5.	U	5.	U	10.	U	6.	U
75-25-2	Bromoform	6.	U	5.	U	5.	U	5.	U	10.	U	6.	U
75-27-4	Bromodichloromethane	6.	U	5.	U	5.	U	5.	U	10.	U	6.	U
75-34-3	1,1-Dichloroethane	6.	U	5.	U	5.	U	5.	U	10.	U	6.	U
75-35-4	1,1-Dichloroethene	6.	U	5.	U	5.	U	5.	U	10.	U	6.	U
78-87-5	1,2-Dichloropropane	6.	U	5.	U	5.	U	5.	U	10.	U	6.	U
78-93-3	2-Butanone (MEK)	11.	U	17.		9.		12.		19.	U	12.	U
79-00-5	1,1,2-Trichloroethane	6.	U	5.	U	5.	U	5.	U	10.	U	6.	U
79-01-6	Trichloroethene	6.	U	5.	U	5.	U	5.	U	10.	U	6.	U
79-34-5	1,1,2,2-Tetrachloroethane	6.	U	5.	U	5.	U	5.	U	10.	U	6.	U

*** Validation Complete ***

CEDAR CHEMICAL CORPORATION
WEST HELENA, ARKANSAS
SITE 4 PHASE I SURFACE SOIL DATA

VOA											
	SHORT ID --------->	4HA-7 (5-6')		4HA-8 (5-6')		4MW-2 (0-5')					
	ORIGINAL ID ----->	CED4SHA-7-1		CED4SHA-8-1		CED4-SMW2-1					
	SAMPLE DATE ----->	09/03/93		09/03/93		09/16/93					
	DATE ANALYZED --->	09/11/93		09/11/93		09/28/93					
	MATRIX ---------->	Soil		Soil		Soil					
	UNITS ---------->	UG/KG		UG/KG		UG/KG					
CAS #	Parameter	E003	VAL	E003	VAL	E011	VAL				
100-41-4	Ethylbenzene	6.	U	6.	U	6.	U				
100-42-5	Styrene	6.	U	6.	U	6.	U				
10061-01-5	cis-1,3-Dichloropropene	6.	U	6.	U	6.	U				
10061-02-6	trans-1,3-Dichloropropene	6.	U	6.	U	6.	U				
107-06-2	1,2-Dichloroethane	6.	U	6.	U	6.	U				
108-05-4	Vinyl acetate	6.	U	6.	U	6.	U				
108-10-1	4-Methyl-2-Pentanone (MIBK)	64.	U	61.	U	60.	U				
108-88-3	Toluene	6.	U	6.	U	2.					
108-90-7	Chlorobenzene	6.	U	6.	U	6.	U				
124-48-1	Dibromochloromethane	6.	U	6.	U	6.	U				
127-18-4	Tetrachloroethene	6.	U	6.	U	6.	U				
1330-20-7	Xylene (total)	6.	U	6.	U	6.	U				
540-59-0	1,2-Dichloroethene (total)	6.	U	6.	U	6.	U				
56-23-5	Carbon tetrachloride	6.	U	6.	U	6.	U				
591-78-6	2-Hexanone	64.	U	61.	U	60.	U				
67-64-1	Acetone	13.	U	12.	U	27.					
67-66-3	Chloroform	6.	U	6.	U	6.	U				
71-43-2	Benzene	6.	U	6.	U	6.	U				
71-55-6	1,1,1-Trichloroethane	6.	U	6.	U	6.	U				
74-83-9	Bromomethane	13.	U	12.	U	12.	U				
74-87-3	Chloromethane	13.	U	12.	U	12.	U				
75-00-3	Chloroethane	13.	U	12.	U	12.	U				
75-01-4	Vinyl chloride	6.	U	6.	U	6.	U				
75-09-2	Methylene chloride	6.	U	6.	U	6.	U				
75-15-0	Carbon disulfide	6.	U	6.	U	6.	U				
75-25-2	Bromoform	6.	U	6.	U	6.	U				
75-27-4	Bromodichloromethane	6.	U	6.	U	6.	U				
75-34-3	1,1-Dichloroethane	6.	U	6.	U	6.	U				
75-35-4	1,1-Dichloroethene	6.	U	6.	U	6.	U				
78-87-5	1,2-Dichloropropane	6.	U	6.	U	6.	U				
78-93-3	2-Butanone (MEK)	13.	U	12.	U	60.					
79-00-5	1,1,2-Trichloroethane	6.	U	6.	U	6.	U				
79-01-6	Trichloroethene	6.	U	6.	U	6.	U				
79-34-5	1,1,2,2-Tetrachloroethane	6.	U	6.	U	6.	U				

*** Validation Complete ***

DATALCP3
07/22/99

CEDAR CHEMICAL CORPORATION
WEST HELENA, ARKANSAS
SITE 4 PHASE I SUBSURFACE SOIL DATA

METAL		SHORT ID --------->	4MW-1		4MW-2		4MW-2 DUP		EMW-1		EMW-2		EMW-3	
		ORIGINAL ID ----->	CED4GWMW1		CED4GWMW2		CED4GWMW2D		CEDE-GWMW-1		CEDE-GWMW-2		CEDE-GWMW-3	
		SAMPLE DATE ----->	09/29/93		09/29/93		09/29/93		09/22/93		09/22/93		09/23/93	
		DATE ANALYZED --->	10/21/93		10/21/93		10/21/93		10/19/93		10/19/93		10/19/93	
		MATRIX ---------->	Water		Water		Water		Water		Water		Water	
		UNITS ----------->	UG/L		UG/L		UG/L		UG/L		UG/L		UG/L	
CAS #	Parameter		E015	VAL	E015	VAL	E015	VAL	E012	VAL	E012	VAL	E012	VAL
7440-38-2	Arsenic (As)		21.6		24.6		25.8		29.3		26.5		39.9	
7440-39-3	Barium (Ba)		1450.		1530.		1370.		799.		1120.		319.	
7440-43-9	Cadmium (Cd)		2.	U	2.3		2.	U	3.6		8.5		180.	
7440-70-2	Calcium (Ca)		186000.		382000.		322000.		232000.		109000.		522000.	
7440-47-3	Chromium (Cr)		41.		120.		107.		63.2		104.		800.	
7439-89-6	Iron (Fe)		32000.		122000.		108000.		64200.		121000.		82900.	
7439-92-1	Lead (Pb)		33.2		134.		119.		30.8		89.4		38.4	
7439-95-4	Magnesium (Mg)		53000.		201000.		169000.		133000.		58700.		140000.	
7439-97-6	Mercury (Hg)		0.2	U	0.2	U	0.2	U	0.2	U	0.2	U	0.2	U
7782-49-2	Selenium (Se)		5.		5.		5.		5.	U	5.	U	5.	U
7440-22-4	Silver (Ag)		3.	U	3.	U	3.	U	3.	U	3.	U	3.	U
7440-23-5	Sodium (Na)		87200.		27000.		26700.		98300.		33400.		171000.	

*** Validation Complete ***

CEDAR CHEMICAL CORPORATION
WEST HELENA, ARKANSAS
SITE 4 PHASE I SUBSURFACE SOIL DATA

METAL													
	SHORT ID --------->	EMW-3 DUP		EMW-4		EMW-6		EMW-7		EMW-6A		EMW-6B	
	ORIGINAL ID ----->	CEDEGWMW3D		CEDE-GWMW-4		CEDE-GWMW6		CEDE-GWMW7		CEDE-GWMW6A		CEDE-GWMW6B	
	SAMPLE DATE ----->	09/23/93		09/23/93		09/24/93		09/23/93		09/24/93		09/24/93	
	DATE ANALYZED --->	10/19/93		10/19/93		10/19/93		10/19/93		10/19/93		10/19/93	
	MATRIX ---------->	Water		Water		Water		Water		Water		Water	
	UNITS ---------->	UG/L		UG/L		UG/L		UG/L		UG/L		UG/L	
CAS #	Parameter	E012	VAL	E012	VAL	E012	VAL	E012	VAL	E012	VAL	E012	VAL
7440-38-2	Arsenic (As)	43.5		44.4		10.		29.7		47.8		28.	
7440-39-3	Barium (Ba)	332.		2400.		336.		441.		1010.		830.	
7440-43-9	Cadmium (Cd)	212.		4.3		2.	U	2.	U	2.	U	16.3	
7440-70-2	Calcium (Ca)	524000.		919000.		128000.		211000.		292000.		301000.	
7440-47-3	Chromium (Cr)	972.		226.		18.6		63.9		72.6		58.6	
7439-89-6	Iron (Fe)	85200.		347000.		14900.		38200.		106000.		50100.	
7439-92-1	Lead (Pb)	40.8		174.		10.1		25.		66.4		29.3	
7439-95-4	Magnesium (Mg)	141000.		472000.		48400.		87600.		121000.		151000.	
7439-97-6	Mercury (Hg)	0.2	U	0.2	U	0.2	U	0.2	U	0.2	U	0.2	U
7782-49-2	Selenium (Se)	5.	U	5.	U	5.	U	5.	U	5.	U	5.	U
7440-22-4	Silver (Ag)	3.	U	3.	U	3.	U	3.	U	3.	U	3.	U
7440-23-5	Sodium (Na)	170000.		137000.		40800.		15100.		17400.		226000.	

*** Validation Complete ***

CEDAR CHEMICAL CORPORATION
WEST HELENA, ARKANSAS
SITE 4 PHASE I SUBSURFACE SOIL DATA

PEST	SHORT ID --------->	4HA-1 (1-2')		4HA-1 (2-3')		4HA-2 (1-2')		4HA-2 (2-3')		4HA-4 (1-2')		4HA-4 (2-3')	
	ORIGINAL ID ----->	CED4SHA-1-2		CED4SHA-1-3		CED4SHA-2-2		CED4SHA-2-3		CED4SHA-4-2		CED4SHA-4-3	
	SAMPLE DATE ----->	09/02/93		09/02/93		09/02/93		09/02/93		09/03/93		09/03/93	
	DATE ANALYZED --->	09/11/93		09/18/93		09/11/93		09/11/93		09/15/93		09/15/93	
	MATRIX ---------->	Soil		Soil		Soil		Soil		Soil		Soil	
	UNITS ---------->	UG/KG		UG/KG		UG/KG		UG/KG		UG/KG		UG/KG	
CAS #	Parameter	E002	VAL	E002	VAL	E002	VAL	E002	VAL	E003	VAL	E003	VAL
1024-57-3	Heptachlor Epoxide	64.	U	66.	U	650.	U	650.	U	680.	U	340.	U
1031-07-8	Endosulfan Sulfate	51.	U	53.	U	520.	U	520.	U	540.	U	270.	U
309-00-2	Aldrin	3.1	U	3.2	U	31.	U	31.	U	33.	U	17.	U
319-84-6	Alpha-BHC	8.1		2.4	U	24.	U	24.	U	24.	U	12.	U
319-85-7	Beta-BHC	4.6	U	5.1		47.	U	47.	U	49.	U	25.	U
319-86-8	Delta-BHC	6.9	U	7.2	U	71.	U	71.	U	73.	U	37.	U
33213-65-9	Endosulfan II	3.1	U	3.2	U	72.		31.	U	33.	U	17.	U
50-29-3	4,4'-DDT	9.2	U	19.		430.		170.		98.	U	50.	U
5103-71-9	alpha-Chlordane	11.	U	11.	U	110.	U	110.	U	110.	U	58.	U
5103-74-2	gamma-Chlordane	11.	U	11.	U	110.	U	110.	U	110.	U	58.	U
53494-70-5	Endrin ketone	18.	U	19.	U	770.		190.	U	200.	U	100.	U
58-89-9	gamma-BHC (Lindane)	3.1	U	3.2	U	31.	U	31.	U	33.	U	17.	U
60-57-1	Dieldrin	1.5	U	50.		16.	U	16.	U	16.	U	8.3	U
72-20-8	Endrin	4.6	U	4.8	U	47.	U	47.	U	49.	U	25.	U
72-43-5	Methoxychlor	8100.		5700.		74000.		15000.		26000.		1600.	
72-54-8	4,4'-DDD	33.		84.		120.		86.	U	90.	U	46.	U
72-55-9	4,4'-DDE	25.		37.		150.		75.		280.		17.	U
76-44-8	Heptachlor	2.3	U	2.4	U	24.	U	24.	U	24.	U	12.	U
8001-35-2	Toxaphene	180.	U	190.	U	1900.	U	1900.	U	20000.	U	1000.	U
959-98-8	Endosulfan I	11.	U	11.	U	110.	U	110.	U	110.	U	58.	U

*** Validation Complete ***

CEDAR CHEMICAL CORPORATION
WEST HELENA, ARKANSAS
SITE 4 PHASE I SUBSURFACE SOIL DATA

PEST	SHORT ID --------->	4HA-4 (2-3')DUP		4HA-5 (1-2')		4HA-5 (2-3')		4HA-6 (1-2')		4HA-7 (6-7')		4HA-7 (7-8')	
	ORIGINAL ID ----->	CED4SHA-4-3		CED4-HA5-2		CED4-HA5-3		CED4SHA-6-2		CED4SHA-7-2		CED4SHA-7-3	
	SAMPLE DATE ----->	09/03/93		09/15/93		09/15/93		09/03/93		09/03/93		09/03/93	
	DATE ANALYZED --->	09/15/93		10/06/93		10/06/93		09/15/93		09/15/93		09/15/93	
	MATRIX ---------->	Soil		Soil		Soil		Soil		Soil		Soil	
	UNITS ---------->	UG/KG		UG/KG		UG/KG		UG/KG		UG/KG		UG/KG	
CAS #	Parameter	E003	VAL	E010	VAL	E010	VAL	E003	VAL	E003	VAL	E003	VAL
1024-57-3	Heptachlor Epoxide	140.	U	3200.	U	340.	U	640.	U	69.	U	69.	U
1031-07-8	Endosulfan Sulfate	110.	U	2600.	U	270.	U	510.	U	54.	U	55.	U
309-00-2	Aldrin	6.6	U	160.	U	16.	U	31.	U	3.3	U	3.3	U
319-84-6	Alpha-BHC	4.9	U	120.	U	12.	U	23.	U	2.5	U	2.5	U
319-85-7	Beta-BHC	9.9	U	230.	U	38.		46.	U	5.	U	5.	U
319-86-8	Delta-BHC	15.	U	350.	U	37.	U	69.	U	7.4	U	7.4	U
33213-65-9	Endosulfan II	6.6	U	160.	U	16.	U	31.	U	3.3	U	3.3	U
50-29-3	4,4'-DDT	20.	U	470.	U	49.	U	450.		9.9	U	9.9	U
5103-71-9	alpha-Chlordane	23.	U	550.	U	57.	U	110.	U	12.	U	12.	U
5103-74-2	gamma-Chlordane	23.	U	550.	U	57.	U	110.	U	12.	U	12.	U
53494-70-5	Endrin ketone	40.	U	940.	U	98.	U	180.	U	19.	U	20.	U
58-89-9	gamma-BHC (Lindane)	6.6	U	160.	U	16.	U	31.	U	3.3	U	3.3	U
60-57-1	Dieldrin	3.3	U	78.	U	8.2	U	630.		1.7	U	1.7	U
72-20-8	Endrin	9.9	U	230.	U	25.	U	46.	U	5.	U	5.	U
72-43-5	Methoxychlor	430.		7400.		740.	U	34000.		150.	U	150.	U
72-54-8	4,4'-DDD	18.	U	430.	U	NR		140.		9.1	U	9.1	U
72-55-9	4,4'-DDE	6.6	U	160.	U	19.		110.		3.3	U	3.3	U
76-44-8	Heptachlor	4.9	U	120.	U	12.	U	23.	U	2.5	U	2.5	U
8001-35-2	Toxaphene	400.	U	9400.	U	980.	U	1800.	U	200.	U	200.	U
959-98-8	Endosulfan I	23.	U	550.	U	57.	U	110.	U	12.	U	12.	U

*** Validation Complete ***

CEDAR CHEMICAL CORPORATION
WEST HELENA, ARKANSAS
SITE 4 PHASE I SUBSURFACE SOIL DATA

PEST	SHORT ID --------->	4HA-8 (6-7')		4HA-8 (7-8')		4MW-1		4MW-1 (10-15')		4MW-1 (25-30')		4MW-2	
	ORIGINAL ID ----->	CED4SHA-8-2		CED4SHA-8-3		CED4GWMW1		CED4MW013		CED4-SMW1-6		CED4GWMW2	
	SAMPLE DATE ----->	09/03/93		09/03/93		09/29/93		09/16/93		09/17/93		09/29/93	
	DATE ANALYZED --->	09/15/93		09/15/93		10/09/93		10/07/93		10/07/93		10/09/93	
	MATRIX ---------->	Soil		Soil		Water		Soil		Soil		Water	
	UNITS ---------->	UG/KG		UG/KG		UG/L		UG/L		UG/KG		UG/L	
CAS #	Parameter	E003	VAL	E003	VAL	E015	VAL	E011	VAL	E011	VAL	E015	VAL
1024-57-3	Heptachlor Epoxide	68.	U	68.	U	0.2	U	140.	U	73.	U	0.2	U
1031-07-8	Endosulfan Sulfate	54.	U	54.	U	0.66	U	110.	U	58.	U	0.66	U
309-00-2	Aldrin	3.3	U	3.3	U	0.04	U	6.8	U	3.5	U	0.04	U
319-84-6	Alpha-BHC	2.5	U	2.5	U	0.03	U	5.1	U	2.6	U	0.03	U
319-85-7	Beta-BHC	4.9	U	4.9	U	0.06	U	10.	U	5.3	U	0.06	U
319-86-8	Delta-BHC	7.4	U	7.4	U	0.09	U	15.	U	7.9	U	0.09	U
33213-65-9	Endosulfan II	3.3	U	3.3	U	0.04	U	6.8	U	3.5	U	0.04	U
50-29-3	4,4'-DDT	9.9	U	9.8	U	0.12	U	20.	U	11.	U	0.12	U
5103-71-9	alpha-Chlordane	12.	U	11.	U	0.14	U	24.	U	12.	U	0.14	U
5103-74-2	gamma-Chlordane	12.	U	11.	U	0.14	U	24.	U	12.	U	0.14	U
53494-70-5	Endrin ketone	20.	U	20.	U	0.1	U	41.	U	21.	U	0.1	U
58-89-9	gamma-BHC (Lindane)	3.3	U	3.3	U	0.04	U	6.8	U	3.5	U	0.04	U
60-57-1	Dieldrin	1.6	U	1.6	U	0.02	U	5.7		1.8	U	0.02	U
72-20-8	Endrin	4.9	U	4.9	U	0.06	U	10.2	U	5.3	U	0.06	U
72-43-5	Methoxychlor	150.	U	150.	U	1.8	U	460.		160.	U	1.8	U
72-54-8	4,4'-DDD	9.1	U	9.	U	0.11	U	18.6	U	9.7	U	0.11	U
72-55-9	4,4'-DDE	3.3	U	3.3	U	0.04	U	6.8	U	3.5	U	0.04	U
76-44-8	Heptachlor	2.5	U	2.5	U	0.03	U	5.1	U	2.6	U	0.03	U
8001-35-2	Toxaphene	200.	U	200.	U	2.4	U	410.	U	210.	U	2.4	U
959-98-8	Endosulfan I	12.	U	11.	U	0.14	U	24.	U	12.	U	0.14	U

*** Validation Complete ***

CEDAR CHEMICAL CORPORATION
WEST HELENA, ARKANSAS
SITE 4 PHASE I SUBSURFACE SOIL DATA

PEST	SHORT ID --------->	4MW-2 DUP		4MW-2 (25-30')		IMSB-1 (3-8')		IMSB-1 (8-12')		IMSB-2 (5-10')		IMSB-2 (10-15')	
	ORIGINAL ID ----->	CED4GWMW2D		CED4-SMW2-6		IM-SB-01-2		IM-SB-01-3		IM-SB-02-2		IMSB023	
	SAMPLE DATE ----->	09/29/93		09/22/93		04/08/93		05/06/93		04/08/93		04/08/93	
	DATE ANALYZED --->	10/09/93		10/07/93		04/17/93		05/03/93		04/17/93		04/30/93	
	MATRIX ---------->	Water		Soil		Soil		Soil		Soil		Soil	
	UNITS ---------->	UG/L		UG/KG		UG/KG		UG/KG		UG/KG		UG/KG	
CAS #	Parameter	E015	VAL	E011	VAL	ES1	VAL	ES1	VAL	ES1	VAL	ES1	VAL
1024-57-3	Heptachlor Epoxide	0.2	U	72.	U	70.	U	72.	U	72.	U	720.	U
1031-07-8	Endosulfan Sulfate	0.66	U	57.	U	55.	U	57.	U	56.	U	570.	U
309-00-2	Aldrin	0.04	U	3.5	U	3.4	U	3.5	U	3.5	U	35.	U
319-84-6	Alpha-BHC	0.03	U	26.	U	2.5	U	2.6	U	2.6	U	55.	
319-85-7	Beta-BHC	0.06	U	5.2	U	5.	U	5.2	U	10.		52.	U
319-86-8	Delta-BHC	0.09	U	7.8	U	7.5	U	26.		7.7	U	78.	U
33213-65-9	Endosulfan II	0.04	U	3.5	U	3.4	U	3.5	U	3.5	U	35.	U
50-29-3	4,4'-DDT	0.12	U	10.	U	10.	U	10.	U	10.	U	100.	U
5103-71-9	alpha-Chlordane	0.14	U	12.	U	12.	U	12.	U	12.	U	120.	U
5103-74-2	gamma-Chlordane	0.14	U	12.	U	12.	U	12.	U	12.	U	120.	U
53494-70-5	Endrin ketone	0.1	U	21.	U	20.	U	21.	U	20.	U	210.	U
58-89-9	gamma-BHC (Lindane)	0.04	U	3.5	U	3.4		3.5	U	3.5	U	35.	U
60-57-1	Dieldrin	0.02	U	1.7	U	1.6	U	1.7	U	1.7	U	350.	
72-20-8	Endrin	0.06	U	5.2	U	5.	U	5.2	U	5.1	U	52.	U
72-43-5	Methoxychlor	1.8	U	160.	U	150.	U	160.	U	150.	U	1500.	U
72-54-8	4,4'-DDD	0.11	U	9.5	U	9.2	U	9.5	U	9.5	U	95.	U
72-55-9	4,4'-DDE	0.04	U	3.5	U	3.4	U	3.5	U	3.5	U	35.	U
76-44-8	Heptachlor	0.03	U	2.6	U	2.5	U	2.6	U	31.		26.	U
8001-35-2	Toxaphene	2.4	U	210.	U	200.	U	210.	U	200.	U	2100.	U
959-98-8	Endosulfan I	0.14	U	12.	U	12.	U	12.	U	12.	U	120.	U

*** Validation Complete ***

CEDAR CHEMICAL CORPORATION
WEST HELENA, ARKANSAS
SITE 4 PHASE I SUBSURFACE SOIL DATA

PEST	SHORT ID --------->	IMSB-3 (5-10')		IMSB-3 (10-15')		IMSB-4 (5-10')		IMSB-5 (5-10')		BGHA-2 (0-1')		BGHA-3 (0-1')	
	ORIGINAL ID ----->	IM-SB-03-2		IM-SB-03-3		IM-SB-04-2		IM-SB-05-2		CED-SBG-2		CED-SBG-3	
	SAMPLE DATE ----->	04/09/93		04/09/93		04/09/93		04/09/93		09/16/93		09/16/93	
	DATE ANALYZED --->	04/22/93		04/30/93		04/17/93		04/17/93		10/07/93		10/07/93	
	MATRIX ---------->	Soil		Soil		Soil		Soil		Soil		Soil	
	UNITS ----------->	UG/KG		UG/KG		UG/KG		UG/KG		UG/KG		UG/KG	
CAS #	Parameter	ES1	VAL	ES1	VAL	ES1	VAL	ES1	VAL	ED11	VAL	ED11	VAL
1024-57-3	Heptachlor Epoxide	70.	U	72.	U	71.	U	71.	U	66.	U	6.4	U
1031-07-8	Endosulfan Sulfate	55.	U	57.	U	56.	U	56.	U	52.	U	51.	U
309-00-2	Aldrin	9.3		3.5	U	3.4	U	3.4	U	3.2	U	3.1	U
319-84-6	Alpha-BHC	2.5	U	2.6	U	2.5	U	2.5	U	2.4	U	2.3	U
319-85-7	Beta-BHC	37.		5.2	U	5.1	U	5.1	U	4.7	U	4.6	U
319-86-8	Delta-BHC	7.5	U	7.8	U	7.6	U	7.6	U	7.1	U	6.9	U
33213-65-9	Endosulfan II	3.4	U	3.5	U	3.4	U	3.4	U	3.2	U	3.1	U
50-29-3	4,4'-DDT	10.	U	10.	U	10.	U	10.	U	9.5	U	29.	
5103-71-9	alpha-Chlordane	12.	U	12.	U	12.	U	12.	U	11.	U	11.	U
5103-74-2	gamma-Chlordane	12.	U	12.	U	12.	U	12.	U	11.	U	11.	U
53494-70-5	Endrin ketone	20.	U	21.	U	20.	U	20.	U	19.	U	18.	U
58-89-9	gamma-BHC (Lindane)	3.4		3.5	U	3.4	U	3.4	U	3.2	U	3.1	U
60-57-1	Dieldrin	1.6	U	1.7	U	1.6	U	1.6	U	1.6	U	1.5	U
72-20-8	Endrin	5.	U	5.2	U	5.1	U	5.1	U	4.8	U	4.6	U
72-43-5	Methoxychlor	150.	U	150.	U	150.	U	150.	U	140.	U	140.	U
72-54-8	4,4'-DDD	10.		9.5	U	9.4	U	9.4	U	8.7	U	8.4	U
72-55-9	4,4'-DDE	3.4	U	3.5	U	3.4	U	3.4	U	3.2	U	20.	
76-44-8	Heptachlor	4.9		2.6	U	2.5	U	2.5	U	2.4	U	2.3	U
8001-35-2	Toxaphene	200.	U	210.	U	200.	U	200.	U	190.	U	180.	U
959-98-8	Endosulfan I	12.	U	12.	U	12.	U	12.	U	11.	U	11.	U

*** Validation Complete ***

CEDAR CHEMICAL CORPORATION
WEST HELENA, ARKANSAS
SITE 4 PHASE I SUBSURFACE SOIL DATA

PEST	SHORT ID -------->	EMW-1		EMW-2		EMW-3		EMW-3 DUP		EMW-4		EMW-6	
	ORIGINAL ID ----->	CEDE-GWMW-1		CEDE-GWMW-2		CEDE-GWMW-3		CEDEGWMW3		CEDE-GWMW-4		CEDE-GWMW6	
	SAMPLE DATE ----->	09/22/93		09/22/93		09/23/93		09/23/93		09/23/93		09/24/93	
	DATE ANALYZED --->	10/07/93		10/07/93		10/08/93		10/08/93		10/07/93		10/08/93	
	MATRIX ---------->	Water		Water		Water		Water		Water		Water	
	UNITS ---------->	UG/L		UG/L		UG/L		UG/L		UG/L		UG/L	
CAS #	Parameter	E012	VAL	E012	VAL	E012	VAL	E012	VAL	E012	VAL	E012	VAL
1024-57-3	Heptachlor Epoxide	0.2	U	0.2	U	0.2	U	0.2	U	0.2	U	0.2	U
1031-07-8	Endosulfan Sulfate	0.66	U	0.66	U	0.66	U	0.66	U	0.66	U	0.66	U
309-00-2	Aldrin	0.04	U	0.04	U	0.04	U	0.04	U	0.04	U	0.04	U
319-84-6	Alpha-BHC	0.05		0.03	U	0.07		0.06		0.03	U	0.03	U
319-85-7	Beta-BHC	0.06	U	0.06	U	0.06	U	0.08		0.06	U	0.06	U
319-86-8	Delta-BHC	0.09	U	0.09	U	0.09	U	0.09	U	0.09	U	0.09	U
33213-65-9	Endosulfan II	0.04	U	0.04	U	0.04	U	0.04	U	0.04	U	0.04	U
50-29-3	4,4'-DDT	0.49		0.12	U	0.12	U	0.12	U	0.56		0.12	U
5103-71-9	alpha-Chlordane	0.14	U	0.14	U	0.14	U	0.14	U	0.14	U	0.14	U
5103-74-2	gamma-Chlordane	0.14	U	0.14	U	0.14	U	0.14	U	0.14	U	0.14	U
53494-70-5	Endrin ketone	0.1	U	0.1	U	0.1	U	0.1	U	0.1	U	0.1	U
58-89-9	gamma-BHC (Lindane)	0.04	U	0.04	U	0.04	U	0.04	U	0.04	U	0.04	U
60-57-1	Dieldrin	0.02	U	0.02	U	0.03		0.02		0.02	U	0.02	U
72-20-8	Endrin	0.06	U	0.06	U	0.06	U	0.06	U	0.06	U	0.06	U
72-43-5	Methoxychlor	1.8	U	1.8	U	1.8	U	1.8		1.8	U	1.8	U
72-54-8	4,4'-DDD	0.11	U	0.11	U	0.11	U	0.11	U	0.11	U	0.11	U
72-55-9	4,4'-DDE	0.04	U	0.04	U	0.04	U	0.04	U	0.04	U	0.04	U
76-44-8	Heptachlor	0.03	U	0.03	U	0.03	U	0.03	U	0.03	U	0.03	U
8001-35-2	Toxaphene	2.4	U	2.4	U	2.4	U	2.4	U	2.4	U	2.4	U
959-98-8	Endosulfan I	0.14	U	0.14	U	0.14	U	0.14	U	0.14	U	0.14	U

*** Validation Complete ***

CEDAR CHEMICAL CORPORATION
WEST HELENA, ARKANSAS
SITE 4 PHASE I SUBSURFACE SOIL DATA

PEST

SHORT ID --------->	EMW-7	EMW-6A	EMW-6B
ORIGINAL ID ----->	CEDE-GWMW7	CEDE-GWMW6A	CEDE-GWMW6B
SAMPLE DATE ----->	09/23/93	09/24/93	09/24/93
DATE ANALYZED --->	10/08/93	10/08/93	10/09/93
MATRIX ---------->	Water	Water	Water
UNITS ----------->	UG/L	UG/L	UG/L

CAS #	Parameter	E012	VAL	E012	VAL	E012	VAL
1024-57-3	Heptachlor Epoxide	0.2	U	0.2	U	0.2	U
1031-07-8	Endosulfan Sulfate	0.66	U	0.66	U	0.66	U
309-00-2	Aldrin	0.04	U	0.04	U	0.04	U
319-84-6	Alpha-BHC	0.03	U	0.03	U	0.03	U
319-85-7	Beta-BHC	0.06	U	0.06	U	0.06	U
319-86-8	Delta-BHC	0.09	U	0.09	U	0.09	U
33213-65-9	Endosulfan II	0.04	U	0.04	U	0.04	U
50-29-3	4,4'-DDT	0.12	U	0.12	U	0.12	U
5103-71-9	alpha-Chlordane	0.14	U	0.14	U	0.14	U
5103-74-2	gamma-Chlordane	0.14	U	0.14	U	0.14	U
53494-70-5	Endrin ketone	0.1	U	0.1	U	0.1	U
58-89-9	gamma-BHC (Lindane)	0.04	U	0.04	U	0.04	U
60-57-1	Dieldrin	0.02	U	0.02	U	0.02	U
72-20-8	Endrin	0.06	U	0.06	U	0.06	U
72-43-5	Methoxychlor	1.8	U	1.8	U	1.8	U
72-54-8	4,4'-DDD	0.11	U	0.11	U	0.11	U
72-55-9	4,4'-DDE	0.04	U	0.04	U	0.04	U
76-44-8	Heptachlor	0.03	U	0.03	U	0.03	U
8001-35-2	Toxaphene	2.4	U	2.4	U	2.4	U
959-98-8	Endosulfan I	0.14	U	0.14	U	0.14	U

*** Validation Complete ***

CEDAR CHEMICAL CORPORATION
WEST HELENA, ARKANSAS
SITE 4 PHASE I SUBSURFACE SOIL DATA

RCRA METAL													
	SHORT ID --------->	4HA-1 (1-2')		4HA-1 (2-3')		4HA-2 (1-2')		4HA-2 (2-3')		4HA-4 (1-2')		4HA-4 (2-3')	
	ORIGINAL ID ----->	CED4SHA-1-2		CED4SHA-1-3		CED4SHA-2-2		CED4SHA-2-3		CED4SHA-4-2		CED4SHA-4-3	
	SAMPLE DATE ----->	09/02/93		09/02/93		09/02/93		09/02/93		09/03/93		09/03/93	
	DATE ANALYZED --->	09/16/93		09/16/93		09/16/93		09/16/93		10/01/93		10/01/93	
	MATRIX ---------->	Soil		Soil		Soil		Soil		Soil		Soil	
	UNITS ---------->	MG/KG		MG/KG		MG/KG		MG/KG		MG/KG		MG/KG	
CAS #	Parameter	E002	VAL	E002	VAL	E002	VAL	E002	VAL	E003	VAL	E003	VAL
7440-38-2	Arsenic (As)	5.		3.3		3.8		4.4		7.2		7.5	
7440-39-3	Barium (Ba)	72.6		111.		91.1		86.6		80.9		96.8	
7440-43-9	Cadmium (Cd)	0.35	U	0.34	U	0.35	U	0.35	U	0.36	U	0.36	U
7440-47-3	Chromium (Cr)	10.6		12.		14.2		14.1		8.6		11.4	
7439-92-1	Lead (Pb)	6.9		7.4		9.3		8.3		8.6		9.	
7439-97-6	Mercury (Hg)	0.12	U	0.11	U	0.11	U	0.11	U	0.12	U	0.11	U
7782-49-2	Selenium (Se)	0.58	U	0.57	U	0.59	U	0.58	U	0.61	U	0.59	U
7440-22-4	Silver (Ag)	0.35	U	0.34	U	0.35	U	0.35	U	0.36	U	0.36	U

*** Validation Complete ***

CEDAR CHEMICAL CORPORATION
WEST HELENA, ARKANSAS
SITE 4 PHASE I SUBSURFACE SOIL DATA

RCRA METAL													
	SHORT ID --------->	4HA-4 (2-3')DUP		4HA-5 (1-2')		4HA-5 (2-3')		4HA-6 (1-2')		4HA-7 (6-7')		4HA-7 (7-8')	
	ORIGINAL ID ------>	CED4SHA-4-3		CED4-HA5-2		CED4-HA5-3		CED4SHA-6-2		CED4SHA-7-2		CED4SHA-7-3	
	SAMPLE DATE ----->	09/03/93		09/15/93		09/15/93		09/03/93		09/03/93		09/03/93	
	DATE ANALYZED --->	10/01/93		10/01/93		10/01/93		10/01/93		10/01/93		10/01/93	
	MATRIX ---------->	Soil		Soil		Soil		Soil		Soil		Soil	
	UNITS ---------->	MG/KG		MG/KG		MG/KG		MG/KG		MG/KG		MG/KG	
CAS #	Parameter	E003	VAL	E010	VAL	E010	VAL	E003	VAL	E003	VAL	E003	VAL
7440-38-2	Arsenic (As)	9.8		4.1		3.1		5.2		7.4		6.2	
7440-39-3	Barium (Ba)	79.7		93.5		113.		83.8		118.		127.	
7440-43-9	Cadmium (Cd)	0.36	U	0.34	U	0.36	U	0.35	U	0.36	U	0.36	U
7440-47-3	Chromium (Cr)	13.5		18.1		14.2		20.9		14.7		11.3	
7439-92-1	Lead (Pb)	8.7		8.8		6.9		15.8		11.1		9.	
7439-97-6	Mercury (Hg)	0.11	U	0.12	U	0.12	U	0.11	U	0.11	U	0.12	U
7782-49-2	Selenium (Se)	0.59	U	0.56	U	0.59	U	0.58	U	0.6	U	0.6	U
7440-22-4	Silver (Ag)	0.36	U	0.34	U	0.36	U	0.35	U	0.36	U	0.36	U

*** Validation Complete ***

CEDAR CHEMICAL CORPORATION
WEST HELENA, ARKANSAS
SITE 4 PHASE I SUBSURFACE SOIL DATA

RCRA METAL		SHORT ID --------->	4HA-8 (6-7')		4HA-8 (7-8')		4MW-1 (10-15')		4MW-1 (25-30')		4MW-2 (25-30')		IMSB-1 (3-8')	
		ORIGINAL ID ----->	CED4SHA-8-2		CED4SHA-8-3		CED4-SMW1-3		CED4-SMW1-6		CED4-SMW2-6		IM-SB-01-2	
		SAMPLE DATE ----->	09/03/93		09/03/93		09/16/93		09/17/93		09/22/93		04/08/93	
		DATE ANALYZED --->	10/01/93		10/01/93		10/11/93		10/11/93		10/11/93		04/19/93	
		MATRIX ---------->	Soil		Soil		Soil		Soil		Soil		Soil	
		UNITS ---------->	MG/KG		MG/KG		MG/KG		MG/KG		MG/KG		MG/KG	
CAS #	Parameter		E003	VAL	E003	VAL	E011	VAL	E011	VAL	E011	VAL	ES1	VAL
7440-38-2	Arsenic (As)		8.3		6.6		9.4		15.5		1.3		9.3	
7440-39-3	Barium (Ba)		118.		95.9		218.		95.2		109.		143.	
7440-43-9	Cadmium (Cd)		0.36	U	0.36	U	0.38	U	0.39	U	0.37	U	0.37	U
7440-47-3	Chromium (Cr)		14.7		13.2		12.4		14.9		11.5		9.2	
7439-92-1	Lead (Pb)		12.5		10.5		30.		11.		11.3		11.7	
7439-97-6	Mercury (Hg)		0.12	U	0.1	U	0.13	U	0.13	U	0.12	U	0.12	U
7782-49-2	Selenium (Se)		0.6	U	0.61	U	0.63	U	0.65	U	0.64		0.15	
7440-22-4	Silver (Ag)		0.36	U	0.36	U	0.38	U	0.39	U	0.37	U	0.85	U

*** Validation Complete ***

CEDAR CHEMICAL CORPORATION
WEST HELENA, ARKANSAS
SITE 4 PHASE I SUBSURFACE SOIL DATA

RCRA METAL													
	SHORT ID --------->	IMSB-2 (5-10')		IMSB-3 (5-10')		IMSB-4 (5-10')		IMSB-5 (5-10')		BGHA-2 (0-1')		BGHA-3 (0-1')	
	ORIGINAL ID ----->	IM-SB-02-2		IM-SB-03-2		IM-SB-04-2		IM-SB-05-2		CED-SBG-2		CED-SBG-3	
	SAMPLE DATE ----->	04/08/93		04/09/93		04/09/93		04/09/93		09/16/93		09/16/93	
	DATE ANALYZED --->	04/19/93		04/19/93		04/19/93		04/19/93		10/11/93		10/11/93	
	MATRIX ---------->	Soil		Soil		Soil		Soil		Soil		Soil	
	UNITS ---------->	MG/KG		MG/KG		MG/KG		MG/KG		MG/KG		MG/KG	
CAS #	Parameter	ES1	VAL	ES1	VAL	ES1	VAL	ES1	VAL	E011	VAL	E011	VAL
7440-38-2	Arsenic (As)	7.4		7.3		8.5		7.2		6.2		5.3	
7440-39-3	Barium (Ba)	210.		231.		156.		122.		174.		138.	
7440-43-9	Cadmium (Cd)	0.37	U	0.36	U	0.38	U	0.37	U	0.35	U	0.34	U
7440-47-3	Chromium (Cr)	9.9		14.2		16.9		11.7		14.7	U	10.7	
7439-92-1	Lead (Pb)	11.7		13.3		13.		9.7		10.3		11.2	
7439-97-6	Mercury (Hg)	0.11	U	0.11	U	0.12	U	0.12	U	0.12	U	0.11	U
7782-49-2	Selenium (Se)	0.19		0.28		0.29		0.2		0.58	U	0.57	U
7440-22-4	Silver (Ag)	0.87	U	0.85	U	0.88	U	0.87	U	0.35	U	0.34	U

*** Validation Complete ***

CEDAR CHEMICAL CORPORATION
WEST HELENA, ARKANSAS
SITE 4 PHASE I SUBSURFACE SOIL DATA

SVOA	SHORT ID ---------->	4HA-1 (1-2')		4HA-1 (2-3')		4HA-2 (1-2')		4HA-2 (2-3')		4HA-4 (1-2')		4HA-4 (2-3')	
	ORIGINAL ID ----->	CED4SHA-1-2		CED4SHA-1-3		CED4SHA-2-2		CED4SHA-2-3		CED4SHA-4-2		CED4SHA-4-3	
	SAMPLE DATE ----->	09/02/93		09/02/93		09/02/93		09/02/93		09/03/93		09/03/93	
	DATE ANALYZED --->	09/28/93		09/29/93		09/29/93		09/29/93		10/06/93		10/05/93	
	MATRIX ---------->	Soil		Soil		Soil		Soil		Soil		Soil	
	UNITS ---------->	UG/KG		UG/KG		UG/KG		UG/KG		UG/KG		UG/KG	
CAS #	Parameter	E002	VAL	E002	VAL	E002	VAL	E002	VAL	E003	VAL	E003	VAL
100-01-6	4-Nitroaniline	1500.	U	1500.	U	15000.	U	46000.	U	1600.	U	1600.	U
100-02-7	4-Nitrophenol	3800.	U	3900.	U	39000.	U	120000.	U	4100.	U	4100.	U
100-51-6	Benzyl alcohol	1500.	U	1500.	U	15000.	U	46000.	U	1600.	U	1600.	U
101-55-3	4-Bromophenyl-phenylether	760.	U	790.	U	7800.	U	23000.	U	810.	U	820.	U
105-67-9	2,4-Dimethylphenol	760.	U	790.	U	7800.	U	23000.	U	810.	U	820.	U
106-44-5	4-Methylphenol (p-Cresol)	760.	U	790.	U	7800.	U	23000.	U	810.	U	820.	U
106-46-7	1,4-Dichlorobenzene	760.	U	790.	U	7800.	U	23000.	U	810.	U	820.	U
106-47-8	4-Chloroaniline	1500.	U	1500.	U	15000.	U	46000.	U	12000.		4500.	
108-60-1	bis(2-chloroisopropyl) ether	760.	U	790.	U	7800.	U	23000.	U	810.	U	820.	U
108-95-2	Phenol	760.	U	790.	U	7800.	U	23000.	U	810.	U	820.	U
111-44-4	bis(2-Chloroethyl)ether	760.	U	790.	U	7800.	U	23000.	U	810.	U	820.	U
111-91-1	bis(2-Chloroethoxy)methane	760.	U	790.	U	7800.	U	23000.	U	810.	U	820.	U
117-81-7	bis(2-Ethylhexyl)phthalate (BEHP)	760.	U	790.	U	7800.	U	23000.	U	810.	U	820.	U
117-84-0	Di-n-octylphthalate	760.	U	790.	U	7800.	U	23000.	U	810.	U	820.	U
118-74-1	Hexachlorobenzene	760.	U	790.	U	7800.	U	23000.	U	810.	U	820.	U
120-12-7	Anthracene	760.	U	790.	U	7800.	U	23000.	U	810.	U	820.	U
120-82-1	1,2,4-Trichlorobenzene	760.	U	790.	U	7800.	U	23000.	U	470.		820.	U
120-83-2	2,4-Dichlorophenol	760.	U	790.	U	7800.	U	23000.	U	810.	U	820.	U
121-14-2	2,4-Dinitrotoluene	760.	U	790.	U	7800.	U	23000.	U	810.	U	820.	U
129-00-0	Pyrene	760.	U	790.	U	7800.	U	23000.	U	110.		820.	U
131-11-3	Dimethylphthalate	760.	U	790.	U	7800.	U	23000.	U	810.	U	820.	U
132-64-9	Dibenzofuran	760.	U	790.	U	7800.	U	23000.	U	810.	U	820.	U
191-24-2	Benzo(g,h,i)perylene	NR		NR		NR		NR		NR		NR	
193-39-5	Indeno(1,2,3-cd)pyrene	760.	U	790.	U	7800.	U	23000.	U	810.	U	820.	U
205-99-2	Benzo(b)fluoranthene	760.	U	790.	U	7800.	U	23000.	U	810.	U	820.	U
206-44-0	Fluoranthene	760.	U	790.	U	7800.	U	23000.	U	130.		820.	U
207-08-9	Benzo(k)fluoranthene	760.	U	790.	U	7800.	U	23000.	U	810.	U	820.	U
208-96-8	Acenaphthylene	760.	U	790.	U	7800.	U	23000.	U	810.	U	820.	U
218-01-9	Chrysene	760.	U	790.	U	7800.	U	23000.	U	810.	U	820.	U
50-32-8	Benzo(a)pyrene	760.	U	790.	U	7800.	U	23000.	U	810.	U	820.	U
51-28-5	2,4-Dinitrophenol	760.	U	790.	U	7800.	U	23000.	U	810.	U	820.	U
534-52-1	4,6-Dinitro-2-methylphenol	3800.	U	3900.	U	39000.	U	120000.	U	4100.	U	4100.	U
53-70-3	Dibenz(a,h)anthracene	NR		NR		NR		NR		NR		NR	
541-73-1	1,3-Dichlorobenzene	760.	U	790.	U	7800.	U	23000.	U	810.	U	820.	U
56-55-3	Benzo(a)anthracene	760.	U	790.	U	7800.	U	23000.	U	810.	U	820.	U
59-50-7	4-Chloro-3-methylphenol	1500.	U	1500.	U	15000.	U	46000.	U	1600.	U	1600.	U
606-20-2	2,6-Dinitrotoluene	760.	U	790.	U	7800.	U	23000.	U	810.	U	820.	U
621-64-7	N-Nitroso-di-n-propylamine	760.	U	790.	U	7800.	U	23000.	U	810.	U	820.	U
65-85-0	Benzoic acid	3800.	U	3900.	U	39000.	U	120000.	U	4100.	U	4100.	U

*** Validation Complete ***

CEDAR CHEMICAL CORPORATION
WEST HELENA, ARKANSAS
SITE 4 PHASE I SUBSURFACE SOIL DATA

SVOA													
	SHORT ID --------->	4HA-1 (1-2')		4HA-1 (2-3')		4HA-2 (1-2')		4HA-2 (2-3')		4HA-4 (1-2')		4HA-4 (2-3')	
	ORIGINAL ID ----->	CED4SHA-1-2		CED4SHA-1-3		CED4SHA-2-2		CED4SHA-2-3		CED4SHA-4-2		CED4SHA-4-3	
	SAMPLE DATE ----->	09/02/93		09/02/93		09/02/93		09/02/93		09/03/93		09/03/93	
	DATE ANALYZED --->	09/28/93		09/29/93		09/29/93		09/29/93		10/06/93		10/05/93	
	MATRIX ---------->	Soil		Soil		Soil		Soil		Soil		Soil	
	UNITS ---------->	UG/KG		UG/KG		UG/KG		UG/KG		UG/KG		UG/KG	
CAS #	Parameter	EQ02	VAL	EQ02	VAL	EQ02	VAL	EQ02	VAL	EQ03	VAL	EQ03	VAL
67-72-1	Hexachloroethane	760.	U	790.	U	7800.	U	23000.	U	810.	U	820.	U
7005-72-3	4-Chlorophenyl-phenylether	760.	U	790.	U	7800.	U	23000.	U	810.	U	820.	U
709-98-8	Propanil	760.	U	410.		7800.	U	23000.	U	810.	U	820.	U
77-47-4	Hexachlorocyclopentadiene	760.	U	790.	U	7800.	U	23000.	U	810.	U	820.	U
78-59-1	Isophorone	760.	U	790.	U	7800.	U	23000.	U	810.	U	820.	U
83-32-9	Acenaphthene	760.	U	790.	U	7800.	U	23000.	U	810.	U	820.	U
84-66-2	Diethylphthalate	760.	U	790.	U	7800.	U	23000.	U	810.	U	820.	U
84-74-2	Di-n-butylphthalate	760.	U	790.	U	2700.		23000.	U	810.	U	820.	U
85-01-8	Phenanthrene	760.	U	790.	U	7800.	U	23000.	U	810.	U	820.	U
85-68-7	Butylbenzylphthalate	760.	U	790.	U	7800.	U	23000.	U	810.	U	820.	U
86-30-6	N-Nitrosodiphenylamine	760.	U	790.	U	7800.	U	23000.	U	810.	U	820.	U
86-73-7	Fluorene	760.	U	790.	U	7800.	U	23000.	U	810.	U	820.	U
87-68-3	Hexachlorobutadiene	760.	U	790.	U	7800.	U	23000.	U	810.	U	820.	U
87-86-5	Pentachlorophenol	3800.	U	3900.	U	39000.	U	120000.	U	4100.	U	4100.	U
88-06-2	2,4,6-Trichlorophenol	760.	U	790.	U	7800.	U	23000.	U	810.	U	820.	U
88-74-4	2-Nitroaniline	3800.	U	3900.	U	39000.	U	120000.	U	4100.	U	4100.	U
88-75-5	2-Nitrophenol	760.	U	790.	U	7800.	U	23000.	U	810.	U	820.	U
88-85-7	Dinoseb	760.	U	740.		1100000.		470000.		810.	U	820.	U
91-20-3	Naphthalene	760.	U	790.	U	7800.	U	23000.	U	810.	U	820.	U
91-57-6	2-Methylnaphthalene	760.	U	790.	U	7800.	U	23000.	U	810.	U	820.	U
91-58-7	2-Chloronaphthalene	760.	U	790.	U	7800.	U	23000.	U	810.	U	820.	U
91-94-1	3,3'-Dichlorobenzidine	1500.	U	1500.	U	15000.	U	46000.	U	1600.	U	1600.	U
95-48-7	2-Methylphenol (o-Cresol)	760.	U	790.	U	7800.	U	23000.	U	810.	U	820.	U
95-50-1	1,2-Dichlorobenzene	760.	U	790.	U	7800.	U	23000.	U	160.		820.	U
95-57-8	2-Chlorophenol	760.	U	790.	U	7800.	U	23000.	U	810.	U	820.	U
95-76-1	3,4-Dichloroaniline	1900.		4900.		7400.		23000.	U	810.	U	820.	U
95-95-4	2,4,5-Trichlorophenol	760.	U	790.	U	7800.	U	23000.	U	810.	U	820.	U
98-95-3	Nitrobenzene	760.	U	790.	U	7800.	U	23000.	U	810.	U	820.	U
99-09-2	3-Nitroaniline	3800.	U	3900.	U	39000.	U	120000.	U	4100.	U	4100.	U

*** Validation Complete ***

CEDAR CHEMICAL CORPORATION
WEST HELENA, ARKANSAS
SITE 4 PHASE I SUBSURFACE SOIL DATA

SVOA	SHORT ID --------->	4HA-4 (2-3')DUP		4HA-5 (1-2')		4HA-5 (2-3')		4HA-6 (1-2')		4HA-7 (6-7')		4HA-7 (7-8')	
	ORIGINAL ID ----->	CED4SHA-4-3		CED4HA5-2		CED4HA5-3		CED4SHA-6-2		CED4SHA-7-2		CED4SHA-7-3	
	SAMPLE DATE ----->	09/03/93		09/15/93		09/15/93		09/03/93		09/03/93		09/03/93	
	DATE ANALYZED --->	10/14/93		10/19/93		10/19/93		10/09/93		10/05/93		10/14/93	
	MATRIX ---------->	Soil		Soil		Soil		Soil		Soil		Soil	
	UNITS ---------->	UG/KG		UG/KG		UG/KG		UG/KG		UG/KG		UG/KG	
CAS #	Parameter	E003	VAL	E010	VAL	E010	VAL	E003	VAL	E003	VAL	E003	VAL
100-01-6	4-Nitroaniline	1600.	U	16000.	U	16000.	U	2700000.	U	1600.	U	3200.	U
100-02-7	4-Nitrophenol	4100.	U	16000.	U	16000.	U	6800000.	U	4100.	U	8100.	U
100-51-6	Benzyl alcohol	1600.	U	3100.	U	3300.	U	2700000.	U	1600.	U	3200.	U
101-55-3	4-Bromophenyl-phenylether	810.	U	3100.	U	3300.	U	1400000.	U	810.	U	1600.	U
105-67-9	2,4-Dimethylphenol	810.	U	3100.	U	3300.	U	1400000.	U	810.	U	1600.	U
106-44-5	4-Methylphenol (p-Cresol)	810.	U	3100.	U	3300.	U	1400000.	U	810.	U	1600.	U
106-46-7	1,4-Dichlorobenzene	810.	U	3100.	U	3300.	U	1400000.	U	810.	U	1600.	U
106-47-8	4-Chloroaniline	1100.		9100.		3300.	U	2700000.	U	1600.	U	3200.	U
108-60-1	bis(2-chloroisopropyl) ether	810.	U	3100.	U	3300.	U	1400000.	U	810.	U	1600.	U
108-95-2	Phenol	810.	U	3100.	U	3300.	U	1400000.	U	810.	U	1600.	U
111-44-4	bis(2-Chloroethyl)ether	810.	U	3100.	U	3300.	U	1400000.	U	810.	U	1600.	U
111-91-1	bis(2-Chloroethoxy)methane	810.	U	3100.	U	3300.	U	1400000.	U	810.	U	1600.	U
117-81-7	bis(2-Ethylhexyl)phthalate (BEHP)	810.	U	1300.		3300.	U	1400000.	U	810.	U	1600.	U
117-84-0	Di-n-octylphthalate	810.	U	4300.		3300.	U	1400000.	U	810.	U	1600.	U
118-74-1	Hexachlorobenzene	810.	U	3100.	U	3300.	U	1400000.	U	810.	U	1600.	U
120-12-7	Anthracene	810.	U	3100.	U	3300.	U	1400000.	U	810.	U	1600.	U
120-82-1	1,2,4-Trichlorobenzene	810.	U	3100.	U	3300.	U	1400000.	U	810.	U	1600.	U
120-83-2	2,4-Dichlorophenol	810.	U	3100.	U	3300.	U	1400000.	U	810.	U	1600.	U
121-14-2	2,4-Dinitrotoluene	810.	U	3100.	U	3300.	U	1400000.	U	810.	U	1600.	U
129-00-0	Pyrene	810.	U	3100.	U	3300.	U	1400000.	U	810.	U	1600.	U
131-11-3	Dimethylphthalate	810.	U	3100.	U	3300.	U	1400000.	U	810.	U	1600.	U
132-64-9	Dibenzofuran	810.	U	3100.	U	3300.	U	1400000.	U	810.	U	1600.	U
191-24-2	Benzo(g,h,i)perylene	NR		3100.	U	3300.	U	NR		NR		NR	
193-39-5	Indeno(1,2,3-cd)pyrene	810.	U	3100.	U	3300.	U	1400000.	U	810.	U	1600.	U
205-99-2	Benzo(b)fluoranthene	810.	U	3100.	U	3300.	U	1400000.	U	810.	U	1600.	U
206-44-0	Fluoranthene	810.	U	3100.	U	3300.	U	1400000.	U	810.	U	1600.	U
207-08-9	Benzo(k)fluoranthene	810.	U	3100.	U	3300.	U	1400000.	U	810.	U	1600.	U
208-96-8	Acenaphthylene	810.	U	3100.	U	3300.	U	1400000.	U	810.	U	1600.	U
218-01-9	Chrysene	810.	U	3100.	U	3300.	U	1400000.	U	810.	U	1600.	U
50-32-8	Benzo(a)pyrene	810.	U	3100.	U	3300.	U	1400000.	U	810.	U	1600.	U
51-28-5	2,4-Dinitrophenol	810.	U	16000.	U	16000.	U	1400000.	U	810.	U	1600.	U
534-52-1	4,6-Dinitro-2-methylphenol	4100.	U	16000.	U	16000.	U	6800000.	U	4100.	U	8100.	U
53-70-3	Dibenz(a,h)anthracene	NR		3100.	U	3300.	U	NR		NR		NR	
541-73-1	1,3-Dichlorobenzene	810.	U	3100.	U	3300.	U	1400000.	U	810.	U	1600.	U
56-55-3	Benzo(a)anthracene	810.	U	3100.	U	3300.	U	1400000.	U	810.	U	1600.	U
59-50-7	4-Chloro-3-methylphenol	1600.	U	3100.	U	3300.	U	2700000.	U	1600.	U	3200.	U
606-20-2	2,6-Dinitrotoluene	810.	U	3100.	U	3300.	U	1400000.	U	810.	U	1600.	U
621-64-7	N-Nitroso-di-n-propylamine	810.	U	3100.	U	3300.	U	1400000.	U	810.	U	1600.	U
65-85-0	Benzoic acid	4100.	U	16000.	U	16000.	U	6800000.	U	4100.	U	8100.	U

*** Validation Complete ***

CEDAR CHEMICAL CORPORATION
WEST HELENA, ARKANSAS
SITE 4 PHASE I SUBSURFACE SOIL DATA

SVOA	SHORT ID --------->	4HA-4 (2-3')DUP		4HA-5 (1-2')		4HA-5 (2-3')		4HA-6 (1-2')		4HA-7 (6-7')		4HA-7 (7-8')	
	ORIGINAL ID ----->	CED4SHA-4-3		CED4HA5-2		CED4HA5-3		CED4SHA-6-2		CED4SHA-7-2		CED4SHA-7-3	
	SAMPLE DATE ----->	09/03/93		09/15/93		09/15/93		09/03/93		09/03/93		09/03/93	
	DATE ANALYZED --->	10/14/93		10/19/93		10/19/93		10/09/93		10/05/93		10/14/93	
	MATRIX ---------->	Soil		Soil		Soil		Soil		Soil		Soil	
	UNITS ---------->	UG/KG		UG/KG		UG/KG		UG/KG		UG/KG		UG/KG	
CAS #	Parameter	E003	VAL	E010	VAL	E010	VAL	E003	VAL	E003	VAL	E003	VAL
67-72-1	Hexachloroethane	810.	U	3100.	U	3300.	U	1400000.	U	810.	U	1600.	U
7005-72-3	4-Chlorophenyl-phenylether	810.	U	3100.	U	3300.	U	1400000.	U	810.	U	1600.	U
709-98-8	Propanil	810.	U	49000.		130000.		1400000.	U	810.	U	1600.	U
77-47-4	Hexachlorocyclopentadiene	810.	U	3100.	U	3300.	U	1400000.	U	810.	U	1600.	U
78-59-1	Isophorone	810.	U	730.		3300.	U	1400000.	U	810.	U	1600.	U
83-32-9	Acenaphthene	810.	U	3100.	U	3300.	U	1400000.	U	810.	U	1600.	U
84-66-2	Diethylphthalate	810.	U	3100.	U	3300.	U	1400000.	U	810.	U	1600.	U
84-74-2	Di-n-butylphthalate	810.	U	460.		3300.	U	1400000.	U	810.	U	1600.	U
85-01-8	Phenanthrene	810.	U	3100.	U	3300.	U	1400000.	U	810.	U	1600.	U
85-68-7	Butylbenzylphthalate	810.	U	3100.	U	3300.	U	1400000.	U	810.	U	1600.	U
86-30-6	N-Nitrosodiphenylamine	810.	U	3100.	U	3300.	U	1400000.	U	810.	U	1600.	U
86-73-7	Fluorene	810.	U	3100.	U	3300.	U	1400000.	U	810.	U	1600.	U
87-68-3	Hexachlorobutadiene	810.	U	3100.	U	3300.	U	1400000.	U	810.	U	1600.	U
87-86-5	Pentachlorophenol	4100.	U	16000.	U	16000.	U	6800000.	U	4100.	U	8100.	U
88-06-2	2,4,6-Trichlorophenol	810.	U	3100.	U	3300.	U	1400000.	U	810.	U	1600.	U
88-74-4	2-Nitroaniline	4100.	U	16000.	U	16000.	U	6800000.	U	4100.	U	8100.	U
88-75-5	2-Nitrophenol	810.	U	3100.	U	3300.	U	1400000.	U	810.	U	1600.	U
88-85-7	Dinoseb	810.	U	30000.		920000.		1400000.	U	98000.		19000.	
91-20-3	Naphthalene	810.	U	3100.	U	3300.	U	1400000.	U	810.	U	1600.	U
91-57-6	2-Methylnaphthalene	810.	U	3100.	U	3300.	U	1400000.	U	810.	U	1600.	U
91-58-7	2-Chloronaphthalene	810.	U	3100.	U	3300.	U	1400000.	U	810.	U	1600.	U
91-94-1	3,3'-Dichlorobenzidine	1600.	U	6200.	U	6500.	U	2700000.	U	1600.	U	3200.	U
95-48-7	2-Methylphenol (o-Cresol)	810.	U	3100.	U	3300.	U	1400000.	U	810.	U	1600.	U
95-50-1	1,2-Dichlorobenzene	350.		1700.		3300.	U	1400000.	U	810.	U	1600.	U
95-57-8	2-Chlorophenol	810.	U	3100.	U	3300.	U	1400000.	U	810.	U	1600.	U
95-76-1	3,4-Dichloroaniline	810.	U	2500000.		400000.		12000000.		810.	U	1600.	U
95-95-4	2,4,5-Trichlorophenol	810.	U	16000.	U	16000.	U	1400000.	U	810.	U	1600.	U
98-95-3	Nitrobenzene	810.	U	3100.	U	3300.	U	1400000.	U	810.	U	1600.	U
99-09-2	3-Nitroaniline	4100.	U	16000.	U	16000.	U	6800000.	U	4100.	U	8100.	U

*** Validation Complete ***

CEDAR CHEMICAL CORPORATION
WEST HELENA, ARKANSAS
SITE 4 PHASE I SUBSURFACE SOIL DATA

SVOA	SHORT ID -------->	4HA-8 (6-7')		4HA-8 (7-8')		4MW-1		4MW-1 (10-15')		4MW-1 (25-30')		4MW-2	
	ORIGINAL ID ----->	CED4SHA-8-2		CED4SHA-8-3		CED4GWMW1		CED4SMW13		CED4SMW16		CED4GWMW2	
	SAMPLE DATE ----->	09/03/93		09/03/93		09/29/93		09/16/93		09/17/93		09/29/93	
	DATE ANALYZED --->	10/05/93		10/05/93		10/26/93		10/16/93		10/16/93		10/26/93	
	MATRIX ---------->	Soil		Soil		Water		Soil		Soil		Water	
	UNITS ---------->	UG/KG		UG/KG		UG/L		UG/KG		UG/KG		UG/L	
CAS #	Parameter	E003	VAL	E003	VAL	E015	VAL	E011	VAL	E011	VAL	E015	VAL
100-01-6	4-Nitroaniline	1600.	U	1600.	U	50.	U	5100.	U	1100.	U	50.	U
100-02-7	4-Nitrophenol	4100.	U	4000.	U	50.	U	5100.	U	2.		50.	U
100-51-6	Benzyl alcohol	1600.	U	1600.	U	10.	U	NR		NR		10.	U
101-55-3	4-Bromophenyl-phenylether	810.	U	800.	U	10.	U	2100.	U	430.	U	10.	U
105-67-9	2,4-Dimethylphenol	810.	U	800.	U	10.	U	2100.	U	430.	U	10.	U
106-44-5	4-Methylphenol (p-Cresol)	810.	U	800.	U	23.		2100.	U	430.	U	10.	U
106-46-7	1,4-Dichlorobenzene	810.	U	800.	U	10.	U	2100.	U	430.	U	10.	U
106-47-8	4-Chloroaniline	1600.	U	1600.	U	23.		2100.	U	430.	U	5.	
108-60-1	bis(2-chloroisopropyl) ether	810.	U	800.	U	10.	U	2100.	U	430.	U	10.	U
108-95-2	Phenol	810.	U	800.	U	10.	U	2100.	U	7.		10.	U
111-44-4	bis(2-Chloroethyl)ether	810.	U	800.	U	10.	U	2100.	U	430.	U	10.	U
111-91-1	bis(2-Chloroethoxy)methane	810.	U	800.	U	10.	U	2100.	U	430.	U	10.	U
117-81-7	bis(2-Ethylhexyl)phthalate (BEHP)	810.	U	800.	U	10.	U	2100.	U	430.	U	12.	U
117-84-0	Di-n-octylphthalate	810.	U	800.	U	10.	U	2100.	U	430.	U	10.	U
118-74-1	Hexachlorobenzene	810.	U	800.	U	10.	U	2100.	U	430.	U	10.	U
120-12-7	Anthracene	810.	U	800.	U	10.	U	2100.	U	430.	U	10.	U
120-82-1	1,2,4-Trichlorobenzene	810.	U	800.	U	10.	U	2100.	U	430.	U	10.	U
120-83-2	2,4-Dichlorophenol	810.	U	800.	U	10.	U	2100.	U	430.	U	10.	U
121-14-2	2,4-Dinitrotoluene	810.	U	800.	U	10.	U	2100.	U	430.	U	10.	U
129-00-0	Pyrene	810.	U	800.	U	10.	U	2100.	U	430.	U	10.	U
131-11-3	Dimethylphthalate	810.	U	170.		10.	U	2100.	U	430.	U	10.	U
132-64-9	Dibenzofuran	810.	U	800.	U	10.	U	2100.	U	430.	U	10.	U
191-24-2	Benzo(g,h,i)perylene	NR		NR		10.	U	2100.	U	430.	U	10.	U
193-39-5	Indeno(1,2,3-cd)pyrene	810.	U	800.	U	10.	U	2100.	U	430.	U	10.	U
205-99-2	Benzo(b)fluoranthene	810.	U	800.	U	10.	U	2100.	U	430.	U	10.	U
206-44-0	Fluoranthene	810.	U	800.	U	10.	U	2100.	U	430.	U	10.	U
207-08-9	Benzo(k)fluoranthene	810.	U	800.	U	10.	U	2100.	U	430.	U	10.	U
208-96-8	Acenaphthylene	810.	U	800.	U	10.	U	2100.	U	430.	U	10.	U
218-01-9	Chrysene	810.	U	800.	U	10.	U	2100.	U	430.	U	10.	U
50-32-8	Benzo(a)pyrene	810.	U	800.	U	10.	U	2100.	U	430.	U	10.	U
51-28-5	2,4-Dinitrophenol	810.	U	800.	U	50.	U	5100.	U	1100.	U	110.	
534-52-1	4,6-Dinitro-2-methylphenol	4100.	U	4000.	U	50.	U	5100.	U	1100.	U	50.	U
53-70-3	Dibenz(a,h)anthracene	NR		NR		10.	U	2100.	U	430.	U	10.	U
541-73-1	1,3-Dichlorobenzene	810.	U	800.	U	10.	U	2100.	U	430.	U	10.	U
56-55-3	Benzo(a)anthracene	810.	U	800.	U	10.	U	2100.	U	430.	U	10.	U
59-50-7	4-Chloro-3-methylphenol	1600.	U	1600.	U	10.	U	2100.	U	430.	U	10.	U
606-20-2	2,6-Dinitrotoluene	810.	U	800.	U	10.	U	2100.	U	430.	U	10.	U
621-64-7	N-Nitroso-di-n-propylamine	810.	U	800.	U	10.	U	2100.	U	430.	U	10.	U
65-85-0	Benzoic acid	4100.	U	4000.	U	57.		NR		NR		50.	U

*** Validation Complete ***

CEDAR CHEMICAL CORPORATION
WEST HELENA, ARKANSAS
SITE 4 PHASE I SUBSURFACE SOIL DATA

SVOA	SHORT ID --------->	4HA-8 (6-7')		4HA-8 (7-8')		4MW-1		4MW-1 (10-15')		4MW-1 (25-30')		4MW-2	
	ORIGINAL ID ----->	CED4SHA-8-2		CED4SHA-8-3		CED4GWMW1		CED4SMW13		CED4SMW16		CED4GWMW2	
	SAMPLE DATE ----->	09/03/93		09/03/93		09/29/93		09/16/93		09/17/93		09/29/93	
	DATE ANALYZED --->	10/05/93		10/05/93		10/26/93		10/16/93		10/16/93		10/26/93	
	MATRIX ---------->	Soil		Soil		Water		Soil		Soil		Water	
	UNITS ---------->	UG/KG		UG/KG		UG/L		UG/KG		UG/KG		UG/L	
CAS #	Parameter	E003	VAL	E003	VAL	E015	VAL	E011	VAL	E011	VAL	E015	VAL
67-72-1	Hexachloroethane	810.	U	800.	U	10.	U	2100.	U	430.	U	10.	U
7005-72-3	4-Chlorophenyl-phenylether	810.	U	800.	U	10.	U	2100.	U	430.	U	10.	U
709-98-8	Propanil	810.	U	800.	U	45.		5100.	U	64.		10.	U
77-47-4	Hexachlorocyclopentadiene	810.	U	800.	U	10.	U	2100.	U	430.	U	10.	U
78-59-1	Isophorone	810.	U	800.	U	17.		2100.	U	430.	U	2.	
83-32-9	Acenaphthene	810.	U	800.	U	10.	U	2100.	U	430.	U	10.	U
84-66-2	Diethylphthalate	810.	U	800.	U	1.		2100.	U	430.	U	10.	U
84-74-2	Di-n-butylphthalate	810.	U	800.	U	10.	U	2100.	U	430.	U	10.	U
85-01-8	Phenanthrene	810.	U	800.	U	10.	U	2100.	U	430.	U	10.	U
85-68-7	Butylbenzylphthalate	810.	U	800.	U	10.	U	2100.	U	430.	U	10.	U
86-30-6	N-Nitrosodiphenylamine	810.	U	800.	U	10.	U	2100.	U	430.	U	10.	U
86-73-7	Fluorene	810.	U	800.	U	10.	U	2100.	U	430.	U	10.	U
87-68-3	Hexachlorobutadiene	810.	U	800.	U	10.	U	2100.	U	430.	U	10.	U
87-86-5	Pentachlorophenol	4100.	U	4000.	U	50.	U	5100.	U	1100.	U	50.	U
88-06-2	2,4,6-Trichlorophenol	810.	U	800.	U	10.	U	2100.	U	430.	U	10.	U
88-74-4	2-Nitroaniline	4100.	U	4000.	U	50.	U	5100.	U	1100.	U	50.	U
88-75-5	2-Nitrophenol	810.	U	800.	U	10.	U	2100.	U	430.	U	10.	U
88-85-7	Dinoseb	73000.		26000.		50.	U	6300.		1100.	U	41000.	
91-20-3	Naphthalene	810.	U	800.	U	2.		2100.	U	430.	U	10.	U
91-57-6	2-Methylnaphthalene	810.	U	800.	U	10.	U	2100.	U	430.	U	10.	U
91-58-7	2-Chloronaphthalene	810.	U	800.	U	10.	U	2100.	U	430.	U	10.	U
91-94-1	3,3'-Dichlorobenzidine	1600.	U	1600.	U	20.	U	2100.	U	430.	U	20.	U
95-48-7	2-Methylphenol (o-Cresol)	810.	U	800.	U	15.		2100.	U	2.		10.	U
95-50-1	1,2-Dichlorobenzene	810.	U	800.	U	960.		2100.	U	430.	U	33.	
95-57-8	2-Chlorophenol	810.	U	800.	U	10.	U	2100.	U	430.	U	10.	U
95-76-1	3,4-Dichloroaniline	810.	U	800.	U	66.		5100.	U	12.		22.	
95-95-4	2,4,5-Trichlorophenol	810.	U	800.	U	50.	U	5100.	U	1100.	U	50.	U
98-95-3	Nitrobenzene	810.	U	800.	U	10.	U	2100.	U	430.	U	10.	U
99-09-2	3-Nitroaniline	4100.	U	4000.	U	50.	U	NR		NR		50.	U

*** Validation Complete ***

CEDAR CHEMICAL CORPORATION
WEST HELENA, ARKANSAS
SITE 4 PHASE I SUBSURFACE SOIL DATA

SVOA	SHORT ID ---------->	4MW-2 DUP		4MW-2 (25-30')		IMSB-1 (3-8')		IMSB-1 (8-12')		IMSB-2 (5-10')		IMSB-2 (10-15')	
	ORIGINAL ID ----->	CED4GWMW2D		CED4SMW26		IM-SB-01-2		IM-SB-01-3		IM-SB-02-2		IM-SB-02-3	
	SAMPLE DATE ----->	09/29/93		09/22/93		04/08/93		04/08/93		04/08/93		04/08/93	
	DATE ANALYZED --->	10/26/93		10/15/93		04/22/93		04/20/93		04/20/93		04/21/93	
	MATRIX ---------->	Water		Soil		Soil		Soil		Soil		Soil	
	UNITS ---------->	UG/L		UG/KG		UG/L		UG/KG		UG/KG		UG/KG	
CAS #	Parameter	E015	VAL	E011	VAL	ES1	VAL	ES1	VAL	ES1	VAL	ES1	VAL
100-01-6	4-Nitroaniline	50.	U	1000.	U	4100.	U	4300.	U	4200.	U	4300.	U
100-02-7	4-Nitrophenol	100.	U	1000.	U	4100.	U	4300.	U	4200.	U	4300.	U
100-51-6	Benzyl alcohol	10.	U	NR		1600.	U	1700.	U	1700.	U	1700.	U
101-55-3	4-Bromophenyl-phenylether	10.	U	430.	U	820.	U	860.	U	850.	U	850.	U
105-67-9	2,4-Dimethylphenol	20.	U	430.	U	820.	U	860.	U	850.	U	850.	U
106-44-5	4-Methylphenol (p-Cresol)	20.	U	430.	U	820.	U	860.	U	850.	U	850.	U
106-46-7	1,4-Dichlorobenzene	2.		430.	U	820.	U	860.	U	850.	U	850.	U
106-47-8	4-Chloroaniline	5.		430.	U	1600.	U	1700.	U	1700.	U	1700.	U
108-60-1	bis(2-chloroisopropyl) ether	10.	U	430.	U	820.	U	860.	U	850.	U	850.	U
108-95-2	Phenol	20.	U	430.	U	820.	U	860.	U	850.	U	850.	U
111-44-4	bis(2-Chloroethyl)ether	10.	U	430.	U	820.	U	860.	U	850.	U	850.	U
111-91-1	bis(2-Chloroethoxy)methane	10.	U	430.	U	820.	U	860.	U	850.	U	850.	U
117-81-7	bis(2-Ethylhexyl)phthalate (BEHP)	37.	U	430.	U	820.	U	860.	U	850.	U	850.	U
117-84-0	Di-n-octylphthalate	10.	U	430.	U	820.	U	860.	U	850.	U	850.	U
118-74-1	Hexachlorobenzene	10.	U	430.	U	820.	U	860.	U	850.	U	850.	U
120-12-7	Anthracene	10.	U	430.	U	820.	U	860.	U	850.	U	850.	U
120-82-1	1,2,4-Trichlorobenzene	10.	U	430.	U	820.	U	860.	U	850.	U	850.	U
120-83-2	2,4-Dichlorophenol	20.	U	430.	U	820.	U	860.	U	850.	U	850.	U
121-14-2	2,4-Dinitrotoluene	10.	U	430.	U	820.	U	860.	U	850.	U	850.	U
129-00-0	Pyrene	10.	U	430.	U	820.	U	860.	U	850.	U	850.	U
131-11-3	Dimethylphthalate	10.	U	430.	U	820.	U	860.	U	850.	U	850.	U
132-64-9	Dibenzofuran	10.	U	430.	U	820.	U	860.	U	850.	U	850.	U
191-24-2	Benzo(g,h,i)perylene	10.	U	430.	U	820.	U	860.	U	850.	U	850.	U
193-39-5	Indeno(1,2,3-cd)pyrene	10.	U	430.	U	820.	U	860.	U	850.	U	850.	U
205-99-2	Benzo(b)fluoranthene	10.	U	430.	U	820.	U	860.	U	850.	U	850.	U
206-44-0	Fluoranthene	10.	U	430.	U	820.	U	860.	U	850.	U	850.	U
207-08-9	Benzo(k)fluoranthene	10.	U	430.	U	820.	U	860.	U	850.	U	850.	U
208-96-8	Acenaphthylene	10.	U	430.	U	820.	U	860.	U	850.	U	850.	U
218-01-9	Chrysene	10.	U	430.	U	820.	U	860.	U	850.	U	850.	U
50-32-8	Benzo(a)pyrene	10.	U	430.	U	820.	U	860.	U	850.	U	850.	U
51-28-5	2,4-Dinitrophenol	109.		1000.	U	4100.	U	4300.	U	4200.	U	4300.	U
534-52-1	4,6-Dinitro-2-methylphenol	100.	U	1000.	U	4100.	U	4300.	U	4200.	U	4300.	U
53-70-3	Dibenz(a,h)anthracene	10.	U	430.	U	820.	U	860.	U	850.	U	850.	U
541-73-1	1,3-Dichlorobenzene	10.	U	430.	U	820.	U	860.	U	850.	U	850.	U
56-55-3	Benzo(a)anthracene	10.	U	430.	U	820.	U	860.	U	850.	U	850.	U
59-50-7	4-Chloro-3-methylphenol	20.	U	430.	U	1600.	U	1700.	U	1700.	U	1700.	U
606-20-2	2,6-Dinitrotoluene	10.	U	430.	U	820.	U	860.	U	850.	U	850.	U
621-64-7	N-Nitroso-di-n-propylamine	10.	U	430.	U	820.	U	860.	U	850.	U	850.	U
65-85-0	Benzoic acid	50.	U	NR		4100.	U	4300.	U	4200.	U	4300.	U

*** Validation Complete ***

CEDAR CHEMICAL CORPORATION
WEST HELENA, ARKANSAS
SITE 4 PHASE I SUBSURFACE SOIL DATA

SVOA	SHORT ID --------->	4MW-2 DUP		4MW-2 (25-30')		IMSB-1 (3-8')		IMSB-1 (8-12')		IMSB-2 (5-10')		IMSB-2 (10-15')	
	ORIGINAL ID ----->	CED4GWMW2D		CED4SMW26		IM-SB-01-2		IM-SB-01-3		IM-SB-02-2		IM-SB-02-3	
	SAMPLE DATE ----->	09/29/93		09/22/93		04/08/93		04/08/93		04/08/93		04/08/93	
	DATE ANALYZED --->	10/26/93		10/15/93		04/22/93		04/20/93		04/20/93		04/21/93	
	MATRIX ---------->	Water		Soil		Soil		Soil		Soil		Soil	
	UNITS ---------->	UG/L		UG/KG		UG/L		UG/KG		UG/KG		UG/KG	
CAS #	Parameter	E015	VAL	E011	VAL	ES1	VAL	ES1	VAL	ES1	VAL	ES1	VAL
67-72-1	Hexachloroethane	10.	U	430.	U	820.	U	860.	U	850.	U	850.	U
7005-72-3	4-Chlorophenyl-phenylether	10.	U	430.	U	820.	U	860.	U	850.	U	850.	U
709-98-8	Propanil	10.	U	1000.	U	4100.	U	4300.	U	4200.	U	8800.	
77-47-4	Hexachlorocyclopentadiene	10.	U	430.	U	820.	U	860.	U	850.	U	850.	U
78-59-1	Isophorone	2.		430.	U	820.	U	860.	U	850.	U	850.	U
83-32-9	Acenaphthene	10.	U	430.	U	820.	U	860.	U	850.	U	850.	U
84-66-2	Diethylphthalate	10.	U	430.	U	820.	U	860.	U	850.	U	850.	U
84-74-2	Di-n-butylphthalate	10.	U	430.	U	820.	U	860.	U	850.	U	850.	U
85-01-8	Phenanthrene	10.	U	430.	U	820.	U	860.	U	850.	U	850.	U
85-68-7	Butylbenzylphthalate	10.	U	430.	U	820.	U	860.	U	850.	U	850.	U
86-30-6	N-Nitrosodiphenylamine	10.	U	430.	U	820.	U	860.	U	850.	U	850.	U
86-73-7	Fluorene	10.	U	430.	U	820.	U	860.	U	850.	U	850.	U
87-68-3	Hexachlorobutadiene	10.	U	430.	U	820.	U	860.	U	850.	U	850.	U
87-86-5	Pentachlorophenol	100.	U	1000.	U	4100.	U	4300.	U	4200.	U	4300.	U
88-06-2	2,4,6-Trichlorophenol	20.	U	430.	U	820.	U	860.	U	850.	U	850.	U
88-74-4	2-Nitroaniline	50.	U	1000.	U	4100.	U	4300.	U	4200.	U	4300.	U
88-75-5	2-Nitrophenol	20.	U	430.	U	820.	U	860.	U	850.	U	850.	U
88-85-7	Dinoseb	47000.		45.		63000.		1700.	U	2900.		1700.	U
91-20-3	Naphthalene	10.	U	430.	U	820.	U	860.	U	850.	U	850.	U
91-57-6	2-Methylnaphthalene	10.	U	430.	U	820.	U	860.	U	850.	U	850.	U
91-58-7	2-Chloronaphthalene	10.	U	430.	U	820.	U	860.	U	850.	U	850.	U
91-94-1	3,3'-Dichlorobenzidine	20.	U	430.	U	1600.	U	1700.	U	1700.	U	1700.	U
95-48-7	2-Methylphenol (o-Cresol)	20.	U	430.	U	820.	U	860.	U	850.	U	850.	U
95-50-1	1,2-Dichlorobenzene	35.		430.	U	820.	U	860.	U	850.	U	850.	U
95-57-8	2-Chlorophenol	20.	U	430.	U	820.	U	860.	U	850.	U	850.	U
95-76-1	3,4-Dichloroaniline	26.		1000.	U	1600.	U	1700.	U	6700.		1700.	U
95-95-4	2,4,5-Trichlorophenol	100.	U	1000.	U	820.	U	860.	U	850.	U	850.	U
98-95-3	Nitrobenzene	10.	U	430.	U	820.	U	860.	U	850.	U	850.	U
99-09-2	3-Nitroaniline	50.	U	NR		4100.	U	4300.	U	4200.	U	4300.	U

*** Validation Complete ***

CEDAR CHEMICAL CORPORATION
WEST HELENA, ARKANSAS
SITE 4 PHASE I SUBSURFACE SOIL DATA

SVOA	SHORT ID --------->	IMSB-3 (5-10')		IMSB-3 (10-15')		IMSB-4 (5-10')		IMSB-4 (10-15')		IMSB-5 (5-10')		IMSB-5 (10-15')	
	ORIGINAL ID ----->	IM-SB-03-2		IM-SB-03-3		IM-SB-04-2		IMSB043		IM-SB-05-2		IM-SB-05-3	
	SAMPLE DATE ----->	04/09/93		04/09/93		04/09/93		04/09/93		04/09/93		04/09/93	
	DATE ANALYZED --->	04/21/93		04/21/93		04/22/93		04/21/93		04/22/93		04/22/93	
	MATRIX ---------->	Soil		Soil		Soil		Soil		Soil		Soil	
	UNITS ---------->	UG/KG		UG/KG		UG/KG		UG/KG		UG/KG		UG/KG	
CAS #	Parameter	ES1	VAL	ES1	VAL	ES1	VAL	ES1	VAL	ES1	VAL	ES1	VAL
100-01-6	4-Nitroaniline	4100.	U	4200.	U	4200.	U	4300.	U	4200.	U	4200.	U
100-02-7	4-Nitrophenol	4100.	U	4200.	U	4200.	U	4300.	U	4200.	U	4200.	U
100-51-6	Benzyl alcohol	1600.	U	1700.	U	1600.	U	1700.	U	1600.	U	1600.	U
101-55-3	4-Bromophenyl-phenylether	820.	U	850.	U	840.	U	850.	U	830.	U	830.	U
105-67-9	2,4-Dimethylphenol	820.	U	850.	U	840.	U	850.	U	830.	U	830.	U
106-44-5	4-Methylphenol (p-Cresol)	820.	U	850.	U	840.	U	850.	U	830.	U	830.	U
106-46-7	1,4-Dichlorobenzene	820.	U	850.	U	840.	U	850.	U	830.	U	830.	U
106-47-8	4-Chloroaniline	1600.	U	1700.	U	1600.	U	1700.	U	1600.	U	1600.	U
108-60-1	bis(2-chloroisopropyl) ether	820.	U	850.	U	840.	U	850.	U	830.	U	830.	U
108-95-2	Phenol	1000.		850.	U	840.	U	850.	U	830.	U	830.	U
111-44-4	bis(2-Chloroethyl)ether	820.	U	850.	U	840.	U	850.	U	830.	U	830.	U
111-91-1	bis(2-Chloroethoxy)methane	820.	U	850.	U	840.	U	850.	U	830.	U	830.	U
117-81-7	bis(2-Ethylhexyl)phthalate (BEHP)	820.	U	850.	U	840.	U	850.	U	830.	U	830.	U
117-84-0	Di-n-octylphthalate	820.	U	850.	U	840.	U	850.	U	830.	U	830.	U
118-74-1	Hexachlorobenzene	820.	U	850.	U	840.	U	850.	U	830.	U	830.	U
120-12-7	Anthracene	820.	U	850.	U	840.	U	850.	U	830.	U	830.	U
120-82-1	1,2,4-Trichlorobenzene	820.	U	850.	U	840.	U	850.	U	830.	U	830.	U
120-83-2	2,4-Dichlorophenol	820.	U	850.	U	840.	U	850.	U	830.	U	830.	U
121-14-2	2,4-Dinitrotoluene	820.	U	850.	U	840.	U	850.	U	830.	U	830.	U
129-00-0	Pyrene	820.	U	850.	U	840.	U	850.	U	830.	U	830.	U
131-11-3	Dimethylphthalate	820.	U	850.	U	840.	U	850.	U	830.	U	830.	U
132-64-9	Dibenzofuran	820.	U	850.	U	840.	U	850.	U	830.	U	830.	U
191-24-2	Benzo(g,h,i)perylene	820.	U	850.	U	840.	U	850.	U	830.	U	830.	U
193-39-5	Indeno(1,2,3-cd)pyrene	820.	U	850.	U	840.	U	850.	U	830.	U	830.	U
205-99-2	Benzo(b)fluoranthene	820.	U	850.	U	840.	U	850.	U	830.	U	830.	U
206-44-0	Fluoranthene	820.	U	850.	U	840.	U	850.	U	830.	U	830.	U
207-08-9	Benzo(k)fluoranthene	820.	U	850.	U	840.	U	850.	U	830.	U	830.	U
208-96-8	Acenaphthylene	820.	U	850.	U	840.	U	850.	U	830.	U	830.	U
218-01-9	Chrysene	820.	U	850.	U	840.	U	850.	U	830.	U	830.	U
50-32-8	Benzo(a)pyrene	820.	U	850.	U	840.	U	850.	U	830.	U	830.	U
51-28-5	2,4-Dinitrophenol	4100.	U	4200.	U	4200.	U	4300.	U	4200.	U	4200.	U
534-52-1	4,6-Dinitro-2-methylphenol	4100.	U	4200.	U	4200.	U	4300.	U	4200.	U	4200.	U
53-70-3	Dibenz(a,h)anthracene	820.	U	850.	U	840.	U	850.	U	830.	U	830.	U
541-73-1	1,3-Dichlorobenzene	820.	U	850.	U	840.	U	850.	U	830.	U	830.	U
56-55-3	Benzo(a)anthracene	820.	U	850.	U	840.	U	850.	U	830.	U	830.	U
59-50-7	4-Chloro-3-methylphenol	1600.	U	1700.	U	1600.	U	1700.	U	1600.	U	1600.	U
606-20-2	2,6-Dinitrotoluene	820.	U	850.	U	840.	U	850.	U	830.	U	830.	U
621-64-7	N-Nitroso-di-n-propylamine	820.	U	850.	U	840.	U	850.	U	830.	U	830.	U
65-85-0	Benzoic acid	4100.	U	4200.	U	4200.	U	4300.	U	4200.	U	4200.	U

*** Validation Complete ***

CEDAR CHEMICAL CORPORATION
WEST HELENA, ARKANSAS
SITE 4 PHASE I SUBSURFACE SOIL DATA

SVOA	SHORT ID --------->	IMSB-3 (5-10')		IMSB-3 (10-15')		IMSB-4 (5-10')		IMSB-4 (10-15')		IMSB-5 (5-10')		IMSB-5 (10-15')	
	ORIGINAL ID ----->	IM-SB-03-2		IM-SB-03-3		IM-SB-04-2		IMSB043		IM-SB-05-2		IM-SB-05-3	
	SAMPLE DATE ----->	04/09/93		04/09/93		04/09/93		04/09/93		04/09/93		04/09/93	
	DATE ANALYZED --->	04/21/93		04/21/93		04/22/93		04/21/93		04/22/93		04/22/93	
	MATRIX ---------->	Soil		Soil		Soil		Soil		Soil		Soil	
	UNITS ---------->	UG/KG		UG/KG		UG/KG		UG/KG		UG/KG		UG/KG	
CAS #	Parameter	ES1	VAL	ES1	VAL	ES1	VAL	ES1	VAL	ES1	VAL	ES1	VAL
67-72-1	Hexachloroethane	820.	U	850.	U	840.	U	850.	U	830.	U	830.	U
7005-72-3	4-Chlorophenyl-phenylether	820.	U	850.	U	840.	U	850.	U	830.	U	830.	U
709-98-8	Propanil	4100.	U	4200.	U	4200.	U	4300.	U	4200.	U	4200.	U
77-47-4	Hexachlorocyclopentadiene	820.	U	850.	U	840.	U	850.	U	830.	U	830.	U
78-59-1	Isophorone	820.	U	850.	U	840.	U	850.	U	830.	U	830.	U
83-32-9	Acenaphthene	820.	U	850.	U	840.	U	850.	U	830.	U	830.	U
84-66-2	Diethylphthalate	820.	U	850.	U	840.	U	850.	U	830.	U	830.	U
84-74-2	Di-n-butylphthalate	820.	U	850.	U	840.	U	850.	U	830.	U	830.	U
85-01-8	Phenanthrene	820.	U	850.	U	840.	U	850.	U	830.	U	830.	U
85-68-7	Butylbenzylphthalate	820.	U	850.	U	840.	U	850.	U	830.	U	830.	U
86-30-6	N-Nitrosodiphenylamine	820.	U	850.	U	840.	U	850.	U	830.	U	830.	U
86-73-7	Fluorene	820.	U	850.	U	840.	U	850.	U	830.	U	830.	U
87-68-3	Hexachlorobutadiene	820.	U	850.	U	840.	U	850.	U	830.	U	830.	U
87-86-5	Pentachlorophenol	4100.	U	4200.	U	4200.	U	4300.	U	4200.	U	4200.	U
88-06-2	2,4,6-Trichlorophenol	820.	U	850.	U	840.	U	850.	U	830.	U	830.	U
88-74-4	2-Nitroaniline	4100.	U	4200.	U	4200.	U	4300.	U	4200.	U	4200.	U
88-75-5	2-Nitrophenol	820.	U	850.	U	840.	U	850.	U	830.	U	1600.	U
88-85-7	Dinoseb	12000.		1700.	U	1600.	U	1700.	U	1600.	U	830.	U
91-20-3	Naphthalene	820.	U	850.	U	840.	U	850.	U	830.	U	830.	U
91-57-6	2-Methylnaphthalene	820.	U	850.	U	840.	U	850.	U	830.	U	830.	U
91-58-7	2-Chloronaphthalene	820.	U	850.	U	840.	U	850.	U	830.	U	830.	U
91-94-1	3,3'-Dichlorobenzidine	1600.	U	1700.	U	1600.	U	1700.	U	1600.	U	1600.	U
95-48-7	2-Methylphenol (o-Cresol)	820.	U	850.	U	840.	U	850.	U	830.	U	830.	U
95-50-1	1,2-Dichlorobenzene	820.	U	850.	U	840.	U	850.	U	830.	U	830.	U
95-57-8	2-Chlorophenol	820.	U	850.	U	840.	U	850.	U	830.	U	830.	U
95-76-1	3,4-Dichloroaniline	2600.		1700.	U	1600.	U	1700.	U	1600.	U	1600.	U
95-95-4	2,4,5-Trichlorophenol	820.	U	850.	U	840.	U	850.	U	830.	U	830.	U
98-95-3	Nitrobenzene	820.	U	850.	U	840.	U	850.	U	830.	U	830.	U
99-09-2	3-Nitroaniline	4100.	U	4200.	U	4200.	U	4300.	U	4200.	U	4200.	U

*** Validation Complete ***

CEDAR CHEMICAL CORPORATION
WEST HELENA, ARKANSAS
SITE 4 PHASE I SUBSURFACE SOIL DATA

SVOA	SHORT ID --------->	BGHA-2 (0-1')		BGHA-3 (0-1')		EMW-1		EMW-2		EMW-3 DUP		EMW-3	
	ORIGINAL ID ----->	CEDSBG2		CEDSBG3		CEDE-GWMW-1		CEDE-GWMW-2		CEDE-GWMW-3D		CEDE-GWMW-3	
	SAMPLE DATE ----->	09/16/93		09/16/93		09/22/93		09/22/93		09/23/93		09/23/93	
	DATE ANALYZED --->	10/15/93		10/15/93		10/19/93		10/19/93		10/19/93		10/19/93	
	MATRIX ---------->	Soil		Soil		Water		Water		Soil		Water	
	UNITS ---------->	UG/KG		UG/KG		UG/L		UG/L		UG/L		UG/L	
CAS #	Parameter	ED11	VAL	ED11	VAL	ED12	VAL	ED12	VAL	ED12	VAL	ED12	VAL
100-01-6	4-Nitroaniline	950.	U	920.	U	50.	U	50.	U	50.	U	50.	U
100-02-7	4-Nitrophenol	950.	U	920.	U	50.	U	50.	U	50.	U	250.	U
100-51-6	Benzyl alcohol	NR		NR		10.	U	10.	U	10.	U	10.	U
101-55-3	4-Bromophenyl-phenylether	390.	U	380.	U	10.	U	10.	U	10.	U	10.	U
105-67-9	2,4-Dimethylphenol	390.	U	380.	U	10.	U	10.	U	10.	U	2.	
106-44-5	4-Methylphenol (p-Cresol)	390.	U	380.	U	10.	U	1.		10.	U	50.	U
106-46-7	1,4-Dichlorobenzene	390.	U	380.	U	10.	U	10.	U	10.	U	10.	U
106-47-8	4-Chloroaniline	390.	U	380.	U	10.	U	10.	U	44.		40.	
108-60-1	bis(2-chloroisopropyl) ether	390.	U	380.	U	10.	U	10.	U	10.	U	10.	U
108-95-2	Phenol	390.	U	380.	U	10.	U	10.	U	10.	U	50.	U
111-44-4	bis(2-Chloroethyl)ether	390.	U	380.	U	10.	U	10.	U	10.	U	10.	U
111-91-1	bis(2-Chloroethoxy)methane	390.	U	380.	U	10.	U	10.	U	10.	U	10.	U
117-81-7	bis(2-Ethylhexyl)phthalate (BEHP)	390.	U	380.	U	22.	U	28.	U	15.	U	27.	U
117-84-0	Di-n-octylphthalate	390.	U	380.	U	10.	U	10.	U	10.	U	10.	U
118-74-1	Hexachlorobenzene	390.	U	380.	U	10.	U	10.	U	10.	U	10.	U
120-12-7	Anthracene	390.	U	380.	U	10.	U	10.	U	10.	U	10.	U
120-82-1	1,2,4-Trichlorobenzene	390.	U	380.	U	10.	U	10.	U	2.		2.	
120-83-2	2,4-Dichlorophenol	390.	U	380.	U	10.	U	10.	U	10.	U	2.	
121-14-2	2,4-Dinitrotoluene	390.	U	380.	U	10.	U	10.	U	10.	U	10.	U
129-00-0	Pyrene	390.	U	380.	U	10.	U	10.	U	10.	U	10.	U
131-11-3	Dimethylphthalate	390.	U	380.	U	10.		10.	U	10.	U	10.	U
132-64-9	Dibenzofuran	390.	U	380.	U	10.	U	10.	U	10.	U	10.	U
191-24-2	Benzo(g,h,i)perylene	390.	U	380.	U	10.	U	10.	U	10.	U	10.	U
193-39-5	Indeno(1,2,3-cd)pyrene	390.	U	380.	U	10.	U	10.	U	10.	U	10.	U
205-99-2	Benzo(b)fluoranthene	390.	U	380.	U	10.	U	10.	U	10.	U	10.	U
206-44-0	Fluoranthene	390.	U	380.	U	10.	U	10.	U	10.	U	10.	U
207-08-9	Benzo(k)fluoranthene	390.	U	380.	U	10.	U	10.	U	10.	U	10.	U
208-96-8	Acenaphthylene	390.	U	380.	U	10.	U	10.	U	10.	U	10.	U
218-01-9	Chrysene	390.	U	380.	U	10.	U	10.	U	10.	U	10.	U
50-32-8	Benzo(a)pyrene	390.	U	380.	U	10.	U	10.	U	10.	U	10.	U
51-28-5	2,4-Dinitrophenol	950.	U	920.	U	50.	U	50.	U	50.	U	250.	U
534-52-1	4,6-Dinitro-2-methylphenol	950.	U	920.	U	50.	U	50.	U	50.	U	250.	U
53-70-3	Dibenz(a,h)anthracene	390.	U	380.	U	10.	U	10.	U	10.	U	10.	U
541-73-1	1,3-Dichlorobenzene	390.	U	380.	U	10.	U	10.	U	10.	U	10.	U
56-55-3	Benzo(a)anthracene	390.	U	380.	U	10.	U	10.	U	10.	U	10.	U
59-50-7	4-Chloro-3-methylphenol	390.	U	380.	U	10.	U	10.	U	10.	U	50.	U
606-20-2	2,6-Dinitrotoluene	390.	U	380.	U	10.	U	10.	U	10.	U	10.	U
621-64-7	N-Nitroso-di-n-propylamine	390.	U	380.	U	10.	U	10.	U	10.	U	10.	U
65-85-0	Benzoic acid	NR		NR		50.	U	50.	U	50.	U	50.	U

*** Validation Complete ***

CEDAR CHEMICAL CORPORATION
WEST HELENA, ARKANSAS
SITE 4 PHASE I SUBSURFACE SOIL DATA

SVOA	SHORT ID --------->	BGHA-2 (0-1')		BGHA-3 (0-1')		EMW-1		EMW-2		EMW-3 DUP		EMW-3	
	ORIGINAL ID ----->	CEDSBG2		CEDSBG3		CEDE-GWMW-1		CEDE-GWMW-2		CEDE-GWMW-3D		CEDE-GWMW-3	
	SAMPLE DATE ----->	09/16/93		09/16/93		09/22/93		09/22/93		09/23/93		09/23/93	
	DATE ANALYZED --->	10/15/93		10/15/93		10/19/93		10/19/93		10/19/93		10/19/93	
	MATRIX ---------->	Soil		Soil		Water		Water		Soil		Water	
	UNITS ---------->	UG/KG		UG/KG		UG/L		UG/L		UG/L		UG/L	
CAS #	Parameter	E011	VAL	E011	VAL	E012	VAL	E012	VAL	E012	VAL	E012	VAL
67-72-1	Hexachloroethane	390.	U	380.	U	10.	U	10.	U	10.	U	10.	U
7005-72-3	4-Chlorophenyl-phenylether	390.	U	380.	U	10.	U	10.	U	10.	U	10.	U
709-98-8	Propanil	950.	U	920.	U	10.	U	10.	U	24.		31.	U
77-47-4	Hexachlorocyclopentadiene	390.	U	380.	U	10.	U	10.	U	10.	U	10.	U
78-59-1	Isophorone	390.	U	380.	U	10.	U	10.	U	6.		6.	
83-32-9	Acenaphthene	390.	U	380.	U	10.	U	10.	U	10.	U	10.	U
84-66-2	Diethylphthalate	390.	U	380.	U	10.	U	10.	U	2.		2.	
84-74-2	Di-n-butylphthalate	390.	U	2.		10.	U	10.	U	10.	U	10.	U
85-01-8	Phenanthrene	390.	U	380.	U	10.	U	10.	U	10.	U	10.	U
85-68-7	Butylbenzylphthalate	390.	U	380.	U	10.	U	10.	U	10.	U	10.	U
86-30-6	N-Nitrosodiphenylamine	390.	U	380.	U	10.	U	10.	U	10.	U	10.	U
86-73-7	Fluorene	390.	U	380.	U	10.	U	10.	U	10.	U	10.	U
87-68-3	Hexachlorobutadiene	390.	U	380.	U	10.	U	10.	U	10.	U	10.	U
87-86-5	Pentachlorophenol	950.	U	920.	U	50.	U	50.	U	50.	U	250.	U
88-06-2	2,4,6-Trichlorophenol	390.	U	380.	U	10.	U	10.	U	10.	U	10.	U
88-74-4	2-Nitroaniline	950.	U	920.	U	50.	U	50.	U	50.	U	50.	U
88-75-5	2-Nitrophenol	390.	U	380.	U	10.	U	10.	U	10.	U	50.	U
88-85-7	Dinoseb	950.	U	920.	U	42.		50.	U	94.		140.	
91-20-3	Naphthalene	390.	U	380.	U	10.	U	10.	U	4.		4.	
91-57-6	2-Methylnaphthalene	390.	U	380.	U	10.	U	10.	U	1.		1.	
91-58-7	2-Chloronaphthalene	390.	U	380.	U	10.	U	10.	U	10.	U	10.	U
91-94-1	3,3'-Dichlorobenzidine	390.	U	380.	U	20.	U	20.	U	20.	U	20.	U
95-48-7	2-Methylphenol (o-Cresol)	390.	U	380.	U	2.		10.	U	10.	U	50.	U
95-50-1	1,2-Dichlorobenzene	390.	U	380.	U	10.	U	1.		300.		310.	
95-57-8	2-Chlorophenol	390.	U	380.	U	10.	U	10.	U	10.	U	50.	U
95-76-1	3,4-Dichloroaniline	950.	U	920.	U	19.	U	10.	U	770.		670.	
95-95-4	2,4,5-Trichlorophenol	950.	U	920.	U	50.	U	50.	U	50.	U	250.	U
98-95-3	Nitrobenzene	390.	U	380.	U	10.	U	10.	U	10.	U	10.	U
99-09-2	3-Nitroaniline	NR		NR		50.	U	50.	U	50.	U	50.	U

*** Validation Complete ***

CEDAR CHEMICAL CORPORATION
WEST HELENA, ARKANSAS
SITE 4 PHASE I SUBSURFACE SOIL DATA

SVOA		SHORT ID --------->	EMW-4		EMW-6		EMW-7		EMW-6A		EMW-6B	
		ORIGINAL ID ----->	CEDE-GWMW-4		CEDE-GWMW-6		CEDE-GWMW-7		CEDE-GWMW-6A		CEDE-GWMW-6B	
		SAMPLE DATE ----->	09/23/93		09/24/93		09/23/93		09/24/93		09/24/93	
		DATE ANALYZED --->	10/19/93		10/20/93		10/20/93		10/20/93		10/21/93	
		MATRIX ---------->	Water		Water		Water		Water		Water	
		UNITS ----------->	UG/L		UG/L		UG/L		UG/L		UG/L	
CAS #	Parameter		E012	VAL	E012	VAL	E012	VAL	E012	VAL	E012	VAL
100-01-6	4-Nitroaniline		50.	U	50.	U	50.	U	50.	U	250.	U
100-02-7	4-Nitrophenol		50.	U	50.	U	50.	U	50.	U	250.	U
100-51-6	Benzyl alcohol		10.	U	10.	U	10.	U	10.	U	50.	U
101-55-3	4-Bromophenyl-phenylether		10.	U	10.	U	10.	U	10.	U	50.	U
105-67-9	2,4-Dimethylphenol		10.	U	10.	U	10.	U	10.	U	50.	U
106-44-5	4-Methylphenol (p-Cresol)		10.	U	10.	U	10.	U	10.	U	50.	U
106-46-7	1,4-Dichlorobenzene		10.	U	10.	U	10.	U	10.	U	50.	U
106-47-8	4-Chloroaniline		130.		10.	U	65.		10.	U	5900.	
108-60-1	bis(2-chloroisopropyl) ether		10.	U	10.	U	10.	U	10.	U	50.	U
108-95-2	Phenol		1.		10.	U	10.	U	10.	U	50.	U
111-44-4	bis(2-Chloroethyl)ether		5.		10.	U	10.	U	10.	U	50.	U
111-91-1	bis(2-Chloroethoxy)methane		10.	U	10.	U	10.	U	10.	U	50.	U
117-81-7	bis(2-Ethylhexyl)phthalate (BEHP)		58.	U	10.	U	10.	U	10.	U	50.	U
117-84-0	Di-n-octylphthalate		10.	U	10.	U	10.	U	10.	U	50.	U
118-74-1	Hexachlorobenzene		10.	U	10.	U	10.	U	10.	U	50.	U
120-12-7	Anthracene		10.	U	10.	U	10.	U	10.	U	50.	U
120-82-1	1,2,4-Trichlorobenzene		10.	U	10.	U	10.	U	10.	U	50.	U
120-83-2	2,4-Dichlorophenol		10.	U	10.	U	10.	U	10.	U	50.	U
121-14-2	2,4-Dinitrotoluene		10.	U	10.	U	10.	U	10.	U	50.	U
129-00-0	Pyrene		10.	U	10.	U	10.	U	10.	U	50.	U
131-11-3	Dimethylphthalate		10.	U	10.	U	10.	U	10.	U	50.	U
132-64-9	Dibenzofuran		10.	U	10.	U	10.	U	10.	U	50.	U
191-24-2	Benzo(g,h,i)perylene		10.	U	10.	U	10.	U	10.	U	50.	U
193-39-5	Indeno(1,2,3-cd)pyrene		10.	U	10.	U	10.	U	10.	U	50.	U
205-99-2	Benzo(b)fluoranthene		10.	U	10.	U	10.	U	10.	U	50.	U
206-44-0	Fluoranthene		10.	U	10.	U	10.	U	10.	U	50.	U
207-08-9	Benzo(k)fluoranthene		10.	U	10.	U	10.	U	10.	U	50.	U
208-96-8	Acenaphthylene		10.	U	10.	U	10.	U	10.	U	50.	U
218-01-9	Chrysene		10.	U	10.	U	10.	U	10.	U	50.	U
50-32-8	Benzo(a)pyrene		10.	U	10.	U	10.	U	10.	U	50.	U
51-28-5	2,4-Dinitrophenol		50.	U	50.	U	50.	U	50.	U	250.	U
534-52-1	4,6-Dinitro-2-methylphenol		50.	U	50.	U	50.	U	50.	U	250.	U
53-70-3	Dibenz(a,h)anthracene		10.	U	10.	U	10.	U	10.	U	50.	U
541-73-1	1,3-Dichlorobenzene		10.	U	10.	U	10.	U	10.	U	50.	U
56-55-3	Benzo(a)anthracene		10.	U	10.	U	10.	U	10.	U	50.	U
59-50-7	4-Chloro-3-methylphenol		10.	U	10.	U	10.	U	10.	U	50.	U
606-20-2	2,6-Dinitrotoluene		10.	U	10.	U	13.		10.	U	50.	U
621-64-7	N-Nitroso-di-n-propylamine		10.	U	10.	U	10.	U	10.	U	50.	U
65-85-0	Benzoic acid		50.	U	50.	U	50.	U	50.	U	250.	U

*** Validation Complete ***

CEDAR CHEMICAL CORPORATION
WEST HELENA, ARKANSAS
SITE 4 PHASE I SUBSURFACE SOIL DATA

SVOA											
	SHORT ID --------->	EMW-4		EMW-6		EMW-7		EMW-6A		EMW-6B	
	ORIGINAL ID ----->	CEDE-GWMW-4		CEDE-GWMW-6		CEDE-GWMW-7		CEDE-GWMW-6A		CEDE-GWMW-6B	
	SAMPLE DATE ----->	09/23/93		09/24/93		09/23/93		09/24/93		09/24/93	
	DATE ANALYZED --->	10/19/93		10/20/93		10/20/93		10/20/93		10/21/93	
	MATRIX ---------->	Water		Water		Water		Water		Water	
	UNITS ----------->	UG/L		UG/L		UG/L		UG/L		UG/L	
CAS #	Parameter	E012	VAL	E012	VAL	E012	VAL	E012	VAL	E012	VAL
67-72-1	Hexachloroethane	10.	U	10.	U	10.	U	10.	U	50.	U
7005-72-3	4-Chlorophenyl-phenylether	10.	U	10.	U	10.	U	10.	U	50.	U
709-98-8	Propanil	10.	U	10.	U	10.	U	10.	U	18.	
77-47-4	Hexachlorocyclopentadiene	10.	U	10.	U	10.	U	10.	U	50.	U
78-59-1	Isophorone	10.	U	10.	U	10.	U	10.	U	50.	U
83-32-9	Acenaphthene	10.	U	10.	U	10.	U	10.	U	50.	U
84-66-2	Diethylphthalate	10.	U	10.	U	10.	U	10.	U	50.	U
84-74-2	Di-n-butylphthalate	10.	U	10.	U	10.	U	10.	U	50.	U
85-01-8	Phenanthrene	10.	U	10.	U	10.	U	10.	U	50.	U
85-68-7	Butylbenzylphthalate	10.	U	10.	U	10.	U	10.	U	50.	U
86-30-6	N-Nitrosodiphenylamine	10.	U	10.	U	10.	U	10.	U	50.	U
86-73-7	Fluorene	10.	U	10.	U	10.	U	10.	U	50.	U
87-68-3	Hexachlorobutadiene	10.	U	10.	U	10.	U	10.	U	50.	U
87-86-5	Pentachlorophenol	50.	U	50.	U	50.	U	50.	U	250.	U
88-06-2	2,4,6-Trichlorophenol	10.	U	10.	U	10.	U	10.	U	50.	U
88-74-4	2-Nitroaniline	50.	U	50.	U	50.	U	50.	U	250.	U
88-75-5	2-Nitrophenol	10.	U	10.	U	10.	U	10.	U	50.	U
88-85-7	Dinoseb	50.	U	50.	U	50.	U	50.	U	250.	U
91-20-3	Naphthalene	10.	U	10.	U	10.	U	10.	U	15.	
91-57-6	2-Methylnaphthalene	10.	U	10.	U	10.	U	10.	U	6.	
91-58-7	2-Chloronaphthalene	10.	U	10.	U	10.	U	10.	U	50.	U
91-94-1	3,3'-Dichlorobenzidine	20.	U	20.	U	20.	U	20.	U	100.	U
95-48-7	2-Methylphenol (o-Cresol)	10.	U	10.	U	10.	U	10.	U	50.	U
95-50-1	1,2-Dichlorobenzene	7.		10.	U	10.	U	10.	U	130.	
95-57-8	2-Chlorophenol	10.	U	10.	U	1.		10.	U	50.	U
95-76-1	3,4-Dichloroaniline	63.	U	10.	U	10.	U	10.	U	58000.	
95-95-4	2,4,5-Trichlorophenol	50.	U	50.	U	50.	U	50.	U	250.	U
98-95-3	Nitrobenzene	10.	U	10.	U	10.	U	10.	U	50.	U
99-09-2	3-Nitroaniline	50.	U	50.	U	50.	U	50.	U	250.	U

*** Validation Complete ***

CEDAR CHEMICAL CORPORATION
WEST HELENA, ARKANSAS
SITE 4 PHASE I SUBSURFACE SOIL DATA

VOA													
	SHORT ID --------->	4HA-1 (1-2')		4HA-1 (2-3')		4HA-2 (1-2')		4HA-2 (2-3')		4HA-4 (1-2')		4HA-4 (2-3')	
	ORIGINAL ID ----->	CED4SHA-1-2		CED4SHA-1-3		CED4SHA-2-2		CED4SHA-2-3		CED4SHA-4-2		CED4SHA-4-3	
	SAMPLE DATE ----->	09/02/93		09/02/93		09/02/93		09/02/93		09/03/93		09/03/93	
	DATE ANALYZED --->	09/09/93		09/09/93		09/09/93		09/09/93		09/10/93		09/10/93	
	MATRIX ---------->	Soil		Soil		Soil		Soil		Soil		Soil	
	UNITS ----------->	UG/KG		UG/KG		UG/KG		UG/KG		UG/KG		UG/KG	
CAS #	Parameter	E002	VAL	E002	VAL	E002	VAL	E002	VAL	E003	VAL	E003	VAL
100-41-4	Ethylbenzene	6.	U	6.	U	150.		110.		6.	U	6.	U
100-42-5	Styrene	6.	U	6.	U	17.	U	15.	U	6.	U	6.	U
10061-01-5	cis-1,3-Dichloropropene	6.	U	6.	U	17.	U	15.	U	6.	U	6.	U
10061-02-6	trans-1,3-Dichloropropene	6.	U	6.	U	17.	U	15.	U	6.	U	6.	U
107-06-2	1,2-Dichloroethane	6.	U	6.	U	17.	U	15.	U	25.		350.	
108-05-4	Vinyl acetate	6.	U	6.	U	17.	U	15.	U	6.	U	6.	U
108-10-1	4-Methyl-2-Pentanone (MIBK)	57.	U	56.	U	170.	U	150.	U	64.	U	65.	U
108-88-3	Toluene	6.	U	6.	U	500.		290.		45.		230.	
108-90-7	Chlorobenzene	6.	U	6.	U	7.		15.	U	6.	U	6.	U
124-48-1	Dibromochloromethane	6.	U	6.	U	17.	U	15.	U	6.	U	6.	U
127-18-4	Tetrachloroethene	6.	U	6.	U	17.	U	15.	U	6.	U	6.	U
1330-20-7	Xylene (total)	6.	U	6.	U	340.		270.		6.	U	1.	
540-59-0	1,2-Dichloroethene (total)	6.	U	6.	U	17.	U	15.	U	6.	U	6.	U
56-23-5	Carbon tetrachloride	6.	U	6.	U	17.	U	15.	U	6.	U	6.	U
591-78-6	2-Hexanone	57.	U	56.	U	170.	U	150.	U	64.	U	65.	U
67-64-1	Acetone	11.	U	11.	U	35.	U	29.	U	31.		20.	
67-66-3	Chloroform	6.	U	6.	U	17.	U	15.	U	6.	U	25.	
71-43-2	Benzene	6.	U	6.	U	17.	U	15.	U	6.	U	6.	U
71-55-6	1,1,1-Trichloroethane	6.	U	6.	U	17.	U	15.	U	6.	U	6.	U
74-83-9	Bromomethane	11.	U	11.	U	35.	U	29.	U	13.	U	13.	U
74-87-3	Chloromethane	11.	U	11.	U	35.	U	29.	U	13.	U	13.	U
75-00-3	Chloroethane	11.	U	11.	U	35.	U	29.	U	13.	U	13.	U
75-01-4	Vinyl chloride	6.	U	6.	U	17.	U	15.	U	6.	U	6.	U
75-09-2	Methylene chloride	6.	U	6.	U	17.	U	15.	U	1.		3.	
75-15-0	Carbon disulfide	6.	U	6.	U	120.		68.		6.	U	16.	
75-25-2	Bromoform	6.	U	6.	U	17.	U	15.	U	6.	U	6.	U
75-27-4	Bromodichloromethane	6.	U	6.	U	17.	U	15.	U	6.	U	6.	U
75-34-3	1,1-Dichloroethane	6.	U	6.	U	17.	U	15.	U	6.	U	6.	U
75-35-4	1,1-Dichloroethene	6.	U	6.	U	17.	U	15.	U	6.	U	2.	
78-87-5	1,2-Dichloropropane	6.	U	6.	U	17.	U	15.	U	6.	U	6.	U
78-93-3	2-Butanone (MEK)	11.	U	11.	U	43.		29.	U	17.		19.	
79-00-5	1,1,2-Trichloroethane	6.	U	6.	U	17.	U	15.	U	6.	U	6.	U
79-01-6	Trichloroethene	6.	U	6.	U	17.	U	15.	U	6.	U	6.	U
79-34-5	1,1,2,2-Tetrachloroethane	6.	U	6.	U	17.	U	15.	U	6.	U	6.	U

*** Validation Complete ***

CEDAR CHEMICAL CORPORATION
WEST HELENA, ARKANSAS
SITE 4 PHASE I SUBSURFACE SOIL DATA

VOA															
	SHORT ID --------->	4HA-4 (2-3')DUP		4HA-5 (1-2')		4HA-5 (2-3')		4HA-6 (1-2')		4HA-7 (6-7')		4HA-7 (7-8')	
	ORIGINAL ID ------>	CED4SHA-4-3		CED4-HA5-2		CED4-HA5-3		CED4SHA-6-2		CED4SHA-7-2		CED4SHA-7-3	
	SAMPLE DATE ------>	09/03/93		09/15/93		09/15/93		09/03/93		09/03/93		09/03/93	
	DATE ANALYZED --->	09/10/93		09/24/93		09/24/93		09/11/93		09/11/93		09/11/93	
	MATRIX ---------->	Soil		Soil		Soil		Soil		Soil		Soil	
	UNITS ---------->	UG/KG		UG/KG		UG/KG		UG/KG		UG/KG		UG/KG	
CAS #	Parameter	E003	VAL	E010	VAL	E010	VAL	E003	VAL	E003	VAL	E003	VAL
100-41-4	Ethylbenzene	12.	U	29.	U	110.		8.		6.	U	6.	U
100-42-5	Styrene	12.	U	29.	U	6.	U	11.	U	6.	U	6.	U
10061-01-5	cis-1,3-Dichloropropene	12.	U	29.	U	6.	U	11.	U	6.	U	6.	U
10061-02-6	trans-1,3-Dichloropropene	12.	U	29.	U	6.	U	11.	U	6.	U	6.	U
107-06-2	1,2-Dichloroethane	320.		29.	U	6.	U	11.	U	31.		26.	
108-05-4	Vinyl acetate	12.	U	29.	U	6.	U	11.	U	6.	U	6.	U
108-10-1	4-Methyl-2-Pentanone (MIBK)	120.	U	32.		120.		28.		59.	U	62.	U
108-88-3	Toluene	220.		830.		10000.		100.		6.	U	6.	U
108-90-7	Chlorobenzene	12.	U	29.	U	35.		3.		6.	U	6.	U
124-48-1	Dibromochloromethane	12.	U	29.	U	6.	U	11.	U	6.	U	6.	U
127-18-4	Tetrachloroethene	12.	U	29.	U	6.	U	11.	U	6.	U	6.	U
1330-20-7	Xylene (total)	12.	U	71.		4400.		290.		6.	U	6.	U
540-59-0	1,2-Dichloroethene (total)	12.	U	29.	U	6.	U	11.	U	6.	U	6.	U
56-23-5	Carbon tetrachloride	12.	U	29.	U	6.	U	11.	U	6.	U	6.	U
591-78-6	2-Hexanone	120.	U	290.	U	7400.	U	110.	U	59.	U	62.	U
67-64-1	Acetone	24.	U	59.	U	110.		130.		12.		12.	
67-66-3	Chloroform	26.		29.	U	6.	U	11.	U	6.	U	6.	U
71-43-2	Benzene	12.	U	29.	U	2.		11.	U	6.	U	6.	U
71-55-6	1,1,1-Trichloroethane	12.	U	29.	U	6.	U	11.	U	6.	U	6.	U
74-83-9	Bromomethane	24.	U	59.	U	12.	U	23.	U	12.	U	12.	U
74-87-3	Chloromethane	24.	U	59.	U	12.	U	23.	U	12.	U	12.	U
75-00-3	Chloroethane	24.	U	59.	U	12.	U	23.	U	12.	U	12.	U
75-01-4	Vinyl chloride	12.	U	29.	U	6.	U	11.	U	6.	U	6.	U
75-09-2	Methylene chloride	3.		29.	U	5.		11.	U	6.	U	6.	U
75-15-0	Carbon disulfide	16.		29.	U	6.	U	11.	U	6.	U	6.	U
75-25-2	Bromoform	12.	U	29.	U	6.	U	11.	U	6.	U	6.	U
75-27-4	Bromodichloromethane	12.	U	29.	U	6.	U	11.	U	6.	U	6.	U
75-34-3	1,1-Dichloroethane	12.	U	29.	U	6.	U	11.	U	6.	U	6.	U
75-35-4	1,1-Dichloroethene	12.	U	29.	U	6.	U	11.	U	6.	U	6.	U
78-87-5	1,2-Dichloropropane	12.	U	29.	U	6.	U	11.	U	6.	U	6.	U
78-93-3	2-Butanone (MEK)	24.	U	59.	U	28.		54.		12.	U	12.	U
79-00-5	1,1,2-Trichloroethane	12.	U	29.	U	6.	U	11.	U	6.	U	6.	U
79-01-6	Trichloroethene	12.	U	29.	U	6.	U	11.	U	6.	U	6.	U
79-34-5	1,1,2,2-Tetrachloroethane	12.	U	29.	U	6.	U	11.	U	6.	U	6.	U

*** Validation Complete ***

CEDAR CHEMICAL CORPORATION
WEST HELENA, ARKANSAS
SITE 4 PHASE I SUBSURFACE SOIL DATA

VOA	SHORT ID ---------->	4HA-8 (6-7')		4HA-8 (7-8')		4MW-1		4MW-1 (10-15')		4MW-1 (25-30')		4MW-2	
	ORIGINAL ID ----->	CED4SHA-8-2		CED4SHA-8-3		CED4GWMW1		CED4-SMW1-3		CED4-SMW1-6		CED4GWMW2	
	SAMPLE DATE ----->	09/03/93		09/03/93		09/29/93		09/16/93		09/17/93		09/29/93	
	DATE ANALYZED --->	09/11/93		09/11/93		10/11/93		09/28/93		10/01/93		10/10/93	
	MATRIX ---------->	Soil		Soil		Water		Soil		Soil		Water	
	UNITS ---------->	UG/KG		UG/KG		UG/L		UG/KG		UG/KG		UG/L	
CAS #	Parameter	E003	VAL	E003	VAL	E015	VAL	E011	VAL	E011	VAL	E015	VAL
100-41-4	Ethylbenzene	6.	U	6.	U	5000.	U	9.		33.	U	50.	U
100-42-5	Styrene	6.	U	6.	U	5000.	U	29.	U	33.	U	50.	U
10061-01-5	cis-1,3-Dichloropropene	6.	U	6.	U	5000.	U	29.	U	33.	U	50.	U
10061-02-6	trans-1,3-Dichloropropene	6.	U	6.	U	5000.	U	29.	U	33.	U	50.	U
107-06-2	1,2-Dichloroethane	6.	U	6.	U	5800.		120.		650.		210.	
108-05-4	Vinyl acetate	6.	U	6.	U	5000.	U	29.	U	33.	U	50.	U
108-10-1	4-Methyl-2-Pentanone (MIBK)	58.	U	62.	U	50000.	U	31.		23.		500.	U
108-88-3	Toluene	6.	U	6.	U	110000.		56000.		670.		80.	
108-90-7	Chlorobenzene	6.	U	6.	U	5000.	U	29.	U	33.	U	31.	
124-48-1	Dibromochloromethane	6.	U	6.	U	5000.	U	29.	U	33.	U	50.	U
127-18-4	Tetrachloroethene	6.	U	6.	U	5000.	U	29.	U	33.	U	50.	U
1330-20-7	Xylene (total)	6.	U	6.	U	1400.		96.		68.		38.	
540-59-0	1,2-Dichloroethene (total)	6.	U	6.	U	5000.	U	29.	U	33.	U	50.	U
56-23-5	Carbon tetrachloride	6.	U	6.	U	5000.	U	29.	U	33.	U	50.	U
591-78-6	2-Hexanone	58.	U	62.	U	50000.	U	290.	U	330.	U	500.	U
67-64-1	Acetone	12.	U	12.	U	10000.	U	99.		1200.		100.	U
67-66-3	Chloroform	6.	U	6.	U	5000.	U	12.		33.	U	1400.	
71-43-2	Benzene	6.	U	6.	U	5000.	U	29.		33.	U	46.	
71-55-6	1,1,1-Trichloroethane	6.	U	6.	U	5000.	U	29.	U	33.	U	50.	U
74-83-9	Bromomethane	12.	U	12.	U	10000.	U	58.	U	66.	U	100.	U
74-87-3	Chloromethane	12.	U	12.	U	10000.	U	58.	U	66.	U	100.	U
75-00-3	Chloroethane	12.	U	12.	U	10000.	U	58.	U	66.	U	100.	U
75-01-4	Vinyl chloride	6.	U	6.	U	5000.	U	29.	U	33.	U	50.	U
75-09-2	Methylene chloride	6.	U	6.	U	5000.	U	130.		270.		1300.	U
75-15-0	Carbon disulfide	6.	U	6.	U	5000.	U	29.	U	33.	U	50.	U
75-25-2	Bromoform	6.	U	6.	U	5000.	U	29.	U	33.	U	50.	U
75-27-4	Bromodichloromethane	6.	U	6.	U	5000.	U	29.	U	33.	U	50.	U
75-34-3	1,1-Dichloroethane	6.	U	6.	U	5000.	U	29.	U	33.	U	50.	U
75-35-4	1,1-Dichloroethene	6.	U	6.	U	5000.	U	29.	U	33.	U	50.	U
78-87-5	1,2-Dichloropropane	6.	U	6.	U	5000.	U	29.	U	33.	U	50.	U
78-93-3	2-Butanone (MEK)	12.	U	12.	U	10000.	U	58.	U	66.	U	100.	U
79-00-5	1,1,2-Trichloroethane	6.	U	6.	U	5000.	U	29.	U	33.	U	50.	U
79-01-6	Trichloroethene	6.	U	6.	U	5000.	U	29.		33.	U	50.	U
79-34-5	1,1,2,2-Tetrachloroethane	6.	U	6.	U	5000.	U	29.	U	33.	U	50.	U

*** Validation Complete ***

CEDAR CHEMICAL CORPORATION
WEST HELENA, ARKANSAS
SITE 4 PHASE I SUBSURFACE SOIL DATA

VOA	SHORT ID --------->	4MW-2 DUP		4MW-2 (25-30')		IMSB-1 (3-8')		IMSB-2 (5-10')		IMSB-2 (10-15')		IMSB-3 (5-10')	
	ORIGINAL ID ----->	CED4GWMW2D		CED4-SMW2-6		IM-SB-01-2		IM-SB-02-2		IM-SB-02-3		IM-SB-03-2	
	SAMPLE DATE ----->	09/29/93		09/22/93		04/08/93		04/08/93		04/08/93		04/09/93	
	DATE ANALYZED --->	10/10/93		10/05/93		04/15/93		04/15/93		04/22/93		04/15/93	
	MATRIX ---------->	Water		Soil		Soil		Soil		Soil		Soil	
	UNITS ---------->	UG/L		UG/KG		UG/KG		UG/KG		UG/KG		UG/KG	
CAS #	Parameter	E015	VAL	E011	VAL	ES1	VAL	ES1	VAL	ES1	VAL	ES1	VAL
100-41-4	Ethylbenzene	50.	U	7.	U	6.	U	7.	U	7.	U	6.	U
100-42-5	Styrene	50.	U	7.	U	6.	U	7.	U	7.	U	6.	U
10061-01-5	cis-1,3-Dichloropropene	50.	U	7.	U	6.	U	7.	U	7.	U	6.	U
10061-02-6	trans-1,3-Dichloropropene	50.	U	7.	U	6.	U	7.	U	7.	U	6.	U
107-06-2	1,2-Dichloroethane	240.		7.	U	6.	U	7.	U	10.		6.	U
108-05-4	Vinyl acetate	50.	U	7.	U	62.	U	65.	U	68.	U	62.	U
108-10-1	4-Methyl-2-Pentanone (MIBK)	500.	U	69.	U	62.	U	65.	U	68.	U	62.	U
108-88-3	Toluene	52.		7.	U	6.	U	9.		7.	U	6.	U
108-90-7	Chlorobenzene	30.		7.	U	6.	U	7.	U	7.	U	6.	U
124-48-1	Dibromochloromethane	50.	U	7.	U	6.	U	7.	U	7.	U	6.	U
127-18-4	Tetrachloroethene	50.	U	7.	U	6.	U	7.	U	7.	U	6.	U
1330-20-7	Xylene (total)	44.		7.	U	6.	U	7.	U	7.	U	6.	U
540-59-0	1,2-Dichloroethene (total)	50.	U	7.	U	6.	U	7.	U	7.	U	6.	U
56-23-5	Carbon tetrachloride	50.	U	7.	U	6.	U	7.	U	7.	U	6.	U
591-78-6	2-Hexanone	500.	U	69.	U	62.	U	65.	U	68.	U	62.	U
67-64-1	Acetone	100.	U	14.	U	200.		320.		140.	U	120.	U
67-66-3	Chloroform	1900.		7.	U	6.	U	7.	U	7.	U	6.	U
71-43-2	Benzene	43.		7.	U	6.	U	7.	U	7.	U	6.	U
71-55-6	1,1,1-Trichloroethane	50.	U	7.	U	6.	U	7.	U	7.	U	6.	U
74-83-9	Bromomethane	100.	U	14.	U	12.	U	13.	U	14.	U	12.	U
74-87-3	Chloromethane	100.	U	14.	U	12.	U	13.	U	14.	U	12.	U
75-00-3	Chloroethane	100.	U	14.	U	12.	U	13.	U	14.	U	12.	U
75-01-4	Vinyl chloride	50.	U	7.	U	12.	U	13.	U	14.	U	12.	U
75-09-2	Methylene chloride	1500.	U	9.		6.	U	7.	U	66.		12.	
75-15-0	Carbon disulfide	50.	U	7.	U	120.	U	130.	U	140.	U	120.	U
75-25-2	Bromoform	50.	U	7.	U	6.	U	7.	U	7.	U	6.	U
75-27-4	Bromodichloromethane	50.	U	7.	U	6.	U	7.	U	7.	U	6.	U
75-34-3	1,1-Dichloroethane	50.	U	7.	U	6.	U	7.	U	7.	U	6.	U
75-35-4	1,1-Dichloroethene	50.	U	7.	U	6.	U	7.	U	7.	U	6.	U
78-87-5	1,2-Dichloropropane	50.	U	7.	U	6.	U	7.	U	7.	U	6.	U
78-93-3	2-Butanone (MEK)	100.	U	14.	U	120.	U	130.	U	140.	U	120.	U
79-00-5	1,1,2-Trichloroethane	50.	U	7.	U	6.	U	7.	U	7.	U	6.	U
79-01-6	Trichloroethene	50.	U	7.	U	6.	U	7.	U	7.	U	6.	U
79-34-5	1,1,2,2-Tetrachloroethane	50.	U	7.	U	6.	U	7.	U	7.	U	6.	U

*** Validation Complete ***

CEDAR CHEMICAL CORPORATION
WEST HELENA, ARKANSAS
SITE 4 PHASE I SUBSURFACE SOIL DATA

VOA	SHORT ID -------->	IMSB-4 (5-10')		IMSB-5 (5-10')		BGHA-2 (0-1')		BGHA-3 (0-1')		EMW-1		EMW-2	
	ORIGINAL ID ----->	IM-SB-04-2		IM-SB-05-2		CED-SBG-2		CED-SBG-3		CEDE-GWMW-1		CEDE-GWMW-2	
	SAMPLE DATE ----->	04/09/93		04/09/93		09/16/93		09/16/93		09/22/93		09/22/93	
	DATE ANALYZED --->	04/15/93		04/15/93		09/28/93		09/28/93		09/30/93		09/30/93	
	MATRIX ---------->	Soil		Soil		Soil		Soil		Water		Water	
	UNITS ---------->	UG/KG		UG/KG		UG/KG		UG/KG		UG/L		UG/L	
CAS #	Parameter	ES1	VAL	ES1	VAL	E011	VAL	E011	VAL	E012	VAL	E012	VAL
100-41-4	Ethylbenzene	6.	U	6.	U	6.	U	26.	U	5.	U	5.	U
100-42-5	Styrene	6.	U	6.	U	6.	U	26.	U	5.	U	5.	U
10061-01-5	cis-1,3-Dichloropropene	6.	U	6.	U	6.	U	26.	U	5.	U	5.	U
10061-02-6	trans-1,3-Dichloropropene	6.	U	6.	U	6.	U	26.	U	5.	U	5.	U
107-06-2	1,2-Dichloroethane	6.	U	6.	U	6.	U	26.	U	36.		5.	U
108-05-4	Vinyl acetate	63.	U	65.	U	6.	U	26.	U	5.	U	5.	U
108-10-1	4-Methyl-2-Pentanone (MIBK)	63.	U	65.	U	60.	U	260.	U	50.	U	50.	U
108-88-3	Toluene	6.	U	6.	U	6.	U	10.		5.	U	5.	U
108-90-7	Chlorobenzene	6.	U	6.	U	6.	U	26.	U	5.	U	5.	U
124-48-1	Dibromochloromethane	6.	U	6.	U	6.	U	26.	U	5.	U	5.	U
127-18-4	Tetrachloroethene	6.	U	6.	U	6.	U	26.	U	5.	U	5.	U
1330-20-7	Xylene (total)	6.	U	6.	U	6.	U	26.	U	5.	U	5.	U
540-59-0	1,2-Dichloroethene (total)	6.	U	6.	U	6.	U	26.	U	5.	U	5.	U
56-23-5	Carbon tetrachloride	6.	U	6.	U	6.	U	26.	U	5.	U	5.	U
591-78-6	2-Hexanone	63.	U	65.	U	60.	U	260.	U	50.	U	50.	U
67-64-1	Acetone	130.	U	130.	U	12.	U	1200.		10.	U	10.	U
67-66-3	Chloroform	6.	U	6.	U	6.	U	26.	U	1.		5.	U
71-43-2	Benzene	6.	U	6.	U	6.	U	26.	U	5.	U	5.	U
71-55-6	1,1,1-Trichloroethane	6.	U	6.	U	6.	U	26.	U	5.	U	5.	U
74-83-9	Bromomethane	13.	U	13.	U	12.	U	52.	U	10.	U	10.	U
74-87-3	Chloromethane	13.	U	13.	U	12.	U	52.	U	10.	U	10.	U
75-00-3	Chloroethane	13.	U	13.	U	12.	U	52.	U	10.	U	10.	U
75-01-4	Vinyl chloride	13.	U	13.	U	6.	U	26.	U	5.	U	5.	U
75-09-2	Methylene chloride	6.	U	6.	U	2.		7.		5.	U	5.	U
75-15-0	Carbon disulfide	130.	U	130.	U	6.	U	26.	U	5.	U	5.	U
75-25-2	Bromoform	6.	U	6.	U	6.	U	26.	U	5.	U	5.	U
75-27-4	Bromodichloromethane	6.	U	6.	U	6.	U	26.	U	5.	U	5.	U
75-34-3	1,1-Dichloroethane	6.	U	6.	U	6.	U	26.	U	5.	U	5.	U
75-35-4	1,1-Dichloroethene	6.	U	6.	U	6.	U	26.	U	5.	U	5.	U
78-87-5	1,2-Dichloropropane	6.	U	6.	U	6.	U	26.	U	5.	U	5.	U
78-93-3	2-Butanone (MEK)	130.	U	130.	U	12.	U	32.		10.	U	10.	U
79-00-5	1,1,2-Trichloroethane	6.	U	6.	U	6.	U	26.	U	5.	U	5.	U
79-01-6	Trichloroethene	6.	U	6.	U	6.	U	26.	U	5.	U	5.	U
79-34-5	1,1,2,2-Tetrachloroethane	6.	U	6.	U	6.	U	26.	U	5.	U	5.	U

*** Validation Complete ***

CEDAR CHEMICAL CORPORATION
WEST HELENA, ARKANSAS
SITE 4 PHASE I SUBSURFACE SOIL DATA

VOA	SHORT ID --------->	EMW-3		EMW-3 DUP		EMW-4		EMW-6		EMW-7		EMW-6A	
	ORIGINAL ID ----->	CEDE-GWMW-3		CEDE-GWMW-3D		CEDE-GWMW-4		CEDE-GWMW6		CEDE-GWMW7		CEDE-GWMW6A	
	SAMPLE DATE ----->	09/23/93		09/23/93		09/23/93		09/24/93		09/23/93		09/24/93	
	DATE ANALYZED --->	09/30/93		09/30/93		09/30/93		10/06/93		10/05/93		10/06/93	
	MATRIX ---------->	Water		Water		Water		Water		Water		Water	
	UNITS ---------->	UG/L		UG/L		UG/L		UG/L		UG/L		UG/L	
CAS. #	Parameter	E012	VAL	E012	VAL	E012	VAL	E012	VAL	E012	VAL	E012	VAL
100-41-4	Ethylbenzene	54.		65.		40.	U	5.	U	2500.	U	5.	U
100-42-5	Styrene	50.	U	250.	U	40.	U	5.	U	2500.	U	5.	U
10061-01-5	cis-1,3-Dichloropropene	50.	U	250.	U	40.	U	5.	U	2500.	U	5.	U
10061-02-6	trans-1,3-Dichloropropene	50.	U	250.	U	40.	U	5.	U	2500.	U	5.	U
107-06-2	1,2-Dichloroethane	6100.		6700.		1200.		190.		64000.		18.	
108-05-4	Vinyl acetate	50.	U	250.	U	40.	U	5.	U	2500.	U	5.	U
108-10-1	4-Methyl-2-Pentanone (MIBK)	11.		2500.	U	400.	U	50.	U	25000.	U	50.	U
108-88-3	Toluene	32.		250.	U	40.	U	5.	U	2500.	U	5.	U
108-90-7	Chlorobenzene	26.		250.	U	16.		5.	U	2500.	U	5.	U
124-48-1	Dibromochloromethane	50.	U	250.	U	40.	U	5.	U	2500.	U	5.	U
127-18-4	Tetrachloroethene	50.	U	250.	U	40.	U	5.	U	2500.	U	5.	U
1330-20-7	Xylene (total)	88.		100.		40.	U	5.	U	2500.	U	5.	U
540-59-0	1,2-Dichloroethene (total)	50.	U	250.	U	40.	U	5.	U	2500.	U	5.	U
56-23-5	Carbon tetrachloride	50.	U	250.	U	40.	U	5.	U	2500.	U	5.	U
591-78-6	2-Hexanone	500.	U	2500.	U	400.	U	50.	U	25000.	U	50.	U
67-64-1	Acetone	100.	U	500.	U	80.	U	10.	U	5000.	U	10.	U
67-66-3	Chloroform	55.		65.		40.	U	5.	U	2500.	U	5.	U
71-43-2	Benzene	50.	U	250.	U	40.	U	5.	U	2500.	U	5.	U
71-55-6	1,1,1-Trichloroethane	50.	U	250.	U	40.	U	5.	U	2500.	U	5.	U
74-83-9	Bromomethane	100.	U	500.	U	80.	U	10.	U	5000.	U	10.	U
74-87-3	Chloromethane	100.	U	500.	U	80.	U	10.	U	5000.	U	10.	U
75-00-3	Chloroethane	100.	U	500.	U	80.	U	10.	U	5000.	U	10.	U
75-01-4	Vinyl chloride	50.	U	250.	U	40.	U	5.	U	2500.	U	5.	U
75-09-2	Methylene chloride	390.		410.		40.	U	5.	U	2500.	U	5.	U
75-15-0	Carbon disulfide	50.	U	250.	U	40.	U	5.	U	2500.	U	5.	U
75-25-2	Bromoform	50.	U	250.	U	40.	U	5.	U	2500.	U	5.	U
75-27-4	Bromodichloromethane	50.	U	250.	U	40.	U	5.	U	2500.	U	5.	U
75-34-3	1,1-Dichloroethane	50.	U	250.	U	40.	U	5.	U	2500.	U	5.	U
75-35-4	1,1-Dichloroethene	50.	U	250.	U	40.	U	5.	U	2500.	U	5.	U
78-87-5	1,2-Dichloropropane	50.	U	250.	U	40.	U	5.	U	2500.	U	5.	U
78-93-3	2-Butanone (MEK)	100.	U	500.	U	80.	U	10.	U	5000.	U	10.	U
79-00-5	1,1,2-Trichloroethane	50.	U	250.	U	40.	U	5.	U	2500.	U	5.	U
79-01-6	Trichloroethene	50.	U	250.	U	40.	U	5.	U	2500.	U	5.	U
79-34-5	1,1,2,2-Tetrachloroethane	50.	U	250.	U	40.	U	5.	U	2500.	U	5.	U

*** Validation Complete ***

CEDAR CHEMICAL CORPORATION
WEST HELENA, ARKANSAS
SITE 4 PHASE I SUBSURFACE SOIL DATA

VOA

SHORT ID --------->	EMW-6B
ORIGINAL ID ----->	CEDE-GWMW6B
SAMPLE DATE ----->	09/24/93
DATE ANALYZED --->	10/06/93
MATRIX ---------->	Water
UNITS ---------->	UG/L

CAS #	Parameter	E012	VAL
100-41-4	Ethylbenzene	50.	U
100-42-5	Styrene	50.	U
10061-01-5	cis-1,3-Dichloropropene	50.	U
10061-02-6	trans-1,3-Dichloropropene	50.	U
107-06-2	1,2-Dichloroethane	1900.	
108-05-4	Vinyl acetate	50.	U
108-10-1	4-Methyl-2-Pentanone (MIBK)	500.	U
108-88-3	Toluene	50.	U
108-90-7	Chlorobenzene	30.	
124-48-1	Dibromochloromethane	50.	U
127-18-4	Tetrachloroethene	50.	U
1330-20-7	Xylene (total)	50.	U
540-59-0	1,2-Dichloroethene (total)	50.	U
56-23-5	Carbon tetrachloride	50.	U
591-78-6	2-Hexanone	500.	U
67-64-1	Acetone	100.	U
67-66-3	Chloroform	50.	U
71-43-2	Benzene	17.	
71-55-6	1,1,1-Trichloroethane	50.	U
74-83-9	Bromomethane	100.	U
74-87-3	Chloromethane	100.	U
75-00-3	Chloroethane	100.	U
75-01-4	Vinyl chloride	50.	U
75-09-2	Methylene chloride	50.	U
75-15-0	Carbon disulfide	50.	U
75-25-2	Bromoform	50.	U
75-27-4	Bromodichloromethane	50.	U
75-34-3	1,1-Dichloroethane	50.	U
75-35-4	1,1-Dichloroethene	50.	U
78-87-5	1,2-Dichloropropane	50.	U
78-93-3	2-Butanone (MEK)	100.	U
79-00-5	1,1,2-Trichloroethane	50.	U
79-01-6	Trichloroethene	50.	U
79-34-5	1,1,2,2-Tetrachloroethane	50.	U

*** Validation Complete ***

CEDAR CHEMICAL CORPORATION
WEST HELENA, ARKANSAS
SITE 4 PHASE I SUBSURFACE SOIL DATA

WQPL		SHORT ID --------->	4MW-1		4MW-2		4MW-2 DUP		EMW-1		EMW-2		EMW-3	
		ORIGINAL ID ----->	CED4GWMW1		CED4GWMW2		CED4GWMW2D		CEDE-GWMW-1		CEDE-GWMW-2		CEDE-GWMW-3	
		SAMPLE DATE ----->	09/29/93		09/29/93		09/29/93		09/22/93		09/22/93		09/23/93	
		DATE ANALYZED --->	10/04/93		10/04/93		10/04/93		09/28/93		09/28/93		09/28/93	
		MATRIX ---------->	Water		Water		Water		Water		Water		Water	
		UNITS ---------->	MG/L		MG/L		MG/L		MG/L		MG/L		MG/L	
CAS #	Parameter		E015	VAL	E015	VAL	E015	VAL	E012	VAL	E012	VAL	E012	VAL
10-13-9	BICARBONATE		630.		530.		530.		480.		250.		290.	
14797-55-8	Nitrate (as N)		0.2	U	1.2		1.		0.2	U	0.2	U	0.2	U
14808-79-8	Sulfate		23.		140.		120.		120.		41.		320.	
16887-00-6	Chloride		72.		200.		200.		260.		15.		1400.	
7664-41-7	Ammonia (as N)		0.1	U	0.1	U	0.1	U	0.1	U	0.3		0.7	
F	Fluoride		0.3		0.2		0.2		0.3		0.3		0.2	
CN	Cyanide		0.01	U	0.01	U	0.01	U	0.01	U	0.01	U	0.01	U

*** Validation Complete ***

CEDAR CHEMICAL CORPORATION
WEST HELENA, ARKANSAS
SITE 4 PHASE I SUBSURFACE SOIL DATA

WQPL		SHORT ID --------->	EMW-3 DUP		EMW-4		EMW-6		EMW-7		EMW-6A		EMW-6B	
		ORIGINAL ID ----->	CEDE-GWMW-3D		CEDE-GWMW-4		CEDE-GWMW6		CEDE-GWMW7		CEDE-GWMW6A		CEDE-GWMW6B	
		SAMPLE DATE ----->	09/23/93		09/23/93		09/24/93		09/23/93		09/24/93		09/24/93	
		DATE ANALYZED --->	09/28/93		09/28/93		10/12/93		10/12/93		10/12/93		10/12/93	
		MATRIX ---------->	Water		Water		Water		Water		Water		Water	
		UNITS ---------->	MG/L		MG/L		MG/L		MG/L		MG/L		MG/L	
CAS #	Parameter		E012	VAL	E012	VAL	E012	VAL	E012	VAL	E012	VAL	E012	VAL
10-13-9	BICARBONATE		300.		650.		490.		270.		290.		540.	
14797-55-8	Nitrate (as N)		0.2	U	0.2	U	0.2	U	0.2	U	0.2	U	0.2	U
14808-79-8	Sulfate		350.		93.		25.		290.		14.		35.	
16887-00-6	Chloride		1400.		650.		29.		260.		160.		560.	
7664-41-7	Ammonia (as N)		0.8		0.2		0.1	U	0.4		0.8		0.1	U
F	Fluoride		0.2		0.3		0.3		0.3		0.6		0.5	
CN	Cyanide		0.01	U	0.01	U	0.01	U	0.01	U	0.01	U	0.01	U

*** Validation Complete ***

CEDAR CHEMICAL CORPORATION
WEST HELENA, ARKANSAS
SITE 4 PHASE II SURFACE SOIL DATA

CATION EXC							
	SHORT ID --------->	4HA-9 (0-1')	4SB-10 (0-1')				
	ORIGINAL ID ----->	004S000901	004S001001				
	SAMPLE DATE ----->	01/11/95	01/11/95				
	DATE EXTRACTED -->	01/13/95	01/13/95				
	DATE ANALYZED --->	01/13/95	01/13/95				
	MATRIX ---------->	Soil	Soil				
	UNITS ----------->	MEQ/1	MEQ/1				
CAS #	Parameter	11462 VAL	11462 VAL				
9999900-02-6	Cation-Exchange Capacity	16.	14.				

*** Validation Complete ***

CEDAR CHEMICAL CORPORATION
WEST HELENA, ARKANSAS
SITE 4 PHASE II SURFACE SOIL DATA

CHLORIDE							
	SHORT ID --------->	4HA-9 (0-1')	4SB-10 (0-1')				
	ORIGINAL ID ----->	004S000901	004S001001				
	SAMPLE DATE ----->	01/11/95	01/11/95				
	DATE EXTRACTED -->	01/16/95	01/16/95				
	DATE ANALYZED --->	01/16/95	01/16/95				
	MATRIX ---------->	Soil	Soil				
	UNITS ----------->	MG/KG	MG/KG				
CAS #	Parameter	11462 VAL	11462 VAL				
16887-00-6	Chloride	770.	29.				

*** Validation Complete ***

CEDAR CHEMICAL CORPORATION
WEST HELENA, ARKANSAS
SITE 4 PHASE II SURFACE SOIL DATA

PEST	SHORT ID --------->	4SB-1 (0-2')		4SB-2 (0-2')		4MW-3 (0-3')		4MW-4 (0-3')		4MW-4 (0-3')Dup		4SB-3 (0-2')	
	ORIGINAL ID ----->	004S000101		004S000201		004S000301		004S000401		004C000401		004S000301	
	SAMPLE DATE ----->	12/06/94		12/08/94		12/06/94		12/14/94		12/14/94		12/08/94	
	DATE EXTRACTED -->	12/12/94		12/12/94		12/12/94		12/22/94		12/22/94		12/12/94	
	DATE ANALYZED --->	12/15/94		12/21/94		12/15/94		12/23/94		12/23/94		12/15/94	
	MATRIX ---------->	Soil		Soil		Soil		Soil		Soil		Soil	
	UNITS ---------->	UG/KG		UG/KG		UG/KG		UG/KG		UG/KG		UG/KG	
CAS #	Parameter	11008	VAL	11008	VAL	11008	VAL	11097	VAL	11097	VAL	11008	VAL
319-84-6	Alpha-BHC	2.	U	2.	U	2.	U	2.	U	2.	U	20.	U
319-85-7	Beta-BHC	4.	U	4.	U	4.	U	4.	U	4.	U	40.	U
319-86-8	Delta-BHC	6.	U	6.	U	6.	U	6.	U	6.	U	60.	U
58-89-9	gamma-BHC (Lindane)	2.7	U	2.7	U	2.7	U	2.7	U	2.7	U	27.	U
76-44-8	Heptachlor	2.	U	2.	U	2.	U	2.	U	2.	U	20.	U
309-00-2	Aldrin	2.7	U	2.7	U	2.7	U	2.7	U	2.7	U	27.	U
1024-57-3	Heptachlor Epoxide	56.	U	56.	U	56.	U	56.	U	56.	U	560.	U
959-98-8	Endosulfan I	9.4	U	9.4	U	9.4	U	9.4	U	9.4	U	94.	U
60-57-1	Dieldrin	1.3	U	1.3	U	1.3	U	480.		430.		13.	U
72-55-9	4,4'-DDE	2.7	U	250.		22.		23.		21.		27.	U
72-20-8	Endrin	4.	U	4.	U	4.	U	4.	U	4.	U	40.	U
33213-65-9	Endosulfan II	2.7	U	2.7	U	2.7	U	2.7	U	2.7	U	27.	U
72-54-8	4,4'-DDD	7.	U	350.		7.	U	29.		23.		70.	U
7421-93-4	Endrin aldehyde	15.	U	15.	U	15.	U	15.	U	15.	U	150.	U
1031-07-8	Endosulfan Sulfate	44.	U	44.	U	44.	U	44.	U	44.	U	440.	U
50-29-3	4,4'-DDT	8.	U	8.	U	100.		55.		44.		80.	U
72-43-5	Methoxychlor	8700.		120.		220.		6800.		8900.		3100.	
57-74-9	Chlordane	9.4	U	9.4	U	9.4	U	9.4	U	9.4	U	94.	U
8001-35-2	Toxaphene	160.	U	160.	U	160.	U	160.	U	160.	U	1600.	U
12674-11-2	Aroclor-1016	60.	U	60.	U	60.	U	60.	U	60.	U	600.	U
11104-28-2	Aroclor-1221	180.	U	180.	U	180.	U	180.	U	180.	U	1800.	U
11141-16-5	Aroclor-1232	32.	U	32.	U	32.	U	32.	U	32.	U	320.	U
53469-21-9	Aroclor-1242	44.	U	44.	U	44.	U	44.	U	44.	U	440.	U
12672-29-6	Aroclor-1248	170.	U	170.	U	170.	U	170.	U	170.	U	1700.	U
11097-69-1	Aroclor-1254	80.	U	80.	U	80.	U	80.	U	80.	U	800.	U
11096-82-5	Aroclor-1260	24.	U	24.	U	24.	U	24.	U	24.	U	240.	U

*** Validation Complete ***

CEDAR CHEMICAL CORPORATION
WEST HELENA, ARKANSAS
SITE 4 PHASE II SURFACE SOIL DATA

SOIL PH							
	SHORT ID --------->	4HA-9 (0-1')	4SB-10 (0-1')				
	ORIGINAL ID ----->	004S000901	004S001001				
	SAMPLE DATE ----->	01/11/95	01/11/95				
	DATE EXTRACTED -->	01/13/95	01/13/95				
	DATE ANALYZED --->	01/13/95	01/13/95				
	MATRIX ---------->	Soil	Soil				
	UNITS ----------->	UNITS	UNITS				
CAS #	Parameter	11462 VAL	11462 VAL				
9999900-02-7	pH	8.2	8.6				

*** Validation Complete ***

CEDAR CHEMICAL CORPORATION
WEST HELENA, ARKANSAS
SITE 4 PHASE II SURFACE SOIL DATA

SPLP-METAL								
	SHORT ID --------->	4HA-9 (0-1')		4SB-10 (0-1')				
	ORIGINAL ID ----->	004S000901		004S001001				
	SAMPLE DATE ----->	01/11/95		01/11/95				
	DATE EXTRACTED -->	01/17/95						
	DATE ANALYZED --->	01/27/95		01/17/95				
	MATRIX ---------->	Soil		Soil				
	UNITS ----------->	MG/L		MG/L				
CAS #	Parameter	11462	VAL	11462	VAL			
7440-38-2	Arsenic (As)	0.05	U	0.05	U			

*** Validation Complete ***

CEDAR CHEMICAL CORPORATION
WEST HELENA, ARKANSAS
SITE 4 PHASE II SURFACE SOIL DATA

SPLP-PEST							
	SHORT ID --------->	4HA-9 (0-1')	4SB-10 (0-1')				
	ORIGINAL ID ----->	004S000901	004S001001				
	SAMPLE DATE ----->	01/11/95	01/11/95				
	DATE EXTRACTED -->	01/17/95	01/17/95				
	DATE ANALYZED --->	01/19/95	01/19/95				
	MATRIX ---------->	Soil	Soil				
	UNITS ----------->	MG/L	MG/L				
CAS #	Parameter	11462 VAL	11462 VAL				
319-84-6	Alpha-BHC	0.0002 U	0.0002 U				
319-85-7	Beta-BHC	0.0003 U	0.0003 U				
319-86-8	Delta-BHC	0.0004 U	0.0004 U				
58-89-9	gamma-BHC (Lindane)	0.0002 U	0.0002 U				
76-44-8	Heptachlor	0.0002 U	0.0002 U				
309-00-2	Aldrin	0.0002 U	0.0002 U				
1024-57-3	Heptachlor Epoxide	0.0042 U	0.0042 U				
959-98-8	Endosulfan I	0.0007 U	0.0007 U				
60-57-1	Dieldrin	0.0001 U	0.0001 U				
72-55-9	4,4'-DDE	0.0002 U	0.0002 U				
72-20-8	Endrin	0.0003 U	0.0003 U				
33213-65-9	Endosulfan II	0.0002 U	0.0002 U				
72-54-8	4,4'-DDD	0.0006 U	0.0006 U				
7421-93-4	Endrin aldehyde	0.0012 U	0.0012 U				
1031-07-8	Endosulfan Sulfate	0.0033 U	0.0033 U				
50-29-3	4,4'-DDT	0.0006 U	0.0006 U				
72-43-5	Methoxychlor	0.009 U	0.009 U				
57-74-9	Chlordane	0.0007 U	0.0007 U				
8001-35-2	Toxaphene	0.0012 U	0.0012 U				
12674-11-2	Aroclor-1016	0.0045 U	0.0045 U				
11104-28-2	Aroclor-1221	0.014 U	0.014 U				
11141-16-5	Aroclor-1232	0.0024 U	0.0024 U				
53469-21-9	Aroclor-1242	0.0033 U	0.0033 U				
12672-29-6	Aroclor-1248	0.013 U	0.013 U				
11097-69-1	Aroclor-1254	0.006 U	0.006 U				
11096-82-5	Aroclor-1260	0.0018 U	0.0018 U				

*** Validation Complete ***

CEDAR CHEMICAL CORPORATION
WEST HELENA, ARKANSAS
SITE 4 PHASE II SURFACE SOIL DATA

SPLP-SVOA									
	SHORT ID --------->	4HA-9 (0-1')		4SB-10 (0-1')					
	ORIGINAL ID ----->	004S000901		004S001001					
	SAMPLE DATE ----->	01/11/95		01/11/95					
	DATE EXTRACTED -->	01/17/95		01/17/95					
	DATE ANALYZED --->	01/18/95		01/18/95					
	MATRIX ---------->	Soil		Soil					
	UNITS ---------->	MG/L		MG/L					
CAS #	Parameter	11462	VAL	11462	VAL				
108-95-2	Phenol	0.1	U	0.1	U				
111-44-4	bis(2-Chloroethyl)ether	0.1	U	0.1	U				
95-57-8	2-Chlorophenol	0.1	U	0.1	U				
541-73-1	1,3-Dichlorobenzene	0.1	U	0.1	U				
106-46-7	1,4-Dichlorobenzene	0.1	U	0.1	U				
100-51-6	Benzyl alcohol	0.2	U	0.2	U				
95-50-1	1,2-Dichlorobenzene	0.27		0.1	U				
95-48-7	2-Methylphenol (o-Cresol)	0.1	U	0.1	U				
108-60-1	bis(2-chloroisopropyl) ether	0.1	U	0.1	U				
106-44-5	4-Methylphenol (p-Cresol)	0.1	U	0.1	U				
621-64-7	N-Nitroso-di-n-propylamine	0.1	U	0.1	U				
67-72-1	Hexachloroethane	0.1	U	0.1	U				
98-95-3	Nitrobenzene	0.1	U	0.1	U				
78-59-1	Isophorone	0.1	U	0.1	U				
88-75-5	2-Nitrophenol	0.1	U	0.1	U				
105-67-9	2,4-Dimethylphenol	0.1	U	0.1	U				
111-91-1	bis(2-Chloroethoxy)methane	0.1	U	0.1	U				
120-83-2	2,4-Dichlorophenol	0.1	U	0.1	U				
120-82-1	1,2,4-Trichlorobenzene	0.1	U	0.1	U				
91-20-3	Naphthalene	0.1	U	0.1	U				
87-68-3	Hexachlorobutadiene	0.1	U	0.1	U				
59-50-7	4-Chloro-3-methylphenol	0.2	U	0.2	U				
91-57-6	2-Methylnaphthalene	0.1	U	0.1	U				
77-47-4	Hexachlorocyclopentadiene	0.1	U	0.1	U				
88-06-2	2,4,6-Trichlorophenol	0.1	U	0.1	U				
95-95-4	2,4,5-Trichlorophenol	0.1	U	0.1	U				
91-58-7	2-Chloronaphthalene	0.1	U	0.1	U				
88-74-4	2-Nitroaniline	0.5	U	0.5	U				
131-11-3	Dimethylphthalate	0.1	U	0.1	U				
208-96-8	Acenaphthylene	0.1	U	0.1	U				
99-09-2	3-Nitroaniline	0.5	U	0.5	U				
83-32-9	Acenaphthene	0.1	U	0.1	U				
51-28-5	2,4-Dinitrophenol	0.5	U	0.5	U				
100-02-7	4-Nitrophenol	0.5	U	0.5	U				
132-64-9	Dibenzofuran	0.1	U	0.1	U				
121-14-2	2,4-Dinitrotoluene	0.1	U	0.1	U				
606-20-2	2,6-Dinitrotoluene	0.1	U	0.1	U				
84-66-2	Diethylphthalate	0.1	U	0.1	U				

*** Validation Complete ***

CEDAR CHEMICAL CORPORATION
WEST HELENA, ARKANSAS
SITE 4 PHASE II SURFACE SOIL DATA

SPLP-SVOA									
	SHORT ID --------->	4HA-9 (0-1')		4SB-10 (0-1')					
	ORIGINAL ID ----->	004S000901		004S001001					
	SAMPLE DATE ----->	01/11/95		01/11/95					
	DATE EXTRACTED -->	01/17/95		01/17/95					
	DATE ANALYZED --->	01/18/95		01/18/95					
	MATRIX ---------->	Soil		Soil					
	UNITS ---------->	MG/L		MG/L					
CAS #	Parameter	11462	VAL	11462	VAL				
7005-72-3	4-Chlorophenyl-phenylether	0.1	U	0.1	U				
86-73-7	Fluorene	0.1	U	0.1	U				
100-01-6	4-Nitroaniline	0.5	U	0.5	U				
534-52-1	4,6-Dinitro-2-methylphenol	0.5	U	0.5	U				
86-30-6	N-Nitrosodiphenylamine	0.1	U	0.1	U				
101-55-3	4-Bromophenyl-phenylether	0.1	U	0.1	U				
118-74-1	Hexachlorobenzene	0.1	U	0.1	U				
87-86-5	Pentachlorophenol	0.5	U	0.5	U				
85-01-8	Phenanthrene	0.1	U	0.1	U				
120-12-7	Anthracene	0.1	U	0.1	U				
206-44-0	Fluoranthene	0.1	U	0.1	U				
129-00-0	Pyrene	0.1	U	0.1	U				
85-68-7	Butylbenzylphthalate	0.1	U	0.1	U				
91-94-1	3,3'-Dichlorobenzidine	0.2	U	0.2	U				
56-55-3	Benzo(a)anthracene	0.1	U	0.1	U				
117-81-7	bis(2-Ethylhexyl)phthalate (BEHP)	0.1	U	0.1	U				
218-01-9	Chrysene	0.1	U	0.1	U				
117-84-0	Di-n-octylphthalate	0.1	U	0.1	U				
205-99-2	Benzo(b)fluoranthene	0.1	U	0.1	U				
207-08-9	Benzo(k)fluoranthene	0.1	U	0.1	U				
50-32-8	Benzo(a)pyrene	0.1	U	0.1	U				
193-39-5	Indeno(1,2,3-cd)pyrene	0.1	U	0.1	U				
53-70-3	Dibenz(a,h)anthracene	0.1	U	0.1	U				
191-24-2	Benzo(g,h,i)perylene	0.1	U	0.1	U				
88-85-7	Dinoseb	13.		0.1	U				
110-86-1	Pyridine	NR		NR					
1319-77-3	Cresols	0.2	U	0.2	U				
65-85-0	Benzoic acid	0.5	U	0.5	U				
106-47-8	4-Chloroaniline	0.2	U	0.2	U				
84-74-2	Di-n-butylphthalate	0.1	U	0.1	U				

*** Validation Complete ***

CEDAR CHEMICAL CORPORATION
WEST HELENA, ARKANSAS
SITE 4 PHASE II SURFACE SOIL DATA

SPLP-VOA

SHORT ID --------->	4HA-9 (0-1')		4SB-10 (0-1')				
ORIGINAL ID ----->	004S000901		004S001001				
SAMPLE DATE ----->	01/11/95		01/11/95				
DATE EXTRACTED -->	01/17/95		01/17/95				
DATE ANALYZED --->	01/17/95		01/17/95				
MATRIX ---------->	Soil		Soil				
UNITS ----------->	MG/L		MG/L				
CAS #	Parameter	11462 VAL	11462 VAL				
74-87-3	Chloromethane	0.1 U	0.1 U				
74-83-9	Bromomethane	0.1 U	0.1 U				
75-01-4	Vinyl chloride	0.1 U	0.1 U				
75-00-3	Chloroethane	0.1 U	0.1 U				
75-09-2	Methylene chloride	0.2 U	0.2 U				
67-64-1	Acetone	1. U	1. U				
75-15-0	Carbon disulfide	1. U	1. U				
75-35-4	1,1-Dichloroethene	0.05 U	0.05 U				
75-34-3	1,1-Dichloroethane	0.05 U	0.05 U				
156-60-5	trans-1,2-Dichloroethene	0.05 U	0.05 U				
67-66-3	Chloroform	0.05 U	0.05 U				
107-06-2	1,2-Dichloroethane	0.05 U	0.05 U				
78-93-3	2-Butanone (MEK)	1. U	1. U				
71-55-6	1,1,1-Trichloroethane	0.05 U	0.05 U				
56-23-5	Carbon tetrachloride	0.05 U	0.05 U				
108-05-4	Vinyl acetate	0.5 U	0.5 U				
75-27-4	Bromodichloromethane	0.05 U	0.05 U				
79-34-5	1,1,2,2-Tetrachloroethane	0.05 U	0.05 U				
78-87-5	1,2-Dichloropropane	0.05 U	0.05 U				
10061-02-6	trans-1,3-Dichloropropene	0.05 U	0.05 U				
79-01-6	Trichloroethene	0.05 U	0.05 U				
124-48-1	Dibromochloromethane	0.05 U	0.05 U				
79-00-5	1,1,2-Trichloroethane	0.05 U	0.05 U				
71-43-2	Benzene	0.05 U	0.05 U				
10061-01-5	cis-1,3-Dichloropropene	0.05 U	0.05 U				
110-75-8	2-Chloroethylvinylether	0.1 U	0.1 U				
75-25-2	Bromoform	0.05 U	0.05 U				
591-78-6	2-Hexanone	0.5 U	0.5 U				
108-10-1	4-Methyl-2-Pentanone (MIBK)	0.5 U	0.5 U				
127-18-4	Tetrachloroethene	0.05 U	0.05 U				
108-88-3	Toluene	0.14	0.05 U				
108-90-7	Chlorobenzene	0.05 U	0.05 U				
100-41-4	Ethylbenzene	0.05 U	0.05 U				
100-42-5	Styrene	0.05 U	0.05 U				
1330-20-7	Xylene (total)	0.1	0.05 U				

*** Validation Complete ***

CEDAR CHEMICAL CORPORATION
WEST HELENA, ARKANSAS
SITE 4 PHASE II SURFACE SOIL DATA

SVOA	SHORT ID --------->	4SB-1 (0-2')		4SB-2 (0-2')		4MW-3 (0-3')		4MW-4 (0-3')		4MW-4 (0-3')Dup		4SB-3 (0-2')	
	ORIGINAL ID ----->	004S000101		004S000201		004S000301		004S000401		004C000401		004S000301	
	SAMPLE DATE ----->	12/06/94		12/08/94		12/06/94		12/14/94		12/14/94		12/08/94	
	DATE EXTRACTED -->	12/12/94		12/12/94		12/12/94		12/22/94		12/22/94		12/12/94	
	DATE ANALYZED --->	12/14/94		12/16/94		12/14/94		12/22/94		12/23/94		12/15/94	
	MATRIX ----------->	Soil		Soil		Soil		Soil		Soil		Soil	
	UNITS ------------>	UG/KG		UG/KG		UG/KG		UG/KG		UG/KG		UG/KG	
CAS #	Parameter	11008	VAL	11008	VAL	11008	VAL	11097	VAL	11097	VAL	11008	VAL
108-95-2	Phenol	4000.	U	3300.	U	660.	U	660.	U	660.	U	13200.	U
111-44-4	bis(2-Chloroethyl)ether	4000.	U	3300.	U	660.	U	660.	U	660.	U	13200.	U
95-57-8	2-Chlorophenol	4000.	U	3300.	U	660.	U	660.	U	660.	U	13200.	U
541-73-1	1,3-Dichlorobenzene	4000.	U	3300.	U	660.	U	660.	U	660.	U	13200.	U
106-46-7	1,4-Dichlorobenzene	4000.	U	3300.	U	660.	U	660.	U	660.	U	13200.	U
100-51-6	Benzyl alcohol	7800.	U	6500.	U	1300.	U	1300.	U	1300.	U	26000.	U
95-50-1	1,2-Dichlorobenzene	4000.	U	3300.	U	660.	U	660.	U	660.	U	13200.	U
95-48-7	2-Methylphenol (o-Cresol)	4000.	U	3300.	U	660.	U	660.	U	660.	U	13200.	U
108-60-1	bis(2-chloroisopropyl) ether	4000.	U	3300.	U	660.	U	660.	U	660.	U	13200.	U
106-44-5	4-Methylphenol (p-Cresol)	4000.	U	3300.	U	660.	U	660.	U	660.	U	13200.	U
621-64-7	N-Nitroso-di-n-propylamine	4000.	U	3300.	U	660.	U	660.	U	660.	U	13200.	U
67-72-1	Hexachloroethane	4000.	U	3300.	U	660.	U	660.	U	660.	U	13200.	U
98-95-3	Nitrobenzene	4000.	U	3300.	U	660.	U	660.	U	660.	U	13200.	U
78-59-1	Isophorone	4000.	U	3300.	U	660.	U	660.	U	660.	U	13200.	U
88-75-5	2-Nitrophenol	4000.	U	3300.	U	660.	U	660.	U	660.	U	13200.	U
105-67-9	2,4-Dimethylphenol	4000.	U	3300.	U	660.	U	660.	U	660.	U	13200.	U
111-91-1	bis(2-Chloroethoxy)methane	4000.	U	3300.	U	660.	U	660.	U	660.	U	13200.	U
120-83-2	2,4-Dichlorophenol	4000.	U	3300.	U	660.	U	660.	U	660.	U	13200.	U
120-82-1	1,2,4-Trichlorobenzene	4000.	U	3300.	U	660.	U	660.	U	660.	U	13200.	U
91-20-3	Naphthalene	4000.	U	3300.	U	660.	U	660.	U	660.	U	13200.	U
87-68-3	Hexachlorobutadiene	4000.	U	3300.	U	660.	U	660.	U	660.	U	13200.	U
59-50-7	4-Chloro-3-methylphenol	7800.	U	6500.	U	1300.	U	1300.	U	1300.	U	26000.	U
91-57-6	2-Methylnaphthalene	4000.	U	3300.	U	660.	U	660.	U	660.	U	13200.	U
77-47-4	Hexachlorocyclopentadiene	4000.	U	3300.	U	660.	U	660.	U	660.	U	13200.	U
88-06-2	2,4,6-Trichlorophenol	4000.	U	3300.	U	660.	U	660.	U	660.	U	13200.	U
95-95-4	2,4,5-Trichlorophenol	4000.	U	3300.	U	660.	U	660.	U	660.	U	13200.	U
91-58-7	2-Chloronaphthalene	4000.	U	3300.	U	660.	U	660.	U	660.	U	13200.	U
88-74-4	2-Nitroaniline	20000.	U	16500.	U	3300.	U	3300.	U	3300.	U	66000.	U
131-11-3	Dimethylphthalate	4000.	U	3300.	U	660.	U	660.	U	660.	U	13200.	U
208-96-8	Acenaphthylene	4000.	U	3300.	U	660.	U	660.	U	660.	U	13200.	U
99-09-2	3-Nitroaniline	20000.	U	16500.	U	3300.	U	3300.	U	3300.	U	66000.	U
83-32-9	Acenaphthene	4000.	U	3300.	U	660.	U	660.	U	660.	U	13200.	U
51-28-5	2,4-Dinitrophenol	20000.	U	16500.	U	3300.	U	3300.	U	3300.	U	66000.	U
100-02-7	4-Nitrophenol	20000.	U	16500.	U	3300.	U	3300.	U	3300.	U	66000.	U
132-64-9	Dibenzofuran	4000.	U	3300.	U	660.	U	660.	U	660.	U	13200.	U
121-14-2	2,4-Dinitrotoluene	4000.	U	3300.	U	660.	U	660.	U	660.	U	13200.	U
606-20-2	2,6-Dinitrotoluene	4000.	U	3300.	U	660.	U	660.	U	660.	U	13200.	U
84-66-2	Diethylphthalate	4000.	U	3300.	U	660.	U	660.	U	660.	U	13200.	U

*** Validation Complete ***

CEDAR CHEMICAL CORPORATION
WEST HELENA, ARKANSAS
SITE 4 PHASE II SURFACE SOIL DATA

SVOA													
	SHORT ID --------->	4SB-1 (0-2')		4SB-2 (0-2')		4MW-3 (0-3')		4MW-4 (0-3')		4MW-4 (0-3')Dup		4SB-3 (0-2')	
	ORIGINAL ID ----->	004S000101		004S000201		004S000301		004S000401		004C000401		004S000301	
	SAMPLE DATE ----->	12/06/94		12/08/94		12/06/94		12/14/94		12/14/94		12/08/94	
	DATE EXTRACTED -->	12/12/94		12/12/94		12/12/94		12/22/94		12/22/94		12/12/94	
	DATE ANALYZED --->	12/14/94		12/16/94		12/14/94		12/22/94		12/23/94		12/15/94	
	MATRIX ---------->	Soil		Soil		Soil		Soil		Soil		Soil	
	UNITS ----------->	UG/KG		UG/KG		UG/KG		UG/KG		UG/KG		UG/KG	
CAS #	Parameter	11008	VAL	11008	VAL	11008	VAL	11097	VAL	11097	VAL	11008	VAL
7005-72-3	4-Chlorophenyl-phenylether	4000.	U	3300.	U	660.	U	660.	U	660.	U	13200.	U
86-73-7	Fluorene	4000.	U	3300.	U	660.	U	660.	U	660.	U	13200.	U
100-01-6	4-Nitroaniline	20000.	U	16500.	U	3300.	U	3300.	U	3300.	U	66000.	U
534-52-1	4,6-Dinitro-2-methylphenol	20000.	U	16500.	U	3300.	U	3300.	U	3300.	U	66000.	U
86-30-6	N-Nitrosodiphenylamine	4000.	U	3300.	U	660.	U	660.	U	660.	U	13200.	U
101-55-3	4-Bromophenyl-phenylether	4000.	U	3300.	U	660.	U	660.	U	660.	U	13200.	U
118-74-1	Hexachlorobenzene	4000.	U	3300.	U	660.	U	660.	U	660.	U	13200.	U
87-86-5	Pentachlorophenol	20000.	U	16500.	U	3300.	U	3300.	U	3300.	U	66000.	U
85-01-8	Phenanthrene	4000.	U	3300.	U	660.	U	660.	U	660.	U	13200.	U
120-12-7	Anthracene	4000.	U	3300.	U	660.	U	660.	U	660.	U	13200.	U
206-44-0	Fluoranthene	4000.	U	3300.	U	660.	U	660.	U	660.	U	13200.	U
129-00-0	Pyrene	4000.	U	3300.	U	660.	U	660.	U	660.	U	13200.	U
85-68-7	Butylbenzylphthalate	4000.	U	3300.	U	660.	U	660.	U	660.	U	13200.	U
91-94-1	3,3'-Dichlorobenzidine	7800.	U	6500.	U	1300.	U	1300.	U	1300.	U	26000.	U
56-55-3	Benzo(a)anthracene	4000.	U	3300.	U	660.	U	660.	U	660.	U	13200.	U
117-81-7	bis(2-Ethylhexyl)phthalate (BEHP)	4000.	U	3300.	U	660.	U	660.	U	660.	U	13200.	U
218-01-9	Chrysene	4000.	U	3300.	U	660.	U	660.	U	660.	U	13200.	U
117-84-0	Di-n-octylphthalate	4000.	U	3300.	U	660.	U	660.	U	660.	U	13200.	U
205-99-2	Benzo(b)fluoranthene	4000.	U	3300.	U	660.	U	660.	U	660.	U	13200.	U
207-08-9	Benzo(k)fluoranthene	4000.	U	3300.	U	660.	U	660.	U	660.	U	13200.	U
50-32-8	Benzo(a)pyrene	4000.	U	3300.	U	660.	U	660.	U	660.	U	13200.	U
193-39-5	Indeno(1,2,3-cd)pyrene	4000.	U	3300.	U	660.	U	660.	U	660.	U	13200.	U
53-70-3	Dibenz(a,h)anthracene	4000.	U	3300.	U	660.	U	660.	U	660.	U	13200.	U
191-24-2	Benzo(g,h,i)perylene	4000.	U	3300.	U	660.	U	660.	U	660.	U	13200.	U
88-85-7	Dinoseb	550000.		2310.	U	462.	U	95000.		90000.		95000.	
65-85-0	Benzoic acid	20000.	U	16500.	U	3300.	U	3300.	U	3300.	U	66000.	U
106-47-8	4-Chloroaniline	7800.	U	6500.	U	1300.	U	1300.	U	1300.	U	26000.	U
84-74-2	Di-n-butylphthalate	4000.	U	3300.	U	660.	U	660.	U	660.	U	13200.	U

*** Validation Complete ***

CEDAR CHEMICAL CORPORATION
WEST HELENA, ARKANSAS
SITE 4 PHASE II SURFACE SOIL DATA

VOA									
	SHORT ID --------->	4SB-1 (0-2')		4MW-3 (0-3')		4MW-4 (0-3')		4MW-4 (0-3')Dup	
	ORIGINAL ID ----->	004S000101		004S000301		004S000401		004C000401	
	SAMPLE DATE ----->	12/06/94		12/06/94		12/14/94		12/14/94	
	DATE EXTRACTED -->	12/11/94		12/11/94		12/21/94		12/21/94	
	DATE ANALYZED --->	12/11/94		12/11/94		12/21/94		12/21/94	
	MATRIX ---------->	Soil		Soil		Soil		Soil	
	UNITS ---------->	UG/KG		UG/KG		UG/KG		UG/KG	
CAS #	Parameter	11008	VAL	11008	VAL	11097	VAL	11097	VAL
74-87-3	Chloromethane	10.	U	10.	U	10.	U	10.	U
74-83-9	Bromomethane	10.	U	10.	U	10.	U	10.	U
75-01-4	Vinyl chloride	10.	U	10.	U	10.	U	10.	U
75-00-3	Chloroethane	10.	U	10.	U	10.	U	10.	U
75-09-2	Methylene chloride	20.	U	20.	U	20.	U	20.	U
67-64-1	Acetone	250.		100.	U	100.	U	100.	U
75-15-0	Carbon disulfide	100.	U	100.	U	100.	U	100.	U
75-35-4	1,1-Dichloroethene	5.	U	5.	U	5.	U	5.	U
75-34-3	1,1-Dichloroethane	5.	U	5.	U	5.	U	5.	U
156-60-5	trans-1,2-Dichloroethene	5.	U	5.	U	5.	U	5.	U
67-66-3	Chloroform	5.	U	5.	U	5.	U	5.	U
107-06-2	1,2-Dichloroethane	9.9		5.	U	5.	U	5.	U
78-93-3	2-Butanone (MEK)	130.		100.	U	100.	U	100.	U
71-55-6	1,1,1-Trichloroethane	5.	U	5.	U	5.	U	5.	U
56-23-5	Carbon tetrachloride	5.	U	5.	U	5.	U	5.	U
108-05-4	Vinyl acetate	50.	U	50.	U	50.	U	50.	U
75-27-4	Bromodichloromethane	5.	U	5.	U	5.	U	5.	U
79-34-5	1,1,2,2-Tetrachloroethane	5.	U	5.	U	5.	U	5.	U
78-87-5	1,2-Dichloropropane	5.	U	5.	U	5.	U	5.	U
10061-02-6	trans-1,3-Dichloropropene	5.	U	5.	U	5.	U	5.	U
79-01-6	Trichloroethene	5.	U	5.	U	5.	U	5.	U
124-48-1	Dibromochloromethane	5.	U	5.	U	5.	U	5.	U
79-00-5	1,1,2-Trichloroethane	5.	U	5.	U	5.	U	5.	U
71-43-2	Benzene	5.	U	5.	U	5.	U	5.	U
10061-01-5	cis-1,3-Dichloropropene	5.	U	5.	U	5.	U	5.	U
110-75-8	2-Chloroethylvinylether	10.	U	10.	U	10.	U	10.	U
75-25-2	Bromoform	5.	U	5.	U	5.	U	5.	U
591-78-6	2-Hexanone	50.	U	50.	U	50.	U	50.	U
108-10-1	4-Methyl-2-Pentanone (MIBK)	50.	U	50.	U	50.	U	50.	U
127-18-4	Tetrachloroethene	5.	U	5.	U	5.	U	5.	U
108-88-3	Toluene	32.		5.	U	7.6		6.2	
108-90-7	Chlorobenzene	5.	U	5.	U	5.	U	5.	U
100-41-4	Ethylbenzene	13.		5.	U	5.	U	5.	U
100-42-5	Styrene	5.	U	5.	U	5.	U	5.	U
1330-20-7	Xylene (total)	57.		5.	U	36.		33.	

*** Validation Complete ***

CEDAR CHEMICAL CORPORATION
WEST HELENA, ARKANSAS
SITE 4 PHASE II SUBSURFACE SOIL DATA

DCA

SHORT ID --------->	4SB-1 (0-2')	4SB-1 (10-12')	4SB-1 (22-24')	4SB-2 (0-4')	4SB-2 (4-8')	4SB-2 (20-24')
ORIGINAL ID ----->	CED4SB1A02	CED4SB1A12	CED4SB1A24	CED4SB2A04	CED4SB2A08	CED4SB2A24
SAMPLE DATE ----->	05/28/96	05/28/96	05/28/96	05/28/96	05/28/96	05/28/96
DATE ANALYZED --->	06/10/96	06/10/96	06/10/96	06/10/96	06/10/96	06/10/96
MATRIX ---------->	Soil	Soil	Soil	Soil	Soil	Soil
UNITS ---------->	ug/kg	ug/kg	ug/kg	ug/kg	ug/kg	ug/kg

CAS #	Parameter	G114-21	VAL	G114-21	VAL	G114-21	VAL	G114-21	VAL	G114-21	VAL	G114-21	VAL
95-76-1	3,4-Dichloroaniline	2100.		390.	U	410.	U	1400.		380.	U	390.	U

*** Validation Complete ***

CEDAR CHEMICAL CORPORATION
WEST HELENA, ARKANSAS
SITE 4 PHASE II SUBSURFACE SOIL DATA

DCA								
	SHORT ID --------->	4SB-3 (0-4')		4SB-3 (4-8')		4SB-3 (20-24')				
	ORIGINAL ID ----->	CED4SB3A04		CED4SB3A08		CED4SB3A24				
	SAMPLE DATE ----->	05/28/96		05/28/96		05/28/96				
	DATE ANALYZED --->	06/11/96		06/10/96		06/11/96				
	MATRIX ---------->	Soil		Soil		Soil				
	UNITS ---------->	ug/kg		ug/kg		ug/kg				
CAS #	Parameter	G114-21	VAL	G114-21	VAL	G114-21	VAL			
95-76-1	3,4-Dichloroaniline	17000.	U	1900.		10000.				

*** Validation Complete ***

CEDAR CHEMICAL CORPORATION
WEST HELENA, ARKANSAS
SITE 4 PHASE II SUBSURFACE SOIL DATA

PROPANIL	SHORT ID --------->	4SB-1 (0-2')	4SB-1 (10-12')	4SB-1 (22-24')	4SB-2 (0-4')	4SB-2 (4-8')	4SB-2 (20-24')
	ORIGINAL ID ----->	CED4SB1A02	CED4SB1A12	CED4SB1A24	CED4SB2A04	CED4SB2A08	CED4SB2A24
	SAMPLE DATE ----->	05/28/96	05/28/96	05/28/96	05/28/96	05/28/96	05/28/96
	DATE ANALYZED --->	06/10/96	06/10/96	06/10/96	06/10/96	06/10/96	06/10/96
	MATRIX ---------->	Soil	Soil	Soil	Soil	Soil	Soil
	UNITS ---------->	ug/kg	ug/kg	ug/kg	ug/kg	ug/kg	ug/kg

CAS #	Parameter	G114-21	VAL	G114-21	VAL	G114-21	VAL	G114-21	VAL	G114-21	VAL	G114-21	VAL
709-98-8	Propanil	350.	U	390.	U	410.	U	370.	U	380.	U	390.	U

*** Validation Complete ***

CEDAR CHEMICAL CORPORATION
WEST HELENA, ARKANSAS
SITE 4 PHASE II SUBSURFACE SOIL DATA

PROPANIL	SHORT ID --------->	4SB-3 (0-4')		4SB-3 (4-8')		4SB-3 (20-24')				
	ORIGINAL ID ----->	CED4SB3A04		CED4SB3A08		CED4SB3A24				
	SAMPLE DATE ----->	05/28/96		05/28/96		05/28/96				
	DATE ANALYZED --->	06/11/96		06/10/96		06/11/96				
	MATRIX ---------->	Soil		Soil		Soil				
	UNITS ---------->	ug/kg		ug/kg		ug/kg				
CAS #	Parameter	G114-21	VAL	G114-21	VAL	G114-21	VAL			
709-98-8	Propanil	130000.		370.	U	2000.				

*** Validation Complete ***

DATALCP3
07/22/99

CEDAR CHEMICAL CORPORATION
WEST HELENA, ARKANSAS
SITE 4 PHASE II SUBSURFACE SOIL DATA

PEST	SHORT ID --------->	4SB-1 (4-6')		4SB-1 (8-10')		4SB-2 (4-6')		4SB-2 (12-14')		4MW-3 (28-33')		4MW-3 (33-38')	
	ORIGINAL ID ----->	004S000103		004S000105		004S000203		004S000207		004S000306		004S000307	
	SAMPLE DATE ----->	12/06/94		12/06/94		12/08/94		12/08/94		12/06/94		12/06/94	
	DATE EXTRACTED -->	12/12/94		12/12/94		12/12/94		12/12/94		12/12/94		12/12/94	
	DATE ANALYZED --->	12/15/94		12/15/94		12/15/94		12/15/94		12/15/94		12/15/94	
	MATRIX ---------->	Soil		Soil		Soil		Soil		Soil		Soil	
	UNITS ---------->	UG/KG		UG/KG		UG/KG		UG/KG		UG/KG		UG/KG	
CAS #	Parameter	11008	VAL	11008	VAL	11008	VAL	11008	VAL	11008	VAL	11008	VAL
319-84-6	Alpha-BHC	2.	U	2.	U	2.	U	2.	U	2.	U	2.	U
319-85-7	Beta-BHC	4.	U	4.	U	4.	U	4.	U	4.	U	4.	U
319-86-8	Delta-BHC	6.	U	6.	U	6.	U	6.	U	6.	U	6.	U
58-89-9	gamma-BHC (Lindane)	2.7	U	2.7	U	2.7	U	2.7	U	2.7	U	2.7	U
76-44-8	Heptachlor	2.	U	2.	U	2.	U	2.	U	2.	U	2.	U
309-00-2	Aldrin	2.7	U	2.7	U	2.7	U	2.7	U	2.7	U	2.7	U
1024-57-3	Heptachlor Epoxide	56.	U	56.	U	56.	U	56.	U	56.	U	56.	U
959-98-8	Endosulfan I	9.4	U	9.4	U	9.4	U	9.4	U	9.4	U	9.4	U
60-57-1	Dieldrin	1.3	U	1.3	U	1.3	U	1.3	U	1.3	U	1.3	U
72-55-9	4,4'-DDE	2.7	U	2.7	U	2.7	U	2.7	U	2.7	U	2.7	U
72-20-8	Endrin	4.	U	4.	U	4.	U	4.	U	4.	U	4.	U
33213-65-9	Endosulfan II	2.7	U	2.7	U	2.7	U	2.7	U	2.7	U	2.7	U
72-54-8	4,4'-DDD	7.	U	7.	U	7.	U	7.	U	7.	U	7.	U
7421-93-4	Endrin aldehyde	15.	U	15.	U	15.	U	15.	U	15.	U	15.	U
1031-07-8	Endosulfan Sulfate	44.	U	44.	U	44.	U	44.	U	44.	U	44.	U
50-29-3	4,4'-DDT	8.	U	8.	U	8.	U	8.	U	8.	U	8.	U
72-43-5	Methoxychlor	120.	U	120.	U	120.	U	120.	U	120.	U	120.	U
57-74-9	Chlordane	9.4	U	9.4	U	9.4	U	9.4	U	9.4	U	9.4	U
8001-35-2	Toxaphene	160.	U	160.	U	160.	U	160.	U	160.	U	160.	U
12674-11-2	Aroclor-1016	60.	U	60.	U	60.	U	60.	U	60.	U	60.	U
11104-28-2	Aroclor-1221	180.	U	180.	U	180.	U	180.	U	180.	U	180.	U
11141-16-5	Aroclor-1232	32.	U	32.	U	32.	U	32.	U	32.	U	32.	U
53469-21-9	Aroclor-1242	44.	U	44.	U	44.	U	44.	U	44.	U	44.	U
12672-29-6	Aroclor-1248	170.	U	170.	U	170.	U	170.	U	170.	U	170.	U
11097-69-1	Aroclor-1254	80.	U	80.	U	80.	U	80.	U	80.	U	80.	U
11096-82-5	Aroclor-1260	24.	U	24.	U	24.	U	24.	U	24.	U	24.	U

*** Validation Complete ***

CEDAR CHEMICAL CORPORATION
WEST HELENA, ARKANSAS
SITE 4 PHASE II SUBSURFACE SOIL DATA

PEST	SHORT ID -------->	4MW-4 (8-13')		4MW-4 (18-23')		4MW-4 (23-28')		4SB-3 (6-8')		4SB-3 (12-14')	
	ORIGINAL ID ----->	004S000403		004S000405		004S000406		004S000304		004S000307	
	SAMPLE DATE ----->	12/14/94		12/14/94		12/15/94		12/08/94		12/08/94	
	DATE EXTRACTED -->	12/22/94		12/22/94		12/22/94		12/12/94		12/12/94	
	DATE ANALYZED --->	12/23/94		12/23/94		12/23/94		12/15/94		12/15/94	
	MATRIX ---------->	Soil		Soil		Soil		Soil		Soil	
	UNITS ----------->	UG/KG		UG/KG		UG/KG		UG/KG		UG/KG	
CAS #	Parameter	11134	VAL	11134	VAL	11134	VAL	11008	VAL	11008	VAL
319-84-6	Alpha-BHC	2.	U	2.	U	2.	U	20.	U	2.	U
319-85-7	Beta-BHC	4.	U	4.	U	4.	U	40.	U	4.	U
319-86-8	Delta-BHC	6.	U	6.	U	6.	U	60.	U	6.	U
58-89-9	gamma-BHC (Lindane)	2.7	U	2.7	U	2.7	U	27.	U	2.7	U
76-44-8	Heptachlor	2.	U	2.	U	2.	U	20.	U	2.	U
309-00-2	Aldrin	2.7	U	2.7	U	2.7	U	27.	U	2.7	U
1024-57-3	Heptachlor Epoxide	56.	U	56.	U	56.	U	560.	U	56.	U
959-98-8	Endosulfan I	9.4	U	9.4	U	9.4	U	94.	U	9.4	U
60-57-1	Dieldrin	1.3	U	1.3	U	1.3	U	13.	U	1.3	U
72-55-9	4,4'-DDE	2.7	U	2.7	U	2.7	U	27.	U	2.7	U
72-20-8	Endrin	4.	U	4.	U	4.	U	40.	U	4.	U
33213-65-9	Endosulfan II	2.7	U	2.7	U	2.7	U	27.	U	2.7	U
72-54-8	4,4'-DDD	7.	U	7.	U	7.	U	70.	U	7.	U
7421-93-4	Endrin aldehyde	15.	U	15.	U	15.	U	150.	U	15.	U
1031-07-8	Endosulfan Sulfate	44.	U	44.	U	44.	U	440.	U	44.	U
50-29-3	4,4'-DDT	8.	U	8.	U	8.	U	80.	U	8.	U
72-43-5	Methoxychlor	120.	U	120.	U	120.	U	1200.	U	120.	U
57-74-9	Chlordane	9.4	U	9.4	U	9.4	U	94.	U	9.4	U
8001-35-2	Toxaphene	160.	U	160.	U	160.	U	1600.	U	160.	U
12674-11-2	Aroclor-1016	60.	U	60.	U	60.	U	600.	U	60.	U
11104-28-2	Aroclor-1221	180.	U	180.	U	180.	U	1800.	U	180.	U
11141-16-5	Aroclor-1232	32.	U	32.	U	32.	U	320.	U	32.	U
53469-21-9	Aroclor-1242	44.	U	44.	U	44.	U	440.	U	44.	U
12672-29-6	Aroclor-1248	170.	U	170.	U	170.	U	1700.	U	170.	U
11097-69-1	Aroclor-1254	80.	U	80.	U	80.	U	800.	U	80.	U
11096-82-5	Aroclor-1260	24.	U	24.	U	24.	U	240.	U	24.	U

*** Validation Complete ***

CEDAR CHEMICAL CORPORATION
WEST HELENA, ARKANSAS
SITE 4 PHASE II SUBSURFACE SOIL DATA

SVOA	SHORT ID -------->	4SB-1 (4-6')		4SB-1 (8-10')		4SB-2 (4-6')		4SB-2 (12-14')		4MW-3 (28-33')		4MW-3 (33-38')	
	ORIGINAL ID ----->	004S000103		004S000105		004S000203		004S000207		004S000306		004S000307	
	SAMPLE DATE ----->	12/06/94		12/06/94		12/08/94		12/08/94		12/06/94		12/06/94	
	DATE EXTRACTED -->	12/12/94		12/12/94		12/12/94		12/12/94		12/12/94		12/12/94	
	DATE ANALYZED --->	12/16/94		12/14/94		12/15/94		12/15/94		12/14/94		12/14/94	
	MATRIX ---------->	Soil		Soil		Soil		Soil		Soil		Soil	
	UNITS ---------->	UG/KG		UG/KG		UG/KG		UG/KG		UG/KG		UG/KG	
CAS #	Parameter	11008	VAL	11008	VAL	11008	VAL	11008	VAL	11008	VAL	11008	VAL
108-95-2	Phenol	3300.	U	660.	U	660.	U	660.	U	660.	U	660.	U
111-44-4	bis(2-Chloroethyl)ether	3300.	U	660.	U	660.	U	660.	U	660.	U	660.	U
95-57-8	2-Chlorophenol	3300.	U	660.	U	660.	U	660.	U	660.	U	660.	U
541-73-1	1,3-Dichlorobenzene	3300.	U	660.	U	660.	U	660.	U	660.	U	660.	U
106-46-7	1,4-Dichlorobenzene	3300.	U	660.	U	660.	U	660.	U	660.	U	660.	U
100-51-6	Benzyl alcohol	6500.	U	1300.	U	1300.	U	1300.	U	1300.	U	1300.	U
95-50-1	1,2-Dichlorobenzene	3300.	U	660.	U	660.	U	660.	U	660.	U	660.	U
95-48-7	2-Methylphenol (o-Cresol)	3300.	U	660.	U	660.	U	660.	U	660.	U	660.	U
108-60-1	bis(2-chloroisopropyl) ether	3300.	U	660.	U	660.	U	660.	U	660.	U	660.	U
106-44-5	4-Methylphenol (p-Cresol)	3300.	U	660.	U	660.	U	660.	U	660.	U	660.	U
621-64-7	N-Nitroso-di-n-propylamine	3300.	U	660.	U	660.	U	660.	U	660.	U	660.	U
67-72-1	Hexachloroethane	3300.	U	660.	U	660.	U	660.	U	660.	U	660.	U
98-95-3	Nitrobenzene	3300.	U	660.	U	660.	U	660.	U	660.	U	660.	U
78-59-1	Isophorone	3300.	U	660.	U	660.	U	8800.		660.	U	660.	U
88-75-5	2-Nitrophenol	3300.	U	660.	U	660.	U	660.	U	660.	U	660.	U
105-67-9	2,4-Dimethylphenol	3300.	U	660.	U	660.	U	660.	U	660.	U	660.	U
111-91-1	bis(2-Chloroethoxy)methane	3300.	U	660.	U	660.	U	660.	U	660.	U	660.	U
120-83-2	2,4-Dichlorophenol	3300.	U	660.	U	660.	U	660.	U	660.	U	660.	U
120-82-1	1,2,4-Trichlorobenzene	3300.	U	660.	U	660.	U	660.	U	660.	U	660.	U
91-20-3	Naphthalene	3300.	U	660.	U	660.	U	660.	U	660.	U	660.	U
87-68-3	Hexachlorobutadiene	3300.	U	660.	U	660.	U	660.	U	660.	U	660.	U
59-50-7	4-Chloro-3-methylphenol	6500.	U	1300.	U	1300.	U	1300.	U	1300.	U	1300.	U
91-57-6	2-Methylnaphthalene	3300.	U	660.	U	660.	U	660.	U	660.	U	660.	U
77-47-4	Hexachlorocyclopentadiene	3300.	U	660.	U	660.	U	660.	U	660.	U	660.	U
88-06-2	2,4,6-Trichlorophenol	3300.	U	660.	U	660.	U	660.	U	660.	U	660.	U
95-95-4	2,4,5-Trichlorophenol	3300.	U	660.	U	660.	U	660.	U	660.	U	660.	U
91-58-7	2-Chloronaphthalene	3300.	U	660.	U	660.	U	660.	U	660.	U	660.	U
88-74-4	2-Nitroaniline	16500.	U	3300.	U	3300.	U	3300.	U	3300.	U	3300.	U
131-11-3	Dimethylphthalate	3300.	U	660.	U	660.	U	660.	U	660.	U	660.	U
208-96-8	Acenaphthylene	3300.	U	660.	U	660.	U	660.	U	660.	U	660.	U
99-09-2	3-Nitroaniline	16500.	U	3300.	U	3300.	U	3300.	U	3300.	U	3300.	U
83-32-9	Acenaphthene	3300.	U	660.	U	660.	U	660.	U	660.	U	660.	U
51-28-5	2,4-Dinitrophenol	16500.	U	3300.	U	3300.	U	3300.	U	3300.	U	3300.	U
100-02-7	4-Nitrophenol	16500.	U	3300.	U	3300.	U	3300.	U	3300.	U	3300.	U
132-64-9	Dibenzofuran	3300.	U	660.	U	660.	U	660.	U	660.	U	660.	U
121-14-2	2,4-Dinitrotoluene	3300.	U	660.	U	660.	U	660.	U	660.	U	660.	U
606-20-2	2,6-Dinitrotoluene	3300.	U	660.	U	660.	U	660.	U	660.	U	660.	U
84-66-2	Diethylphthalate	3300.	U	660.	U	660.	U	660.	U	660.	U	660.	U

*** Validation Complete ***

CEDAR CHEMICAL CORPORATION
WEST HELENA, ARKANSAS
SITE 4 PHASE II SUBSURFACE SOIL DATA

SVOA	SHORT ID --------->	4SB-1 (4-6')		4SB-1 (8-10')		4SB-2 (4-6')		4SB-2 (12-14')		4MW-3 (28-33')		4MW-3 (33-38')	
	ORIGINAL ID ----->	004S000103		004S000105		004S000203		004S000207		004S000306		004S000307	
	SAMPLE DATE ----->	12/06/94		12/06/94		12/08/94		12/08/94		12/06/94		12/06/94	
	DATE EXTRACTED -->	12/12/94		12/12/94		12/12/94		12/12/94		12/12/94		12/12/94	
	DATE ANALYZED --->	12/16/94		12/14/94		12/15/94		12/15/94		12/14/94		12/14/94	
	MATRIX ---------->	Soil		Soil		Soil		Soil		Soil		Soil	
	UNITS ---------->	UG/KG		UG/KG		UG/KG		UG/KG		UG/KG		UG/KG	
CAS #	Parameter	11008	VAL	11008	VAL	11008	VAL	11008	VAL	11008	VAL	11008	VAL
7005-72-3	4-Chlorophenyl-phenylether	3300.	U	660.	U	660.	U	660.	U	660.	U	660.	U
86-73-7	Fluorene	3300.	U	660.	U	660.	U	660.	U	660.	U	660.	U
100-01-6	4-Nitroaniline	16500.	U	3300.	U	3300.	U	3300.	U	3300.	U	3300.	U
534-52-1	4,6-Dinitro-2-methylphenol	16500.	U	3300.	U	3300.	U	3300.	U	3300.	U	3300.	U
86-30-6	N-Nitrosodiphenylamine	3300.	U	660.	U	660.	U	660.	U	660.	U	660.	U
101-55-3	4-Bromophenyl-phenylether	3300.	U	660.	U	660.	U	660.	U	660.	U	660.	U
118-74-1	Hexachlorobenzene	3300.	U	660.	U	660.	U	660.	U	660.	U	660.	U
87-86-5	Pentachlorophenol	16500.	U	3300.	U	3300.	U	3300.	U	3300.	U	3300.	U
85-01-8	Phenanthrene	3300.	U	660.	U	660.	U	660.	U	660.	U	660.	U
120-12-7	Anthracene	3300.	U	660.	U	660.	U	660.	U	660.	U	660.	U
206-44-0	Fluoranthene	3300.	U	660.	U	660.	U	660.	U	660.	U	660.	U
129-00-0	Pyrene	3300.	U	660.	U	660.	U	660.	U	660.	U	660.	U
85-68-7	Butylbenzylphthalate	3300.	U	660.	U	660.	U	660.	U	660.	U	660.	U
91-94-1	3,3'-Dichlorobenzidine	6500.	U	1300.	U	1300.	U	1300.	U	1300.	U	1300.	U
56-55-3	Benzo(a)anthracene	3300.	U	660.	U	660.	U	660.	U	660.	U	660.	U
117-81-7	bis(2-Ethylhexyl)phthalate (BEHP)	3300.	U	660.	U	660.	U	660.	U	660.	U	660.	U
218-01-9	Chrysene	3300.	U	660.	U	660.	U	660.	U	660.	U	660.	U
117-84-0	Di-n-octylphthalate	3300.	U	660.	U	660.	U	660.	U	660.	U	660.	U
205-99-2	Benzo(b)fluoranthene	3300.	U	660.	U	660.	U	660.	U	660.	U	660.	U
207-08-9	Benzo(k)fluoranthene	3300.	U	660.	U	660.	U	660.	U	660.	U	660.	U
50-32-8	Benzo(a)pyrene	3300.	U	660.	U	660.	U	660.	U	660.	U	660.	U
193-39-5	Indeno(1,2,3-cd)pyrene	3300.	U	660.	U	660.	U	660.	U	660.	U	660.	U
53-70-3	Dibenz(a,h)anthracene	3300.	U	660.	U	660.	U	660.	U	660.	U	660.	U
191-24-2	Benzo(g,h,i)perylene	3300.	U	660.	U	660.	U	660.	U	660.	U	660.	U
88-85-7	Dinoseb	360000.		462.	U	462.	U	462.	U	462.	U	462.	U
65-85-0	Benzoic acid	16500.	U	3300.	U	3300.	U	3300.	U	3300.	U	3300.	U
106-47-8	4-Chloroaniline	6500.	U	1300.	U	1300.	U	1300.	U	1300.	U	1300.	U
84-74-2	Di-n-butylphthalate	3300.	U	660.	U	660.	U	660.	U	660.	U	660.	U

*** Validation Complete ***

CEDAR CHEMICAL CORPORATION
WEST HELENA, ARKANSAS
SITE 4 PHASE II SUBSURFACE SOIL DATA

SVOA	SHORT ID --------->	4MW-4 (8-13')		4MW-4 (18-23')		4MW-4 (23-28')		4SB-3 (6-8')		4SB-3 (12-14')	
	ORIGINAL ID ----->	004S000403		004S000405		004S000406		004S000304		004S000307	
	SAMPLE DATE ----->	12/14/94		12/14/94		12/15/94		12/08/94		12/08/94	
	DATE EXTRACTED -->	12/22/94		12/22/94		12/22/94		12/12/94		12/13/94	
	DATE ANALYZED --->	12/23/94		12/23/94		12/23/94		12/15/94		12/16/94	
	MATRIX ---------->	Soil		Soil		Soil		Soil		Soil	
	UNITS ---------->	UG/KG		UG/KG		UG/KG		UG/KG		UG/KG	
CAS #	Parameter	11134	VAL	11134	VAL	11134	VAL	11008	VAL	11008	VAL
108-95-2	Phenol	660.	U	660.	U	660.	U	660.	U	660.	U
111-44-4	bis(2-Chloroethyl)ether	660.	U	660.	U	660.	U	660.	U	660.	U
95-57-8	2-Chlorophenol	660.	U	660.	U	660.	U	660.	U	660.	U
541-73-1	1,3-Dichlorobenzene	660.	U	660.	U	660.	U	660.	U	660.	U
106-46-7	1,4-Dichlorobenzene	660.	U	660.	U	660.	U	660.	U	660.	U
100-51-6	Benzyl alcohol	1300.	U	1300.	U	1300.	U	1300.	U	1300.	U
95-50-1	1,2-Dichlorobenzene	660.	U	660.	U	660.	U	660.	U	660.	U
95-48-7	2-Methylphenol (o-Cresol)	660.	U	660.	U	660.	U	660.	U	660.	U
108-60-1	bis(2-chloroisopropyl) ether	660.	U	660.	U	660.	U	660.	U	660.	U
106-44-5	4-Methylphenol (p-Cresol)	660.	U	660.	U	660.	U	660.	U	660.	U
621-64-7	N-Nitroso-di-n-propylamine	660.	U	660.	U	660.	U	660.	U	660.	U
67-72-1	Hexachloroethane	660.	U	660.	U	660.	U	660.	U	660.	U
98-95-3	Nitrobenzene	660.	U	660.	U	660.	U	660.	U	660.	U
78-59-1	Isophorone	660.	U	660.	U	660.	U	15000.		660.	U
88-75-5	2-Nitrophenol	660.	U	660.	U	660.	U	660.	U	660.	U
105-67-9	2,4-Dimethylphenol	660.	U	660.	U	660.	U	660.	U	660.	U
111-91-1	bis(2-Chloroethoxy)methane	660.	U	660.	U	660.	U	660.	U	660.	U
120-83-2	2,4-Dichlorophenol	660.	U	660.	U	660.	U	660.	U	660.	U
120-82-1	1,2,4-Trichlorobenzene	660.	U	660.	U	660.	U	660.	U	660.	U
91-20-3	Naphthalene	660.	U	660.	U	660.	U	660.	U	660.	U
87-68-3	Hexachlorobutadiene	660.	U	660.	U	660.	U	660.	U	660.	U
59-50-7	4-Chloro-3-methylphenol	1300.	U	1300.	U	1300.	U	1300.	U	1300.	U
91-57-6	2-Methylnaphthalene	660.	U	660.	U	660.	U	660.	U	660.	U
77-47-4	Hexachlorocyclopentadiene	660.	U	660.	U	660.	U	660.	U	660.	U
88-06-2	2,4,6-Trichlorophenol	660.	U	660.	U	660.	U	660.	U	660.	U
95-95-4	2,4,5-Trichlorophenol	660.	U	660.	U	660.	U	660.	U	660.	U
91-58-7	2-Chloronaphthalene	660.	U	660.	U	660.	U	660.	U	660.	U
88-74-4	2-Nitroaniline	3300.	U	3300.	U	3300.	U	3300.	U	3300.	U
131-11-3	Dimethylphthalate	660.	U	660.	U	660.	U	660.	U	660.	U
208-96-8	Acenaphthylene	660.	U	660.	U	660.	U	660.	U	660.	U
99-09-2	3-Nitroaniline	3300.	U	3300.	U	3300.	U	3300.	U	3300.	U
83-32-9	Acenaphthene	660.	U	660.	U	660.	U	660.	U	660.	U
51-28-5	2,4-Dinitrophenol	3300.	U	3300.	U	3300.	U	3300.	U	3300.	U
100-02-7	4-Nitrophenol	3300.	U	3300.	U	3300.	U	3300.	U	3300.	U
132-64-9	Dibenzofuran	660.	U	660.	U	660.	U	660.	U	660.	U
121-14-2	2,4-Dinitrotoluene	660.	U	660.	U	660.	U	660.	U	660.	U
606-20-2	2,6-Dinitrotoluene	660.	U	660.	U	660.	U	660.	U	660.	U
84-66-2	Diethylphthalate	660.	U	660.	U	660.	U	660.	U	660.	U

*** Validation Complete ***

CEDAR CHEMICAL CORPORATION
WEST HELENA, ARKANSAS
SITE 4 PHASE II SUBSURFACE SOIL DATA

SVOA	SHORT ID --------->	4MW-4 (8-13')		4MW-4 (18-23')		4MW-4 (23-28')		4SB-3 (6-8')		4SB-3 (12-14')	
	ORIGINAL ID ----->	004S000403		004S000405		004S000406		004S000304		004S000307	
	SAMPLE DATE ----->	12/14/94		12/14/94		12/15/94		12/08/94		12/08/94	
	DATE EXTRACTED -->	12/22/94		12/22/94		12/22/94		12/12/94		12/13/94	
	DATE ANALYZED --->	12/23/94		12/23/94		12/23/94		12/15/94		12/16/94	
	MATRIX ---------->	Soil		Soil		Soil		Soil		Soil	
	UNITS ---------->	UG/KG		UG/KG		UG/KG		UG/KG		UG/KG	
CAS #	Parameter	11134	VAL	11134	VAL	11134	VAL	11008	VAL	11008	VAL
7005-72-3	4-Chlorophenyl-phenylether	660.	U	660.	U	660.	U	660.	U	660.	U
86-73-7	Fluorene	660.	U	660.	U	660.	U	660.	U	660.	U
100-01-6	4-Nitroaniline	3300.	U	3300.	U	3300.	U	3300.	U	3300.	U
534-52-1	4,6-Dinitro-2-methylphenol	3300.	U	3300.	U	3300.	U	3300.	U	3300.	U
86-30-6	N-Nitrosodiphenylamine	660.	U	660.	U	660.	U	660.	U	660.	U
101-55-3	4-Bromophenyl-phenylether	660.	U	660.	U	660.	U	660.	U	660.	U
118-74-1	Hexachlorobenzene	660.	U	660.	U	660.	U	660.	U	660.	U
87-86-5	Pentachlorophenol	3300.	U	3300.	U	3300.	U	3300.	U	3300.	U
85-01-8	Phenanthrene	660.	U	660.	U	660.	U	660.	U	660.	U
120-12-7	Anthracene	660.	U	660.	U	660.	U	660.	U	660.	U
206-44-0	Fluoranthene	660.	U	660.	U	660.	U	660.	U	660.	U
129-00-0	Pyrene	660.	U	660.	U	660.	U	660.	U	660.	U
85-68-7	Butylbenzylphthalate	660.	U	660.	U	660.	U	660.	U	660.	U
91-94-1	3,3'-Dichlorobenzidine	1300.	U	1300.	U	1300.	U	1300.	U	1300.	U
56-55-3	Benzo(a)anthracene	660.	U	660.	U	660.	U	660.	U	660.	U
117-81-7	bis(2-Ethylhexyl)phthalate (BEHP)	660.	U	660.	U	660.	U	660.	U	660.	U
218-01-9	Chrysene	660.	U	660.	U	660.	U	660.	U	660.	U
117-84-0	Di-n-octylphthalate	660.	U	660.	U	660.	U	660.	U	660.	U
205-99-2	Benzo(b)fluoranthene	660.	U	660.	U	660.	U	660.	U	660.	U
207-08-9	Benzo(k)fluoranthene	660.	U	660.	U	660.	U	660.	U	660.	U
50-32-8	Benzo(a)pyrene	660.	U	660.	U	660.	U	660.	U	660.	U
193-39-5	Indeno(1,2,3-cd)pyrene	660.	U	660.	U	660.	U	660.	U	660.	U
53-70-3	Dibenz(a,h)anthracene	660.	U	660.	U	660.	U	660.	U	660.	U
191-24-2	Benzo(g,h,i)perylene	660.	U	660.	U	660.	U	660.	U	660.	U
88-85-7	Dinoseb	50000.		462.	U	462.	U	462.	U	462.	U
65-85-0	Benzoic acid	3300.	U	3300.	U	3300.	U	3300.	U	3300.	U
106-47-8	4-Chloroaniline	1300.	U	1300.	U	1300.	U	1300.	U	1300.	U
84-74-2	Di-n-butylphthalate	660.	U	660.	U	660.	U	660.	U	660.	U

*** Validation Complete ***

CEDAR CHEMICAL CORPORATION
WEST HELENA, ARKANSAS
SITE 4 PHASE II SUBSURFACE SOIL DATA

VOA		SHORT ID -------->	4SB-1 (4-6')		4SB-1 (8-10')		4MW-3 (28-33')		4MW-3 (33-38')		4MW-4 (8-13')		4MW-4 (18-23')	
		ORIGINAL ID ----->	004S000103		004S000105		004S000306		004S000307		004S000403		004S000405	
		SAMPLE DATE ----->	12/06/94		12/06/94		12/06/94		12/06/94		12/14/94		12/14/94	
		DATE EXTRACTED -->	12/11/94		12/11/94		12/11/94		12/11/94		12/23/94		12/23/94	
		DATE ANALYZED --->	12/11/94		12/11/94		12/11/94		12/11/94		12/23/94		12/23/94	
		MATRIX ---------->	Soil		Soil		Soil		Soil		Soil		Soil	
		UNITS ----------->	UG/KG		UG/KG		UG/KG		UG/KG		UG/KG		UG/KG	
CAS #	Parameter		11008	VAL	11008	VAL	11008	VAL	11008	VAL	11134	VAL	11134	VAL
74-87-3	Chloromethane		10.	U	10.	U	10.	U	10.	U	10.	U	10.	U
74-83-9	Bromomethane		10.	U	10.	U	10.	U	10.	U	10.	U	10.	U
75-01-4	Vinyl chloride		10.	U	10.	U	10.	U	10.	U	10.	U	10.	U
75-00-3	Chloroethane		10.	U	10.	U	10.	U	10.	U	10.	U	10.	U
75-09-2	Methylene chloride		20.	U	20.	U	20.	U	20.	U	20.	U	20.	U
67-64-1	Acetone		150.		4400.		100.	U	330.		190.		1000.	
75-15-0	Carbon disulfide		100.	U	100.	U	100.	U	100.	U	100.	U	100.	U
75-35-4	1,1-Dichloroethene		5.	U	5.	U	5.	U	5.	U	5.	U	5.	U
75-34-3	1,1-Dichloroethane		5.	U	5.	U	5.	U	5.	U	5.	U	5.	U
156-60-5	trans-1,2-Dichloroethene		5.	U	5.	U	5.	U	5.	U	5.	U	5.	U
67-66-3	Chloroform		5.	U	5.	U	5.	U	5.	U	5.	U	5.	U
107-06-2	1,2-Dichloroethane		5.	U	5.	U	340.		820.		5.	U	49.	
78-93-3	2-Butanone (MEK)		100.	U	100.	U	100.	U	100.	U	100.	U	100.	U
71-55-6	1,1,1-Trichloroethane		5.	U	5.	U	5.	U	5.	U	5.	U	5.	U
56-23-5	Carbon tetrachloride		5.	U	5.	U	5.	U	5.	U	5.	U	5.	U
108-05-4	Vinyl acetate		50.	U	50.	U	50.	U	50.	U	50.	U	50.	U
75-27-4	Bromodichloromethane		5.	U	5.	U	5.	U	5.	U	5.	U	5.	U
79-34-5	1,1,2,2-Tetrachloroethane		5.	U	5.	U	5.	U	5.	U	5.	U	5.	U
78-87-5	1,2-Dichloropropane		5.	U	5.	U	5.	U	5.	U	5.	U	5.	U
10061-02-6	trans-1,3-Dichloropropene		5.	U	5.	U	5.	U	5.	U	5.	U	5.	U
79-01-6	Trichloroethene		5.	U	5.	U	5.	U	5.	U	5.	U	5.	U
124-48-1	Dibromochloromethane		5.	U	5.	U	5.	U	5.	U	5.	U	5.	U
79-00-5	1,1,2-Trichloroethane		5.	U	5.	U	5.	U	5.	U	5.	U	5.	U
71-43-2	Benzene		5.	U	5.	U	5.	U	5.	U	5.	U	5.	U
10061-01-5	cis-1,3-Dichloropropene		5.	U	5.	U	5.	U	5.	U	5.	U	5.	U
110-75-8	2-Chloroethylvinylether		10.	U	10.	U	10.	U	10.	U	10.	U	10.	U
75-25-2	Bromoform		5.	U	5.	U	5.	U	5.	U	5.	U	5.	U
591-78-6	2-Hexanone		50.	U	50.	U	50.	U	50.	U	50.	U	50.	U
108-10-1	4-Methyl-2-Pentanone (MIBK)		50.	U	50.	U	50.	U	50.	U	50.	U	50.	U
127-18-4	Tetrachloroethene		5.	U	5.	U	5.	U	5.	U	5.	U	5.	U
108-88-3	Toluene		28.		5.	U	5.	U	5.	U	5.	U	5.	U
108-90-7	Chlorobenzene		5.	U	5.	U	5.	U	5.	U	5.	U	5.	U
100-41-4	Ethylbenzene		5.	U	5.	U	5.	U	5.	U	5.	U	5.	U
100-42-5	Styrene		5.	U	5.	U	5.	U	5.	U	5.	U	5.	U
1330-20-7	Xylene (total)		21.		5.	U	5.	U	5.	U	5.	U	5.	U

*** Validation Complete ***

CEDAR CHEMICAL CORPORATION
WEST HELENA, ARKANSAS
SITE 4 PHASE II SUBSURFACE SOIL DATA

VOA

SHORT ID --------->	4MW-4 (23-28')
ORIGINAL ID ----->	004S000406
SAMPLE DATE ----->	12/15/94
DATE EXTRACTED -->	12/23/94
DATE ANALYZED --->	12/23/94
MATRIX ---------->	Soil
UNITS ----------->	UG/KG

CAS #	Parameter	11134	VAL
74-87-3	Chloromethane	10.	U
74-83-9	Bromomethane	10.	U
75-01-4	Vinyl chloride	10.	U
75-00-3	Chloroethane	10.	U
75-09-2	Methylene chloride	20.	U
67-64-1	Acetone	100.	U
75-15-0	Carbon disulfide	100.	U
75-35-4	1,1-Dichloroethene	5.	U
75-34-3	1,1-Dichloroethane	5.	U
156-60-5	trans-1,2-Dichloroethene	5.	U
67-66-3	Chloroform	5.	U
107-06-2	1,2-Dichloroethane	5.	U
78-93-3	2-Butanone (MEK)	100.	U
71-55-6	1,1,1-Trichloroethane	5.	U
56-23-5	Carbon tetrachloride	5.	U
108-05-4	Vinyl acetate	50.	U
75-27-4	Bromodichloromethane	5.	U
79-34-5	1,1,2,2-Tetrachloroethane	5.	U
78-87-5	1,2-Dichloropropane	5.	U
10061-02-6	trans-1,3-Dichloropropene	5.	U
79-01-6	Trichloroethene	5.	U
124-48-1	Dibromochloromethane	5.	U
79-00-5	1,1,2-Trichloroethane	5.	U
71-43-2	Benzene	5.	U
10061-01-5	cis-1,3-Dichloropropene	5.	U
110-75-8	2-Chloroethylvinylether	10.	U
75-25-2	Bromoform	5.	U
591-78-6	2-Hexanone	50.	U
108-10-1	4-Methyl-2-Pentanone (MIBK)	50.	U
127-18-4	Tetrachloroethene	5.	U
108-88-3	Toluene	5.	U
108-90-7	Chlorobenzene	5.	U
100-41-4	Ethylbenzene	5.	U
100-42-5	Styrene	5.	U
1330-20-7	Xylene (total)	5.	U

*** Validation Complete ***

CEDAR CHEMICAL CORPORATION
WEST HELENA, ARKANSAS
SITE 4 PHASE III SUBSURFACE SOIL DATA

PCB

	SHORT ID	ORIGINAL ID	SAMPLE DATE	DATE EXTRACTED	DATE ANALYZED	MATRIX	UNITS
	SAI-2 (28-30')	SAIS000215	10/10/95	10/16/95	10/20/95	Soil	UG/KG
	SAI-5 (2-4')	SAIS000502	10/11/95	10/16/95	10/20/95	Soil	UG/KG
	SAI-6 (20-22')	SAIS000611	10/11/95	10/16/95	10/20/95	Soil	UG/KG
	SAI-6 (28-30')	SAIS000615	10/11/95	10/16/95	10/26/95	Soil	UG/KG
	SAI-9 (12-14')	SAIS000907	10/17/95	10/26/95	11/02/95	Soil	UG/KG
	SAI-9 (26-28')	SAIS000914	10/17/95	10/26/95	10/26/95	Soil	UG/KG

CAS #	Parameter	G114-11	VAL	G114-11	VAL	G114-11	VAL	G114-11	VAL	G114-11	VAL	G114-11	VAL
12674-11-2	Aroclor-1016	44.	U	39.	U	43.	U	41.	U	42.	U	43.	U
11104-28-2	Aroclor-1221	44.	U	39.	U	43.	U	41.	U	42.	U	43.	U
11141-16-5	Aroclor-1232	44.	U	39.	U	43.	U	41.	U	42.	U	43.	U
53469-21-9	Aroclor-1242	44.	U	39.	U	43.	U	41.	U	42.	U	43.	U
12672-29-6	Aroclor-1248	44.	U	39.	U	43.	U	41.	U	42.	U	43.	U
11097-69-1	Aroclor-1254	44.	U	39.	U	43.	U	41.	U	42.	U	43.	U
11096-82-5	Aroclor-1260	44.	U	39.	U	43.	U	41.	U	42.	U	43.	U

*** Validation Complete ***

CEDAR CHEMICAL CORPORATION
WEST HELENA, ARKANSAS
SITE 4 PHASE III SUBSURFACE SOIL DATA

PCB

SHORT ID --------->	SAI-23 (10-12')
ORIGINAL ID ----->	SAIS002308
SAMPLE DATE ----->	10/19/95
DATE EXTRACTED -->	10/26/95
DATE ANALYZED --->	10/26/95
MATRIX ---------->	Soil
UNITS ----------->	UG/KG

CAS #	Parameter	G114-11	VAL
12674-11-2	Aroclor-1016	41.	U
11104-28-2	Aroclor-1221	41.	U
11141-16-5	Aroclor-1232	41.	U
53469-21-9	Aroclor-1242	41.	U
12672-29-6	Aroclor-1248	41.	U
11097-69-1	Aroclor-1254	41.	U
11096-82-5	Aroclor-1260	41.	U

*** Validation Complete ***

CEDAR CHEMICAL CORPORATION
WEST HELENA, ARKANSAS
SITE 4 PHASE III SUBSURFACE SOIL DATA

PEST	SHORT ID -------->	SAI-2 (28-30')		SAI-5 (2-4')		SAI-6 (20-22')		SAI-6 (28-30')		SAI-9 (12-14')		SAI-9 (26-28')	
	ORIGINAL ID ----->	SAIS000215		SAIS000502		SAIS000611		SAIS000615		SAIS000907		SAIS000914	
	SAMPLE DATE ----->	10/10/95		10/11/95		10/11/95		10/11/95		10/17/95		10/17/95	
	DATE EXTRACTED -->	10/16/95		10/16/95		10/16/95		10/16/95		10/26/95		10/26/95	
	DATE ANALYZED --->	10/20/95		10/20/95		10/20/95		10/26/95		11/02/95		10/26/95	
	MATRIX ---------->	Soil		Soil		Soil		Soil		Soil		Soil	
	UNITS ---------->	UG/KG		UG/KG		UG/KG		UG/KG		UG/KG		UG/KG	
CAS #	Parameter	G114-11	VAL	G114-11	VAL	G114-11	VAL	G114-11	VAL	G114-11	VAL	G114-11	VAL
319-84-6	Alpha-BHC	4.4	U	3.9	U	4.3	U	4.1	U	4.2	U	4.3	U
319-85-7	Beta-BHC	4.4	U	3.9	U	4.3	U	4.1	U	4.2	U	4.3	U
319-86-8	Delta-BHC	4.4	U	3.9	U	4.3	U	4.1	U	4.2	U	4.3	U
58-89-9	gamma-BHC (Lindane)	4.4	U	4.7		4.3	U	4.1	U	4.2	U	4.3	U
76-44-8	Heptachlor	4.4	U	3.9	U	4.3	U	4.1	U	4.2	U	4.3	U
309-00-2	Aldrin	4.4	U	3.9	U	4.3	U	4.1	U	4.2	U	4.3	U
1024-57-3	Heptachlor Epoxide	4.4	U	3.9	U	4.3	U	4.1	U	4.2	U	4.3	U
959-98-8	Endosulfan I	4.4	U	3.9	U	4.3	U	4.1	U	4.2	U	4.3	U
60-57-1	Dieldrin	4.4	U	3.9	U	4.3	U	4.1	U	4.2	U	4.3	U
72-55-9	4,4'-DDE	4.4	U	3.9	U	4.3	U	4.1	U	4.2	U	4.3	U
72-20-8	Endrin	4.4	U	3.9	U	4.3	U	4.1	U	4.2	U	4.3	U
72-54-8	4,4'-DDD	4.4	U	3.9	U	4.3	U	4.1	U	4.2	U	4.3	U
33213-65-9	Endosulfan II	22.	U	19.	U	21.	U	21.	U	21.	U	21.	U
50-29-3	4,4'-DDT	4.4	U	3.9	U	4.3	U	4.1	U	4.2	U	4.3	U
72-43-5	Methoxychlor	22.	U	19.	U	21.	U	21.	U	21.	U	21.	U
8001-35-2	Toxaphene	44.	U	39.	U	43.	U	41.	U	42.	U	43.	U
57-74-9	Chlordane	44.	U	39.	U	43.	U	41.	U	42.	U	43.	U
7421-93-4	Endrin aldehyde	4.4	U	3.9	U	4.3	U	4.1	U	4.2	U	4.3	U
1031-07-8	Endosulfan Sulfate	4.4	U	3.9	U	4.3	U	4.1	U	4.2	U	4.3	U
53494-70-5	Endrin ketone	4.4	U	10.		4.3	U	4.1	U	4.2	U	4.3	U

*** Validation Complete ***

CEDAR CHEMICAL CORPORATION
WEST HELENA, ARKANSAS
SITE 4 PHASE III SUBSURFACE SOIL DATA

PEST

SHORT ID --------->	SAI-23 (10-12')
ORIGINAL ID ----->	SAIS002308
SAMPLE DATE ----->	10/19/95
DATE EXTRACTED -->	10/26/95
DATE ANALYZED --->	10/26/95
MATRIX ---------->	Soil
UNITS ----------->	UG/KG

CAS #	Parameter	G114-11	VAL
319-84-6	Alpha-BHC	4.1	U
319-85-7	Beta-BHC	4.1	U
319-86-8	Delta-BHC	4.1	U
58-89-9	gamma-BHC (Lindane)	30.	
76-44-8	Heptachlor	4.1	U
309-00-2	Aldrin	4.1	U
1024-57-3	Heptachlor Epoxide	4.1	U
959-98-8	Endosulfan I	4.1	U
60-57-1	Dieldrin	4.1	U
72-55-9	4,4'-DDE	4.1	U
72-20-8	Endrin	10.	
72-54-8	4,4'-DDD	4.1	U
33213-65-9	Endosulfan II	16.	
50-29-3	4,4'-DDT	4.1	U
72-43-5	Methoxychlor	520.	
8001-35-2	Toxaphene	41.	U
57-74-9	Chlordane	41.	U
7421-93-4	Endrin aldehyde	15.	
1031-07-8	Endosulfan Sulfate	4.1	U
53494-70-5	Endrin ketone	34.	

*** Validation Complete ***

CEDAR CHEMICAL CORPORATION
WEST HELENA, ARKANSAS
SITE 4 PHASE III SUBSURFACE SOIL DATA

SVOA	SHORT ID	SAI-2 (28-30')		SAI-5 (2-4')		SAI-6 (20-22')		SAI-6 (28-30')		SAI-9 (12-14')		SAI-9 (26-28')	
	ORIGINAL ID	SAIS000215		SAIS000502		SAIS000611		SAIS000615		SAIS000907		SAIS000914	
	SAMPLE DATE	10/10/95		10/11/95		10/11/95		10/11/95		10/17/95		10/17/95	
	DATE EXTRACTED	10/17/95		10/17/95		10/17/95		10/17/95		10/25/95		10/25/95	
	DATE ANALYZED	10/18/95		10/17/95		10/18/95		10/18/95		10/26/95		10/30/95	
	MATRIX	Soil		Soil		Soil		Soil		Soil		Soil	
	UNITS	UG/KG		UG/KG		UG/KG		UG/KG		UG/KG		UG/KG	
CAS #	Parameter	G114-11	VAL	G114-11	VAL	G114-11	VAL	G114-11	VAL	G114-11	VAL	G114-11	VAL
83-32-9	Acenaphthene	450.	U	400.	U	410.	U	390.	U	420.	U	390.	U
208-96-8	Acenaphthylene	450.	U	400.	U	410.	U	390.	U	420.	U	390.	U
120-12-7	Anthracene	450.	U	400.	U	410.	U	390.	U	420.	U	390.	U
56-55-3	Benzo(a)anthracene	450.	U	400.	U	410.	U	390.	U	420.	U	390.	U
50-32-8	Benzo(a)pyrene	450.	U	400.	U	410.	U	390.	U	420.	U	390.	U
205-99-2	Benzo(b)fluoranthene	450.	U	400.	U	410.	U	390.	U	420.	U	390.	U
191-24-2	Benzo(g,h,i)perylene	450.	U	400.	U	410.	U	390.	U	420.	U	390.	U
207-08-9	Benzo(k)fluoranthene	450.	U	400.	U	410.	U	390.	U	420.	U	390.	U
65-85-0	Benzoic acid	900.	U	800.	U	820.	U	780.	U	840.	U	790.	U
100-51-6	Benzyl alcohol	450.	U	400.	U	410.	U	390.	U	420.	U	390.	U
111-91-1	bis(2-Chloroethoxy)methane	450.	U	400.	U	410.	U	390.	U	420.	U	390.	U
111-44-4	bis(2-Chloroethyl)ether	450.	U	400.	U	410.	U	390.	U	420.	U	390.	U
39638-32-9	2,2'-Oxybis(2-chloro)propane	450.	U	400.	U	410.	U	390.	U	420.	U	390.	U
117-81-7	bis(2-Ethylhexyl)phthalate (BEHP)	450.	U	400.	U	410.	U	390.	U	420.	U	390.	U
101-55-3	4-Bromophenyl-phenylether	450.	U	400.	U	410.	U	390.	U	420.	U	390.	U
85-68-7	Butylbenzylphthalate	450.	U	400.	U	410.	U	390.	U	420.	U	390.	U
106-47-8	4-Chloroaniline	450.	U	400.	U	410.	U	390.	U	420.	U	390.	U
59-50-7	4-Chloro-3-methylphenol	450.	U	400.	U	410.	U	390.	U	420.	U	390.	U
91-58-7	2-Chloronaphthalene	450.	U	400.	U	410.	U	390.	U	420.	U	390.	U
95-57-8	2-Chlorophenol	450.	U	400.	U	410.	U	390.	U	420.	U	390.	U
7005-72-3	4-Chlorophenyl-phenylether	450.	U	400.	U	410.	U	390.	U	420.	U	390.	U
218-01-9	Chrysene	450.	U	400.	U	410.	U	390.	U	420.	U	390.	U
84-74-2	Di-n-butylphthalate	450.	U	400.	U	410.	U	390.	U	420.	U	390.	U
117-84-0	Di-n-octylphthalate	450.	U	400.	U	410.	U	390.	U	420.	U	390.	U
53-70-3	Dibenz(a,h)anthracene	450.	U	400.	U	410.	U	390.	U	420.	U	390.	U
132-64-9	Dibenzofuran	450.	U	400.	U	410.	U	390.	U	420.	U	390.	U
95-76-1	3,4-Dichloroaniline	450.	U	2800.		410.	U	390.	U	420.	U	390.	U
95-50-1	1,2-Dichlorobenzene	450.	U	400.	U	410.	U	390.	U	420.	U	390.	U
541-73-1	1,3-Dichlorobenzene	450.	U	400.	U	410.	U	390.	U	420.	U	390.	U
106-46-7	1,4-Dichlorobenzene	450.	U	400.	U	410.	U	390.	U	420.	U	390.	U
91-94-1	3,3'-Dichlorobenzidine	900.	U	800.	U	820.	U	780.	U	840.	U	790.	U
120-83-2	2,4-Dichlorophenol	450.	U	400.	U	410.	U	390.	U	420.	U	390.	U
84-66-2	Diethylphthalate	450.	U	400.	U	410.	U	390.	U	420.	U	390.	U
105-67-9	2,4-Dimethylphenol	450.	U	400.	U	410.	U	390.	U	420.	U	390.	U
131-11-3	Dimethylphthalate	450.	U	400.	U	410.	U	390.	U	420.	U	390.	U
534-52-1	4,6-Dinitro-2-methylphenol	2300.	U	2000.	U	2000.	U	2000.	U	2100.	U	2000.	U
51-28-5	2,4-Dinitrophenol	2300.	U	2000.	U	2000.	U	2000.	U	2100.	U	2000.	U
121-14-2	2,4-Dinitrotoluene	450.	U	400.	U	410.	U	390.	U	420.	U	390.	U

*** Validation Complete ***

CEDAR CHEMICAL CORPORATION
WEST HELENA, ARKANSAS
SITE 4 PHASE III SUBSURFACE SOIL DATA

SVOA	SHORT ID --------->	SAI-2 (28-30')		SAI-5 (2-4')		SAI-6 (20-22')		SAI-6 (28-30')		SAI-9 (12-14')		SAI-9 (26-28')	
	ORIGINAL ID ----->	SAIS000215		SAIS000502		SAIS000611		SAIS000615		SAIS000907		SAIS000914	
	SAMPLE DATE ----->	10/10/95		10/11/95		10/11/95		10/11/95		10/17/95		10/17/95	
	DATE EXTRACTED -->	10/17/95		10/17/95		10/17/95		10/17/95		10/25/95		10/25/95	
	DATE ANALYZED --->	10/18/95		10/17/95		10/18/95		10/18/95		10/26/95		10/30/95	
	MATRIX ---------->	Soil		Soil		Soil		Soil		Soil		Soil	
	UNITS ---------->	UG/KG		UG/KG		UG/KG		UG/KG		UG/KG		UG/KG	
CAS #	Parameter	G114-11	VAL	G114-11	VAL	G114-11	VAL	G114-11	VAL	G114-11	VAL	G114-11	VAL
606-20-2	2,6-Dinitrotoluene	450.	U	400.	U	410.	U	390.	U	420.	U	390.	U
88-85-7	Dinoseb	450.	U	40000.		410.	U	390.	U	40000.		890.	
206-44-0	Fluoranthene	450.	U	400.	U	410.	U	390.	U	420.	U	390.	U
86-73-7	Fluorene	450.	U	400.	U	410.	U	390.	U	420.	U	390.	U
118-74-1	Hexachlorobenzene	450.	U	400.	U	410.	U	390.	U	420.	U	390.	U
87-68-3	Hexachlorobutadiene	450.	U	400.	U	410.	U	390.	U	420.	U	390.	U
77-47-4	Hexachlorocyclopentadiene	900.	U	800.	U	820.	U	780.	U	840.	U	790.	U
67-72-1	Hexachloroethane	450.	U	400.	U	410.	U	390.	U	420.	U	390.	U
193-39-5	Indeno(1,2,3-cd)pyrene	450.	U	400.	U	410.	U	390.	U	420.	U	390.	U
78-59-1	Isophorone	450.	U	400.	U	410.	U	390.	U	420.	U	390.	U
91-57-6	2-Methylnaphthalene	450.	U	400.	U	410.	U	390.	U	420.	U	390.	U
95-48-7	2-Methylphenol (o-Cresol)	450.	U	400.	U	410.	U	390.	U	420.	U	390.	U
106-44-5	4-Methylphenol (p-Cresol)	450.	U	400.	U	410.	U	390.	U	420.	U	390.	U
621-64-7	N-Nitroso-di-n-propylamine	450.	U	400.	U	410.	U	390.	U	420.	U	390.	U
86-30-6	N-Nitrosodiphenylamine	450.	U	400.	U	410.	U	390.	U	420.	U	390.	U
91-20-3	Naphthalene	450.	U	400.	U	410.	U	390.	U	420.	U	390.	U
88-74-4	2-Nitroaniline	450.	U	400.	U	410.	U	390.	U	420.	U	390.	U
99-09-2	3-Nitroaniline	450.	U	400.	U	410.	U	390.	U	420.	U	390.	U
100-01-6	4-Nitroaniline	450.	U	400.	U	410.	U	390.	U	420.	U	390.	U
98-95-3	Nitrobenzene	450.	U	400.	U	410.	U	390.	U	420.	U	390.	U
88-75-5	2-Nitrophenol	450.	U	400.	U	410.	U	390.	U	420.	U	390.	U
100-02-7	4-Nitrophenol	2300.	U	2000.	U	2000.	U	2000.	U	2100.	U	2000.	U
87-86-5	Pentachlorophenol	2300.	U	2000.	U	2000.	U	2000.	U	2100.	U	2000.	U
85-01-8	Phenanthrene	450.	U	400.	U	410.	U	390.	U	420.	U	390.	U
108-95-2	Phenol	450.	U	400.	U	410.	U	390.	U	420.	U	390.	U
709-98-8	Propanil	450.	U	400.	U	410.	U	390.	U	420.	U	390.	U
129-00-0	Pyrene	450.	U	400.	U	410.	U	390.	U	420.	U	390.	U
120-82-1	1,2,4-Trichlorobenzene	450.	U	400.	U	410.	U	390.	U	420.	U	390.	U
95-95-4	2,4,5-Trichlorophenol	450.	U	400.	U	410.	U	390.	U	420.	U	390.	U
88-06-2	2,4,6-Trichlorophenol	450.	U	400.	U	410.	U	390.	U	420.	U	390.	U

*** Validation Complete ***

CEDAR CHEMICAL CORPORATION
WEST HELENA, ARKANSAS
SITE 4 PHASE III SUBSURFACE SOIL DATA

SVOA	SHORT ID	SAI-11 (2-4')	SAI-11 (12-14')	SAI-12 (0-2')	SAI-14 (6-8')	SAI-14 (28-30')	SAI-23 (10-12')
	ORIGINAL ID	SAIS001102	SAIS001107	SAIS001201	SAIS001404	SAIS001415	SAIS002308
	SAMPLE DATE	10/16/95	10/16/95	10/17/95	10/16/95	10/16/95	10/19/95
	DATE EXTRACTED	10/25/95	10/25/95	10/25/95	10/25/95	10/25/95	10/25/95
	DATE ANALYZED	10/26/95	10/26/95	10/26/95	10/26/95	10/26/95	10/26/95
	MATRIX	Soil	Soil	Soil	Soil	Soil	Soil
	UNITS	UG/KG	UG/KG	UG/KG	UG/KG	UG/KG	UG/KG

CAS #	Parameter	G114-11	VAL	G114-11	VAL	G114-11	VAL	G114-11	VAL	G114-11	VAL	G114-11	VAL
83-32-9	Acenaphthene	380.	U	390.	U	370.	U	380.	U	440.	U	420.	U
208-96-8	Acenaphthylene	380.	U	390.	U	370.	U	380.	U	440.	U	420.	U
120-12-7	Anthracene	380.	U	390.	U	370.	U	380.	U	440.	U	420.	U
56-55-3	Benzo(a)anthracene	380.	U	390.	U	370.	U	380.	U	440.	U	420.	U
50-32-8	Benzo(a)pyrene	380.	U	390.	U	370.	U	380.	U	440.	U	420.	U
205-99-2	Benzo(b)fluoranthene	380.	U	390.	U	370.	U	380.	U	440.	U	420.	U
191-24-2	Benzo(g,h,i)perylene	380.	U	390.	U	370.	U	380.	U	440.	U	420.	U
207-08-9	Benzo(k)fluoranthene	380.	U	390.	U	370.	U	380.	U	440.	U	420.	U
65-85-0	Benzoic acid	770.	U	780.	U	740.	U	760.	U	890.	U	500.	
100-51-6	Benzyl alcohol	380.	U	390.	U	370.	U	380.	U	440.	U	420.	U
111-91-1	bis(2-Chloroethoxy)methane	380.	U	390.	U	370.	U	380.	U	440.	U	420.	U
111-44-4	bis(2-Chloroethyl)ether	380.	U	390.	U	370.	U	380.	U	440.	U	420.	U
39638-32-9	2,2'-Oxybis(2-chloro)propane	380.	U	390.	U	370.	U	380.	U	440.	U	420.	U
117-81-7	bis(2-Ethylhexyl)phthalate (BEHP)	380.	U	390.	U	370.	U	380.	U	440.	U	420.	U
101-55-3	4-Bromophenyl-phenylether	380.	U	390.	U	370.	U	380.	U	440.	U	420.	U
85-68-7	Butylbenzylphthalate	380.	U	390.	U	370.	U	380.	U	440.	U	420.	U
106-47-8	4-Chloroaniline	1100.		390.	U	370.	U	380.	U	440.	U	1300.	
59-50-7	4-Chloro-3-methylphenol	380.	U	390.	U	370.	U	380.	U	440.	U	420.	U
91-58-7	2-Chloronaphthalene	380.	U	390.	U	370.	U	380.	U	440.	U	420.	U
95-57-8	2-Chlorophenol	380.	U	390.	U	370.	U	380.	U	440.	U	420.	U
7005-72-3	4-Chlorophenyl-phenylether	380.	U	390.	U	370.	U	380.	U	440.	U	420.	U
218-01-9	Chrysene	380.	U	390.	U	370.	U	380.	U	440.	U	420.	U
84-74-2	Di-n-butylphthalate	380.	U	390.	U	370.	U	380.	U	440.	U	420.	U
117-84-0	Di-n-octylphthalate	380.	U	390.	U	370.	U	380.	U	440.	U	420.	U
53-70-3	Dibenz(a,h)anthracene	380.	U	390.	U	370.	U	380.	U	440.	U	420.	U
132-64-9	Dibenzofuran	380.	U	390.	U	370.	U	380.	U	440.	U	420.	U
95-76-1	3,4-Dichloroaniline	530.		390.	U	370.	U	380.	U	440.	U	80000.	
95-50-1	1,2-Dichlorobenzene	380.	U	390.	U	370.	U	380.	U	440.	U	4500.	
541-73-1	1,3-Dichlorobenzene	380.	U	390.	U	370.	U	380.	U	440.	U	420.	U
106-46-7	1,4-Dichlorobenzene	380.	U	390.	U	370.	U	380.	U	440.	U	420.	U
91-94-1	3,3'-Dichlorobenzidine	770.	U	780.	U	740.	U	760.	U	890.	U	850.	U
120-83-2	2,4-Dichlorophenol	380.	U	390.	U	370.	U	380.	U	440.	U	420.	U
84-66-2	Diethylphthalate	380.	U	390.	U	370.	U	380.	U	440.	U	420.	U
105-67-9	2,4-Dimethylphenol	380.	U	390.	U	370.	U	380.	U	440.	U	420.	U
131-11-3	Dimethylphthalate	380.	U	390.	U	370.	U	380.	U	440.	U	420.	U
534-52-1	4,6-Dinitro-2-methylphenol	1900.	U	1900.	U	1800.	U	1900.	U	2200.	U	2100.	U
51-28-5	2,4-Dinitrophenol	1900.	U	1900.	U	1800.	U	1900.	U	2200.	U	2100.	U
121-14-2	2,4-Dinitrotoluene	380.	U	390.	U	370.	U	380.	U	440.	U	420.	U

*** Validation Complete ***

CEDAR CHEMICAL CORPORATION
WEST HELENA, ARKANSAS
SITE 4 PHASE III SUBSURFACE SOIL DATA

SVOA	SHORT ID -------->	SAI-11 (2-4')		SAI-11 (12-14')		SAI-12 (0-2')		SAI-14 (6-8')		SAI-14 (28-30')		SAI-23 (10-12')	
	ORIGINAL ID ----->	SAIS001102		SAIS001107		SAIS001201		SAIS001404		SAIS001415		SAIS002308	
	SAMPLE DATE ----->	10/16/95		10/16/95		10/17/95		10/16/95		10/16/95		10/19/95	
	DATE EXTRACTED -->	10/25/95		10/25/95		10/25/95		10/25/95		10/25/95		10/25/95	
	DATE ANALYZED --->	10/26/95		10/26/95		10/26/95		10/26/95		10/26/95		10/26/95	
	MATRIX ---------->	Soil		Soil		Soil		Soil		Soil		Soil	
	UNITS ----------->	UG/KG		UG/KG		UG/KG		UG/KG		UG/KG		UG/KG	
CAS #	Parameter	G114-11	VAL	G114-11	VAL	G114-11	VAL	G114-11	VAL	G114-11	VAL	G114-11	VAL
606-20-2	2,6-Dinitrotoluene	380.	U	390.	U	370.	U	380.	U	440.	U	420.	U
88-85-7	Dinoseb	57000.		10000.		370.	U	990.		440.	U	77000.	
206-44-0	Fluoranthene	380.	U	390.	U	370.	U	380.	U	440.	U	420.	U
86-73-7	Fluorene	380.	U	390.	U	370.	U	380.	U	440.	U	420.	U
118-74-1	Hexachlorobenzene	380.	U	390.	U	370.	U	380.	U	440.	U	420.	U
87-68-3	Hexachlorobutadiene	380.	U	390.	U	370.	U	380.	U	440.	U	420.	U
77-47-4	Hexachlorocyclopentadiene	770.	U	780.	U	740.	U	760.	U	890.	U	850.	U
67-72-1	Hexachloroethane	380.	U	390.	U	370.	U	380.	U	440.	U	420.	U
193-39-5	Indeno(1,2,3-cd)pyrene	380.	U	390.	U	370.	U	380.	U	440.	U	420.	U
78-59-1	Isophorone	380.	U	390.	U	370.	U	380.	U	440.	U	420.	U
91-57-6	2-Methylnaphthalene	380.	U	390.	U	370.	U	380.	U	440.	U	420.	U
95-48-7	2-Methylphenol (o-Cresol)	380.	U	390.	U	370.	U	380.	U	440.	U	420.	U
106-44-5	4-Methylphenol (p-Cresol)	380.	U	390.	U	370.	U	380.	U	440.	U	420.	U
621-64-7	N-Nitroso-di-n-propylamine	380.	U	390.	U	370.	U	380.	U	440.	U	420.	U
86-30-6	N-Nitrosodiphenylamine	380.	U	390.	U	370.	U	380.	U	440.	U	420.	U
91-20-3	Naphthalene	380.	U	390.	U	370.	U	380.	U	440.	U	420.	U
88-74-4	2-Nitroaniline	380.	U	390.	U	370.	U	380.	U	440.	U	420.	U
99-09-2	3-Nitroaniline	380.	U	390.	U	370.	U	380.	U	440.	U	420.	U
100-01-6	4-Nitroaniline	380.	U	390.	U	370.	U	380.	U	440.	U	420.	U
98-95-3	Nitrobenzene	380.	U	390.	U	370.	U	380.	U	440.	U	420.	U
88-75-5	2-Nitrophenol	380.	U	390.	U	370.	U	380.	U	440.	U	420.	U
100-02-7	4-Nitrophenol	1900.	U	1900.	U	1800.	U	1900.	U	2200.	U	2100.	U
87-86-5	Pentachlorophenol	1900.	U	1900.	U	1800.	U	1900.	U	2200.	U	2100.	U
85-01-8	Phenanthrene	380.	U	390.	U	370.	U	380.	U	440.	U	420.	U
108-95-2	Phenol	380.	U	390.	U	370.	U	380.	U	440.	U	420.	U
709-98-8	Propanil	380.	U	390.	U	370.	U	380.	U	440.	U	51000.	
129-00-0	Pyrene	380.	U	390.	U	370.	U	380.	U	440.	U	420.	U
120-82-1	1,2,4-Trichlorobenzene	380.	U	390.	U	370.	U	380.	U	440.	U	420.	U
95-95-4	2,4,5-Trichlorophenol	380.	U	390.	U	370.	U	380.	U	440.	U	420.	U
88-06-2	2,4,6-Trichlorophenol	380.	U	390.	U	370.	U	380.	U	440.	U	420.	U

*** Validation Complete ***

CEDAR CHEMICAL CORPORATION
WEST HELENA, ARKANSAS
SITE 4 PHASE III SUBSURFACE SOIL DATA

VOA	SHORT ID -------->	SAI-1 (2-4')		SAI-1 (32-34')		SAI-12 (0-2')		SAI-23 (10-12')		SAI-24 (10-12')		SAI-24 (28-30')	
	ORIGINAL ID ----->	SAIS000102		SAIS000117		SAIS001201		SAIS002308		SAIS002406		SAIS002415	
	SAMPLE DATE ----->	10/10/95		10/10/95		10/17/95		10/19/95		11/07/95		11/07/95	
	DATE EXTRACTED -->	10/26/95		10/20/95		10/31/95		10/24/95		11/14/95		11/14/95	
	DATE ANALYZED --->	10/26/95		10/20/95		10/31/95		10/24/95		11/14/95		11/14/95	
	MATRIX ---------->	Soil		Soil		Soil		Soil		Soil		Soil	
	UNITS ---------->	UG/KG		UG/KG		UG/KG		UG/KG		UG/KG		UG/KG	
CAS #	Parameter	G114-11	VAL	G114-11	VAL	G114-11	VAL	G114-11	VAL	G114-13	VAL	G114-13	VAL
67-64-1	Acetone	29.	U	31.	U	50.		5600.		30.	U	33.	U
71-43-2	Benzene	12.	U	12.	U	12.	U	220.		12.	U	13.	U
75-27-4	Bromodichloromethane	12.	U	12.	U	12.	U	17.		12.	U	13.	U
75-25-2	Bromoform	12.	U	12.	U	12.	U	100.		12.	U	13.	U
74-83-9	Bromomethane	12.	U	12.	U	12.	U	13.	U	12.	U	13.	U
78-93-3	2-Butanone (MEK)	29.		12.	U	12.	U	150.		12.	U	13.	U
75-15-0	Carbon disulfide	12.	U	12.	U	12.	U	13.	U	12.	U	13.	U
56-23-5	Carbon tetrachloride	12.	U	12.	U	12.	U	13.	U	12.	U	13.	U
108-90-7	Chlorobenzene	12.	U	12.	U	12.	U	37.		12.	U	13.	U
75-00-3	Chloroethane	12.	U	12.	U	12.	U	13.	U	12.	U	13.	U
110-75-8	2-Chloroethylvinylether	12.	U	12.	U	12.	U	13.	U	12.	U	13.	U
67-66-3	Chloroform	12.	U	12.	U	12.	U	160.		12.	U	13.	U
74-87-3	Chloromethane	12.	U	12.	U	12.	U	13.	U	12.	U	13.	U
124-48-1	Dibromochloromethane	12.	U	12.	U	12.	U	74.		12.	U	13.	U
95-50-1	1,2-Dichlorobenzene	12.	U	12.	U	12.	U	3400.		12.	U	13.	U
541-73-1	1,3-Dichlorobenzene	12.	U	12.	U	12.	U	13.	U	12.	U	13.	U
106-46-7	1,4-Dichlorobenzene	12.	U	12.	U	12.	U	56.		12.	U	13.	U
75-34-3	1,1-Dichloroethane	12.	U	12.	U	12.	U	13.	U	12.	U	13.	U
107-06-2	1,2-Dichloroethane	12.	U	12.	U	12.	U	1100.		12.	U	13.	U
75-35-4	1,1-Dichloroethene	12.	U	12.	U	12.	U	13.	U	12.	U	13.	U
156-59-2	cis-1,2-Dichloroethene	12.	U	12.	U	12.	U	13.	U	12.	U	13.	U
156-60-5	trans-1,2-Dichloroethene	12.	U	12.	U	12.	U	13.	U	12.	U	13.	U
78-87-5	1,2-Dichloropropane	12.	U	12.	U	12.	U	13.	U	12.	U	13.	U
10061-01-5	cis-1,3-Dichloropropene	12.	U	12.	U	12.	U	13.	U	12.	U	13.	U
10061-02-6	trans-1,3-Dichloropropene	12.	U	12.	U	12.	U	13.	U	12.	U	13.	U
100-41-4	Ethylbenzene	12.	U	12.	U	12.	U	1800.		12.	U	13.	U
75-69-4	Trichlorofluoromethane	12.	U	12.	U	12.	U	13.	U	12.	U	13.	U
591-78-6	2-Hexanone	12.	U	12.	U	12.	U	14.		12.	U	13.	U
108-10-1	4-Methyl-2-Pentanone (MIBK)	12.	U	12.	U	12.	U	13.	U	12.	U	13.	U
75-09-2	Methylene chloride	54.		12.	U	12.	U	40.		26.		13.	U
100-42-5	Styrene	12.	U	12.	U	12.	U	180.		12.	U	13.	U
79-34-5	1,1,2,2-Tetrachloroethane	12.	U	12.	U	12.	U	13.	U	12.	U	13.	U
127-18-4	Tetrachloroethene	12.	U	12.	U	12.	U	13.	U	12.	U	13.	U
108-88-3	Toluene	12.	U	12.	U	12.	U	13.	U	12.	U	13.	U
71-55-6	1,1,1-Trichloroethane	12.	U	12.	U	12.	U	13.	U	12.	U	13.	U
79-00-5	1,1,2-Trichloroethane	12.	U	12.	U	12.	U	13.	U	12.	U	13.	U
79-01-6	Trichloroethene	12.	U	12.	U	12.	U	13.	U	12.	U	13.	U
108-05-4	Vinyl acetate	12.	U	12.	U	12.	U	13.	U	12.	U	13.	U

*** Validation Complete ***

CEDAR CHEMICAL CORPORATION
WEST HELENA, ARKANSAS
SITE 4 PHASE III SUBSURFACE SOIL DATA

VOA													
	SHORT ID --------->	SAI-1 (2-4')		SAI-1 (32-34')		SAI-12 (0-2')		SAI-23 (10-12')		SAI-24 (10-12')		SAI-24 (28-30')	
	ORIGINAL ID ----->	SAIS000102		SAIS000117		SAIS001201		SAIS002308		SAIS002406		SAIS002415	
	SAMPLE DATE ----->	10/10/95		10/10/95		10/17/95		10/19/95		11/07/95		11/07/95	
	DATE EXTRACTED -->	10/26/95		10/20/95		10/31/95		10/24/95		11/14/95		11/14/95	
	DATE ANALYZED --->	10/26/95		10/20/95		10/31/95		10/24/95		11/14/95		11/14/95	
	MATRIX ---------->	Soil		Soil		Soil		Soil		Soil		Soil	
	UNITS ---------->	UG/KG		UG/KG		UG/KG		UG/KG		UG/KG		UG/KG	
CAS #	Parameter	G114-11	VAL	G114-11	VAL	G114-11	VAL	G114-11	VAL	G114-13	VAL	G114-13	VAL
75-01-4	Vinyl chloride	12.	U	12.	U	12.	U	13.	U	12.	U	13.	U
1330-20-7	Xylene (total)	12.	U	12.	U	12.	U	4700.		12.	U	13.	U
95-47-6	o-Xylene	12.	U	12.	U	12.	U	5900.		12.	U	13.	U

*** Validation Complete ***

CEDAR CHEMICAL CORPORATION
WEST HELENA, ARKANSAS
SITE 4 PHASE III SUBSURFACE SOIL DATA

VOA	SHORT ID	SAI-25 (12-14')	SAI-25 (28-30')	SAI-26 (12-14')	SAI-26 (28-30')	SAI-27 (2-4')	SAI-27 (28-30')
	ORIGINAL ID	SAIS002507	SAIS002515	SAIS002607	SAIS002615	SAIS002702	SAIS002715
	SAMPLE DATE	11/07/95	11/07/95	11/08/95	11/08/95	11/08/95	11/08/95
	DATE EXTRACTED	11/14/95	11/14/95	11/14/95	11/14/95	11/14/95	11/14/95
	DATE ANALYZED	11/14/95	11/15/95	11/15/95	11/15/95	11/15/95	11/15/95
	MATRIX	Soil	Soil	Soil	Soil	Soil	Soil
	UNITS	UG/KG	UG/KG	UG/KG	UG/KG	UG/KG	UG/KG

CAS #	Parameter	G114-13	VAL	G114-13	VAL	G114-13	VAL	G114-13	VAL	G114-13	VAL	G114-13	VAL
67-64-1	Acetone	41.		32.	U	33.	U	32.	U	56.		32.	U
71-43-2	Benzene	18.		13.	U	13.	U	13.	U	12.	U	13.	U
75-27-4	Bromodichloromethane	13.	U	13.	U	13.	U	13.	U	12.	U	13.	U
75-25-2	Bromoform	13.	U	13.	U	13.	U	13.	U	12.	U	13.	U
74-83-9	Bromomethane	13.	U	13.	U	13.	U	13.	U	12.	U	13.	U
78-93-3	2-Butanone (MEK)	13.	U	13.	U	13.	U	13.	U	12.	U	13.	U
75-15-0	Carbon disulfide	13.	U	13.	U	13.	U	13.	U	12.	U	13.	U
56-23-5	Carbon tetrachloride	13.	U	13.	U	13.	U	13.	U	12.	U	13.	U
108-90-7	Chlorobenzene	13.	U	13.	U	13.	U	13.	U	12.	U	13.	U
75-00-3	Chloroethane	13.	U	13.	U	13.	U	13.	U	12.	U	13.	U
110-75-8	2-Chloroethylvinylether	13.	U	13.	U	13.	U	13.	U	12.	U	13.	U
67-66-3	Chloroform	13.	U	13.	U	13.	U	13.	U	12.	U	13.	U
74-87-3	Chloromethane	13.	U	13.	U	13.	U	13.	U	12.	U	13.	U
124-48-1	Dibromochloromethane	13.	U	13.	U	13.	U	13.	U	12.	U	13.	U
95-50-1	1,2-Dichlorobenzene	13.	U	13.	U	13.	U	13.	U	12.	U	13.	U
541-73-1	1,3-Dichlorobenzene	13.	U	13.	U	13.	U	13.	U	12.	U	13.	U
106-46-7	1,4-Dichlorobenzene	13.	U	13.	U	13.	U	13.	U	12.	U	13.	U
75-34-3	1,1-Dichloroethane	13.	U	13.	U	13.	U	13.	U	12.	U	13.	U
107-06-2	1,2-Dichloroethane	13.	U	13.	U	13.	U	13.	U	12.	U	13.	U
75-35-4	1,1-Dichloroethene	13.	U	13.	U	13.	U	13.	U	12.	U	13.	U
156-59-2	cis-1,2-Dichloroethene	13.	U	13.	U	13.	U	13.	U	12.	U	13.	U
156-60-5	trans-1,2-Dichloroethene	13.	U	13.	U	13.	U	13.	U	12.	U	13.	U
78-87-5	1,2-Dichloropropane	13.	U	13.	U	13.	U	13.	U	12.	U	13.	U
10061-01-5	cis-1,3-Dichloropropene	13.	U	13.	U	13.	U	13.	U	12.	U	13.	U
10061-02-6	trans-1,3-Dichloropropene	13.	U	13.	U	13.	U	13.	U	12.	U	13.	U
100-41-4	Ethylbenzene	13.	U	13.	U	13.	U	13.	U	12.	U	13.	U
75-69-4	Trichlorofluoromethane	13.	U	13.	U	13.	U	13.	U	12.	U	13.	U
591-78-6	2-Hexanone	13.	U	13.	U	13.	U	13.	U	12.	U	13.	U
108-10-1	4-Methyl-2-Pentanone (MIBK)	13.	U	13.	U	13.	U	13.	U	12.	U	13.	U
75-09-2	Methylene chloride	56.		29.		13.	U	35.		30.		35.	
100-42-5	Styrene	13.	U	13.	U	13.	U	13.	U	12.	U	13.	U
79-34-5	1,1,2,2-Tetrachloroethane	13.	U	13.	U	13.	U	13.	U	12.	U	13.	U
127-18-4	Tetrachloroethene	13.	U	13.	U	13.	U	13.	U	12.	U	13.	U
108-88-3	Toluene	13.	U	13.	U	13.	U	13.	U	12.	U	13.	U
71-55-6	1,1,1-Trichloroethane	13.	U	13.	U	13.	U	13.	U	12.	U	13.	U
79-00-5	1,1,2-Trichloroethane	13.	U	13.	U	13.	U	13.	U	12.	U	13.	U
79-01-6	Trichloroethene	13.	U	13.	U	13.	U	13.	U	12.	U	13.	U
108-05-4	Vinyl acetate	13.	U	13.	U	13.	U	13.	U	12.	U	13.	U

*** Validation Complete ***

CEDAR CHEMICAL CORPORATION
WEST HELENA, ARKANSAS
SITE 4 PHASE III SUBSURFACE SOIL DATA

VOA	SHORT ID -------->	SAI-25 (12-14')	SAI-25 (28-30')	SAI-26 (12-14')	SAI-26 (28-30')	SAI-27 (2-4')	SAI-27 (28-30')
	ORIGINAL ID ----->	SAIS002507	SAIS002515	SAIS002607	SAIS002615	SAIS002702	SAIS002715
	SAMPLE DATE ----->	11/07/95	11/07/95	11/08/95	11/08/95	11/08/95	11/08/95
	DATE EXTRACTED -->	11/14/95	11/14/95	11/14/95	11/14/95	11/14/95	11/14/95
	DATE ANALYZED --->	11/14/95	11/15/95	11/15/95	11/15/95	11/15/95	11/15/95
	MATRIX ---------->	Soil	Soil	Soil	Soil	Soil	Soil
	UNITS ---------->	UG/KG	UG/KG	UG/KG	UG/KG	UG/KG	UG/KG
CAS #	Parameter	G114-13 VAL	G114-13 VAL	G114-13 VAL	G114-13 VAL	G114-13 VAL	G114-13 VAL
75-01-4	Vinyl chloride	13. U	13. U	13. U	13. U	12. U	13. U
1330-20-7	Xylene (total)	13. U	13. U	13. U	13. U	12. U	13. U
95-47-6	o-Xylene	13. U	13. U	13. U	13. U	12. U	13. U

*** Validation Complete ***

CEDAR CHEMICAL CORPORATION
WEST HELENA, ARKANSAS
SITE 4 PHASE III SUBSURFACE SOIL DATA

VOA					
	SHORT ID -------->	SAI-28 (12-14')		SAI-28 (30-32')	
	ORIGINAL ID ----->	SAIS002807		SAIS002816	
	SAMPLE DATE ----->	11/08/95		11/08/95	
	DATE EXTRACTED -->	11/14/95		11/14/95	
	DATE ANALYZED --->	11/15/95		11/15/95	
	MATRIX ---------->	Soil		Soil	
	UNITS ----------->	UG/KG		UG/KG	
CAS #	Parameter	G114-13	VAL	G114-13	VAL
67-64-1	Acetone	31.	U	32.	U
71-43-2	Benzene	12.	U	13.	U
75-27-4	Bromodichloromethane	12.	U	13.	U
75-25-2	Bromoform	12.	U	13.	U
74-83-9	Bromomethane	12.	U	13.	U
78-93-3	2-Butanone (MEK)	12.	U	13.	U
75-15-0	Carbon disulfide	12.	U	13.	U
56-23-5	Carbon tetrachloride	12.	U	13.	U
108-90-7	Chlorobenzene	12.	U	13.	U
75-00-3	Chloroethane	12.	U	13.	U
110-75-8	2-Chloroethylvinylether	12.	U	13.	U
67-66-3	Chloroform	12.	U	13.	U
74-87-3	Chloromethane	12.	U	13.	U
124-48-1	Dibromochloromethane	12.	U	13.	U
95-50-1	1,2-Dichlorobenzene	12.	U	13.	U
541-73-1	1,3-Dichlorobenzene	12.	U	13.	U
106-46-7	1,4-Dichlorobenzene	12.	U	13.	U
75-34-3	1,1-Dichloroethane	12.	U	13.	U
107-06-2	1,2-Dichloroethane	12.	U	13.	U
75-35-4	1,1-Dichloroethene	12.	U	13.	U
156-59-2	cis-1,2-Dichloroethene	12.	U	13.	U
156-60-5	trans-1,2-Dichloroethene	12.	U	13.	U
78-87-5	1,2-Dichloropropane	12.	U	13.	U
10061-01-5	cis-1,3-Dichloropropene	12.	U	13.	U
10061-02-6	trans-1,3-Dichloropropene	12.	U	13.	U
100-41-4	Ethylbenzene	12.	U	13.	U
75-69-4	Trichlorofluoromethane	12.	U	13.	U
591-78-6	2-Hexanone	12.	U	13.	U
108-10-1	4-Methyl-2-Pentanone (MIBK)	12.	U	13.	U
75-09-2	Methylene chloride	33.		35.	
100-42-5	Styrene	12.	U	13.	U
79-34-5	1,1,2,2-Tetrachloroethane	12.	U	13.	U
127-18-4	Tetrachloroethene	12.	U	13.	U
108-88-3	Toluene	12.	U	13.	U
71-55-6	1,1,1-Trichloroethane	12.	U	13.	U
79-00-5	1,1,2-Trichloroethane	12.	U	13.	U
79-01-6	Trichloroethene	12.	U	13.	U
108-05-4	Vinyl acetate	12.	U	13.	U

*** Validation Complete ***

CEDAR CHEMICAL CORPORATION
WEST HELENA, ARKANSAS
SITE 4 PHASE III SUBSURFACE SOIL DATA

VOA								
	SHORT ID -------->	SAI-28 (12-14')		SAI-28 (30-32')				
	ORIGINAL ID ----->	SAIS002807		SAIS002816				
	SAMPLE DATE ----->	11/08/95		11/08/95				
	DATE EXTRACTED -->	11/14/95		11/14/95				
	DATE ANALYZED --->	11/15/95		11/15/95				
	MATRIX ---------->	Soil		Soil				
	UNITS ----------->	UG/KG		UG/KG				
CAS #	Parameter	G114-13	VAL	G114-13	VAL			
75-01-4	Vinyl chloride	12.	U	13.	U			
1330-20-7	Xylene (total)	12.	U	13.	U			
95-47-6	o-Xylene	12.	U	13.	U			

*** Validation Complete ***

CEDAR CHEMICAL CORPORATION
WEST HELENA, ARKANSAS
SITE 5 PHASE I SURFACE SOIL DATA

PEST											
	SHORT ID --------->	5SB-1 (16-18')		5SB-2 (16-18')		5SB-3 (16-18')					
	ORIGINAL ID ----->	CED5SB1-1		CED5SB2-1		CED5SB31					
	SAMPLE DATE ----->	09/07/93		09/08/93		09/30/93					
	DATE ANALYZED --->	09/17/93		09/16/93		10/21/93					
	MATRIX ---------->	Soil		Soil		Soil					
	UNITS ----------->	UG/KG		UG/KG		UG/KG					
CAS #	Parameter	E006	VAL	E003	VAL	E014	VAL				
1024-57-3	Heptachlor Epoxide	69.	U	69.	U	70.	U				
1031-07-8	Endosulfan Sulfate	55.	U	55.	U	56.	U				
309-00-2	Aldrin	3.3	U	3.3	U	3.4	U				
319-84-6	Alpha-BHC	2.5	U	3.7		2.5	U				
319-85-7	Beta-BHC	5.	U	5.	U	5.1	U				
319-86-8	Delta-BHC	7.5	U	7.5	U	7.6	U				
33213-65-9	Endosulfan II	3.3	U	12.		3.4	U				
50-29-3	4,4'-DDT	10.	U	10.	U	10.	U				
5103-71-9	alpha-Chlordane	12.	U	12.	U	12.	U				
5103-74-2	gamma-Chlordane	12.	U	12.	U	12.	U				
53494-70-5	Endrin ketone	20.	U	20.	U	20.	U				
58-89-9	gamma-BHC (Lindane)	3.3	U	3.3	U	3.4	U				
60-57-1	Dieldrin	1.7	U	1.7	U	1.7	U				
72-20-8	Endrin	5.	U	5.	U	5.1	U				
72-43-5	Methoxychlor	150.	U	150.	U	150.	U				
72-54-8	4,4'-DDD	9.1	U	9.2	U	9.3	U				
72-55-9	4,4'-DDE	3.3	U	3.3	U	3.4	U				
76-44-8	Heptachlor	2.5	U	2.5	U	2.5	U				
8001-35-2	Toxaphene	200.	U	200.	U	200.	U				
959-98-8	Endosulfan I	12.	U	12.	U	12.	U				

*** Validation Complete ***

CEDAR CHEMICAL CORPORATION
WEST HELENA, ARKANSAS
SITE 5 PHASE I SURFACE SOIL DATA

RCRA METAL											
	SHORT ID --------->	5SB-1 (16-18')		5SB-2 (16-18')		5SB-3 (16-18')					
	ORIGINAL ID ----->	CED5SB1-1		CED5SB2-1		CED5SB31					
	SAMPLE DATE ----->	09/07/93		09/08/93		09/30/93					
	DATE ANALYZED --->	10/01/93		10/01/93		10/21/93					
	MATRIX ---------->	Soil		Soil		Soil					
	UNITS ---------->	MG/KG		MG/KG		MG/KG					
CAS #	Parameter	E006	VAL	E003	VAL	E014	VAL				
7440-38-2	Arsenic (As)	7.4		7.6		8.5					
7440-39-3	Barium (Ba)	129.		168.		126.					
7440-43-9	Cadmium (Cd)	0.38	U	0.36	U	0.25	U				
7440-47-3	Chromium (Cr)	9.6		11.7		9.1					
7439-92-1	Lead (Pb)	8.4		9.4		9.5					
7439-97-6	Mercury (Hg)	0.11	U	0.12	U	0.12	U				
7782-49-2	Selenium (Se)	0.62	U	0.6	U	0.63	U				
7440-22-4	Silver (Ag)	0.38	U	0.36	U	0.38	U				

*** Validation Complete ***

CEDAR CHEMICAL CORPORATION
WEST HELENA, ARKANSAS
SITE 5 PHASE I SURFACE SOIL DATA

SVOA											
	SHORT ID -------->	5SB-1 (16-18')		5SB-2 (16-18')		5SB-3 (16-18')					
	ORIGINAL ID ----->	CED5SB11		CED5SB2-1		CED5SB31					
	SAMPLE DATE ----->	09/07/93		09/08/93		09/30/93					
	DATE ANALYZED --->	10/14/93		10/06/93		10/25/93					
	MATRIX ---------->	Soil		Soil		Soil					
	UNITS ----------->	UG/KG		UG/KG		UG/KG					
CAS #	Parameter	E006	VAL	E003	VAL	E014	VAL				
100-01-6	4-Nitroaniline	4200.	U	1600.	U	4200.	U				
100-02-7	4-Nitrophenol	4200.	U	4100.	U	4200.	U				
100-51-6	Benzyl alcohol	830.	U	1600.	U	840.	U				
101-55-3	4-Bromophenyl-phenylether	830.	U	820.	U	840.	U				
105-67-9	2,4-Dimethylphenol	830.	U	820.	U	840.	U				
106-44-5	4-Methylphenol (p-Cresol)	830.	U	820.	U	840.	U				
106-46-7	1,4-Dichlorobenzene	830.	U	820.	U	840.	U				
106-47-8	4-Chloroaniline	830.	U	1600.	U	840.	U				
108-60-1	bis(2-chloroisopropyl) ether	830.	U	820.	U	840.	U				
108-95-2	Phenol	830.	U	820.	U	840.	U				
111-44-4	bis(2-Chloroethyl)ether	830.	U	820.	U	840.	U				
111-91-1	bis(2-Chloroethoxy)methane	830.	U	820.	U	840.	U				
117-81-7	bis(2-Ethylhexyl)phthalate (BEHP)	830.	U	820.	U	840.	U				
117-84-0	Di-n-octylphthalate	830.	U	820.	U	840.	U				
118-74-1	Hexachlorobenzene	830.	U	820.	U	840.	U				
120-12-7	Anthracene	830.	U	820.	U	840.	U				
120-82-1	1,2,4-Trichlorobenzene	830.	U	820.	U	840.	U				
120-83-2	2,4-Dichlorophenol	830.	U	820.	U	840.	U				
121-14-2	2,4-Dinitrotoluene	830.	U	820.	U	840.	U				
129-00-0	Pyrene	830.	U	820.	U	840.	U				
131-11-3	Dimethylphthalate	830.	U	820.	U	840.	U				
132-64-9	Dibenzofuran	830.	U	820.	U	840.	U				
191-24-2	Benzo(g,h,i)perylene	830.	U	NR		840.	U				
193-39-5	Indeno(1,2,3-cd)pyrene	830.	U	820.	U	840.	U				
205-99-2	Benzo(b)fluoranthene	830.	U	820.	U	840.	U				
206-44-0	Fluoranthene	830.	U	820.	U	840.	U				
207-08-9	Benzo(k)fluoranthene	830.	U	820.	U	840.	U				
208-96-8	Acenaphthylene	830.	U	820.	U	840.	U				
218-01-9	Chrysene	830.	U	820.	U	840.	U				
50-32-8	Benzo(a)pyrene	830.	U	820.	U	840.	U				
51-28-5	2,4-Dinitrophenol	4200.	U	23000.		4200.	U				
534-52-1	4,6-Dinitro-2-methylphenol	4200.	U	200.		4200.	U				
53-70-3	Dibenz(a,h)anthracene	830.	U	NR		840.	U				
541-73-1	1,3-Dichlorobenzene	830.	U	820.	U	840.	U				
56-55-3	Benzo(a)anthracene	830.	U	820.	U	840.	U				
59-50-7	4-Chloro-3-methylphenol	830.	U	1600.	U	840.	U				
606-20-2	2,6-Dinitrotoluene	830.	U	820.	U	840.	U				
621-64-7	N-Nitroso-di-n-propylamine	830.	U	820.	U	840.	U				
65-85-0	Benzoic acid	4200.	U	4100.	U	4200.	U				

*** Validation Complete ***

CEDAR CHEMICAL CORPORATION
WEST HELENA, ARKANSAS
SITE 5 PHASE I SURFACE SOIL DATA

SVOA											
	SHORT ID --------->	5SB-1 (16-18')		5SB-2 (16-18')		5SB-3 (16-18')					
	ORIGINAL ID ----->	CED5SB11		CED5SB2-1		CED5SB31					
	SAMPLE DATE ----->	09/07/93		09/08/93		09/30/93					
	DATE ANALYZED --->	10/14/93		10/06/93		10/25/93					
	MATRIX ---------->	Soil		Soil		Soil					
	UNITS ----------->	UG/KG		UG/KG		UG/KG					
CAS #	Parameter	E006	VAL	E003	VAL	E014	VAL				
67-72-1	Hexachloroethane	830.	U	820.	U	840.	U				
7005-72-3	4-Chlorophenyl-phenylether	830.	U	820.	U	840.	U				
709-98-8	Propanil	830.	U	820.	U	840.	U				
77-47-4	Hexachlorocyclopentadiene	830.	U	820.	U	840.	U				
78-59-1	Isophorone	830.	U	820.	U	840.	U				
83-32-9	Acenaphthene	830.	U	820.	U	840.	U				
84-66-2	Diethylphthalate	830.	U	820.	U	840.	U				
84-74-2	Di-n-butylphthalate	830.	U	820.	U	840.	U				
85-01-8	Phenanthrene	830.	U	820.	U	840.	U				
85-68-7	Butylbenzylphthalate	830.	U	820.	U	840.	U				
86-30-6	N-Nitrosodiphenylamine	830.	U	820.	U	840.	U				
86-73-7	Fluorene	830.	U	820.	U	840.	U				
87-68-3	Hexachlorobutadiene	830.	U	820.	U	840.	U				
87-86-5	Pentachlorophenol	4200.	U	4100.	U	4200.	U				
88-06-2	2,4,6-Trichlorophenol	830.	U	820.	U	840.	U				
88-74-4	2-Nitroaniline	4200.	U	4100.	U	4200.	U				
88-75-5	2-Nitrophenol	830.	U	820.	U	840.	U				
88-85-7	Dinoseb	4200.	U	170000.		4200.	U				
91-20-3	Naphthalene	830.	U	820.	U	840.	U				
91-57-6	2-Methylnaphthalene	830.	U	820.	U	840.	U				
91-58-7	2-Chloronaphthalene	830.	U	820.	U	840.	U				
91-94-1	3,3'-Dichlorobenzidine	1700.	U	1600.	U	1700.	U				
95-48-7	2-Methylphenol (o-Cresol)	830.	U	820.	U	840.	U				
95-50-1	1,2-Dichlorobenzene	830.	U	820.	U	840.	U				
95-57-8	2-Chlorophenol	830.	U	820.	U	840.	U				
95-76-1	3,4-Dichloroaniline	830.	U	820.	U	840.	U				
95-95-4	2,4,5-Trichlorophenol	4200.	U	820.	U	4200.	U				
98-95-3	Nitrobenzene	830.	U	820.	U	840.	U				
99-09-2	3-Nitroaniline	4200.	U	4100.	U	4200.	U				

*** Validation Complete ***

CEDAR CHEMICAL CORPORATION
WEST HELENA, ARKANSAS
SITE 5 PHASE I SURFACE SOIL DATA

VOA												
	SHORT ID --------->	5SB-1 (16-18')		5SB-2 (16-18')		5SB-3 (16-18')						
	ORIGINAL ID ----->	CED5SB1-1		CED5SB2-1		CED5SB31						
	SAMPLE DATE ----->	09/07/93		09/08/93		09/30/93						
	DATE ANALYZED --->	09/15/93		09/16/93		10/08/93						
	MATRIX ---------->	Soil		Soil		Soil						
	UNITS ----------->	UG/KG		UG/KG		UG/KG						
CAS #	Parameter	E006	VAL	E003	VAL	E014	VAL					
100-41-4	Ethylbenzene	6.	U	3.		7.	U					
100-42-5	Styrene	6.	U	6.	U	7.	U					
10061-01-5	cis-1,3-Dichloropropene	6.	U	6.	U	7.	U					
10061-02-6	trans-1,3-Dichloropropene	6.	U	6.	U	7.	U					
107-06-2	1,2-Dichloroethane	6.	U	6.	U	7.	U					
108-05-4	Vinyl acetate	6.	U	6.	U	7.	U					
108-10-1	4-Methyl-2-Pentanone (MIBK)	59.	U	35.		1.						
108-88-3	Toluene	6.	U	210.		7.	U					
108-90-7	Chlorobenzene	6.	U	6.	U	7.	U					
124-48-1	Dibromochloromethane	6.	U	6.	U	7.	U					
127-18-4	Tetrachloroethene	6.	U	6.	U	7.	U					
1330-20-7	Xylene (total)	6.	U	31.		7.	U					
540-59-0	1,2-Dichloroethene (total)	6.	U	6.	U	7.	U					
56-23-5	Carbon tetrachloride	6.	U	6.	U	7.	U					
591-78-6	2-Hexanone	59.	U	61.	U	66.	U					
67-64-1	Acetone	12.	U	6800.		13.	U					
67-66-3	Chloroform	6.	U	6.	U	7.	U					
71-43-2	Benzene	6.	U	6.	U	7.	U					
71-55-6	1,1,1-Trichloroethane	6.	U	6.	U	7.	U					
74-83-9	Bromomethane	12.	U	12.	U	13.	U					
74-87-3	Chloromethane	12.	U	12.	U	13.	U					
75-00-3	Chloroethane	12.	U	12.	U	13.	U					
75-01-4	Vinyl chloride	6.	U	6.	U	7.	U					
75-09-2	Methylene chloride	18.		8.		21.						
75-15-0	Carbon disulfide	6.	U	6.	U	7.	U					
75-25-2	Bromoform	6.	U	6.	U	7.	U					
75-27-4	Bromodichloromethane	6.	U	6.	U	7.	U					
75-34-3	1,1-Dichloroethane	6.	U	6.	U	7.	U					
75-35-4	1,1-Dichloroethene	6.	U	6.	U	7.	U					
78-87-5	1,2-Dichloropropane	6.	U	6.	U	7.	U					
78-93-3	2-Butanone (MEK)	12.	U	21000.		13.	U					
79-00-5	1,1,2-Trichloroethane	6.	U	6.	U	7.	U					
79-01-6	Trichloroethene	6.	U	6.	U	7.	U					
79-34-5	1,1,2,2-Tetrachloroethane	6.	U	6.	U	7.	U					

*** Validation Complete ***

CEDAR CHEMICAL CORPORATION
WEST HELENA, ARKANSAS
SITE 5 PHASE I SUBSURFACE SOIL DATA

PEST	SHORT ID ---------->	5SB-1 (21-23')		5SB-2 (21-23')		5SB-3 (23-25')				
	ORIGINAL ID ----->	CED5SB1-2		CED5SB2-2		CED5SB32				
	SAMPLE DATE ----->	09/07/93		09/08/93		09/30/93				
	DATE ANALYZED --->	09/17/93		09/16/93		10/21/93				
	MATRIX ---------->	Soil		Soil		Soil				
	UNITS ---------->	UG/KG		UG/KG		UG/KG				
CAS #	Parameter	E006	VAL	E003	VAL	E014	VAL			
1024-57-3	Heptachlor Epoxide	71.	U	73.	U	71.	U			
1031-07-8	Endosulfan Sulfate	57.	U	58.	U	57.	U			
309-00-2	Aldrin	3.4	U	3.5	U	3.4	U			
319-84-6	Alpha-BHC	2.6	U	6.8		2.6	U			
319-85-7	Beta-BHC	5.2	U	5.3	U	5.2	U			
319-86-8	Delta-BHC	7.7	U	7.9	U	7.7	U			
33213-65-9	Endosulfan II	3.4	U	5.9		3.4	U			
50-29-3	4,4'-DDT	10.	U	11.	U	10.	U			
5103-71-9	alpha-Chlordane	12.	U	12.	U	12.	U			
5103-74-2	gamma-Chlordane	12.	U	12.	U	12.	U			
53494-70-5	Endrin ketone	21.	U	21.	U	21.	U			
58-89-9	gamma-BHC (Lindane)	3.4	U	6.2		3.4	U			
60-57-1	Dieldrin	1.7	U	1.8	U	1.7	U			
72-20-8	Endrin	5.2	U	5.3	U	5.2	U			
72-43-5	Methoxychlor	150.	U	160.	U	150.	U			
72-54-8	4,4'-DDD	9.5	U	9.7	U	9.4	U			
72-55-9	4,4'-DDE	3.4	U	3.5	U	3.4	U			
76-44-8	Heptachlor	2.6	U	2.6	U	2.6	U			
8001-35-2	Toxaphene	210.	U	210.	U	210.	U			
959-98-8	Endosulfan I	12.	U	12.	U	12.	U			

*** Validation Complete ***

CEDAR CHEMICAL CORPORATION
WEST HELENA, ARKANSAS
SITE 5 PHASE I SUBSURFACE SOIL DATA

RCRA METAL									
	SHORT ID --------->	5SB-1 (21-23')		5SB-2 (21-23')		5SB-3 (23-25')			
	ORIGINAL ID ----->	CED5SB1-2		CED5SB2-2		CED5SB32			
	SAMPLE DATE ----->	09/07/93		09/08/93		09/30/93			
	DATE ANALYZED --->	10/01/93		10/01/93		10/21/93			
	MATRIX ---------->	Soil		Soil		Soil			
	UNITS ----------->	MG/KG		MG/KG		MG/KG			
CAS #	Parameter	E006	VAL	E003	VAL	E014	VAL		
7440-38-2	Arsenic (As)	9.1		7.9		9.7			
7440-39-3	Barium (Ba)	147.		134.		141.			
7440-43-9	Cadmium (Cd)	0.38	U	0.38	U	0.4			
7440-47-3	Chromium (Cr)	11.2		10.4		10.2			
7439-92-1	Lead (Pb)	10.4		8.3		10.			
7439-97-6	Mercury (Hg)	0.12	U	0.11	U	0.13	U		
7782-49-2	Selenium (Se)	0.63	U	0.63	U	0.65	U		
7440-22-4	Silver (Ag)	0.38	U	0.38	U	0.39	U		

*** Validation Complete ***

CEDAR CHEMICAL CORPORATION
WEST HELENA, ARKANSAS
SITE 5 PHASE I SUBSURFACE SOIL DATA

SVOA		SHORT ID --------->	5SB-1 (21-23')		5SB-2 (21-23')		5SB-3 (23-25')	
		ORIGINAL ID ----->	CED5SB12		CED5SB2-2		CED5SB32	
		SAMPLE DATE ----->	09/07/93		09/08/93		09/30/93	
		DATE ANALYZED --->	10/14/93		10/06/93		10/24/93	
		MATRIX ---------->	Soil		Soil		Soil	
		UNITS ---------->	UG/KG		UG/KG		UG/KG	
CAS #	Parameter		E006	VAL	E003	VAL	E014	VAL
100-01-6	4-Nitroaniline		4300.	U	1700.	U	4300.	U
100-02-7	4-Nitrophenol		4300.	U	4300.	U	4300.	U
100-51-6	Benzyl alcohol		860.	U	1700.	U	860.	U
101-55-3	4-Bromophenyl-phenylether		860.	U	860.	U	860.	U
105-67-9	2,4-Dimethylphenol		860.	U	860.	U	860.	U
106-44-5	4-Methylphenol (p-Cresol)		860.	U	860.	U	860.	U
106-46-7	1,4-Dichlorobenzene		860.	U	860.	U	860.	U
106-47-8	4-Chloroaniline		860.	U	1700.	U	860.	U
108-60-1	bis(2-chloroisopropyl) ether		860.	U	860.	U	860.	U
108-95-2	Phenol		860.	U	860.	U	860.	U
111-44-4	bis(2-Chloroethyl)ether		860.	U	860.	U	860.	U
111-91-1	bis(2-Chloroethoxy)methane		860.	U	860.	U	860.	U
117-81-7	bis(2-Ethylhexyl)phthalate (BEHP)		860.	U	860.	U	860.	U
117-84-0	Di-n-octylphthalate		860.	U	860.	U	860.	U
118-74-1	Hexachlorobenzene		860.	U	860.	U	860.	U
120-12-7	Anthracene		860.	U	860.	U	860.	U
120-82-1	1,2,4-Trichlorobenzene		860.	U	860.	U	860.	U
120-83-2	2,4-Dichlorophenol		860.	U	860.	U	860.	U
121-14-2	2,4-Dinitrotoluene		860.	U	860.	U	860.	U
129-00-0	Pyrene		860.	U	860.	U	860.	U
131-11-3	Dimethylphthalate		860.	U	860.	U	860.	U
132-64-9	Dibenzofuran		860.	U	860.	U	860.	U
191-24-2	Benzo(g,h,i)perylene		860.	U	NR		860.	U
193-39-5	Indeno(1,2,3-cd)pyrene		860.	U	860.	U	860.	U
205-99-2	Benzo(b)fluoranthene		860.	U	860.	U	860.	U
206-44-0	Fluoranthene		860.	U	860.	U	860.	U
207-08-9	Benzo(k)fluoranthene		860.	U	860.	U	860.	U
208-96-8	Acenaphthylene		860.	U	860.	U	860.	U
218-01-9	Chrysene		860.	U	860.	U	860.	U
50-32-8	Benzo(a)pyrene		860.	U	860.	U	860.	U
51-28-5	2,4-Dinitrophenol		4300.	U	49000.		4300.	U
534-52-1	4,6-Dinitro-2-methylphenol		4300.	U	4300.	U	4300.	U
53-70-3	Dibenz(a,h)anthracene		860.	U	NR		860.	U
541-73-1	1,3-Dichlorobenzene		860.	U	860.	U	860.	U
56-55-3	Benzo(a)anthracene		860.	U	860.	U	860.	U
59-50-7	4-Chloro-3-methylphenol		860.	U	1700.	U	860.	U
606-20-2	2,6-Dinitrotoluene		860.	U	860.	U	860.	U
621-64-7	N-Nitroso-di-n-propylamine		860.	U	860.	U	860.	U
65-85-0	Benzoic acid		4300.	U	4300.	U	4300.	U

*** Validation Complete ***

CEDAR CHEMICAL CORPORATION
WEST HELENA, ARKANSAS
SITE 5 PHASE I SUBSURFACE SOIL DATA

SVOA									
	SHORT ID -------->	5SB-1 (21-23')		5SB-2 (21-23')		5SB-3 (23-25')			
	ORIGINAL ID ----->	CED5SB12		CED5SB2-2		CED5SB32			
	SAMPLE DATE ----->	09/07/93		09/08/93		09/30/93			
	DATE ANALYZED --->	10/14/93		10/06/93		10/24/93			
	MATRIX ---------->	Soil		Soil		Soil			
	UNITS ----------->	UG/KG		UG/KG		UG/KG			
CAS #	Parameter	E006	VAL	E003	VAL	E014	VAL		
67-72-1	Hexachloroethane	860.	U	860.	U	860.	U		
7005-72-3	4-Chlorophenyl-phenylether	860.	U	860.	U	860.	U		
709-98-8	Propanil	860.	U	860.	U	860.	U		
77-47-4	Hexachlorocyclopentadiene	860.	U	860.	U	860.	U		
78-59-1	Isophorone	860.	U	860.	U	860.	U		
83-32-9	Acenaphthene	860.	U	860.	U	860.	U		
84-66-2	Diethylphthalate	860.	U	860.	U	860.	U		
84-74-2	Di-n-butylphthalate	860.	U	860.	U	860.	U		
85-01-8	Phenanthrene	860.	U	860.	U	860.	U		
85-68-7	Butylbenzylphthalate	860.	U	860.	U	860.	U		
86-30-6	N-Nitrosodiphenylamine	860.	U	860.	U	860.	U		
86-73-7	Fluorene	860.	U	860.	U	860.	U		
87-68-3	Hexachlorobutadiene	860.	U	860.	U	860.	U		
87-86-5	Pentachlorophenol	4300.	U	4300.	U	4300.	U		
88-06-2	2,4,6-Trichlorophenol	860.	U	860.	U	860.	U		
88-74-4	2-Nitroaniline	4300.	U	4300.	U	4300.	U		
88-75-5	2-Nitrophenol	860.	U	860.	U	860.	U		
88-85-7	Dinoseb	4300.	U	57000.		4300.	U		
91-20-3	Naphthalene	860.	U	860.	U	860.	U		
91-57-6	2-Methylnaphthalene	860.	U	860.	U	860.	U		
91-58-7	2-Chloronaphthalene	860.	U	860.	U	860.	U		
91-94-1	3,3'-Dichlorobenzidine	1700.	U	1700.	U	1700.	U		
95-48-7	2-Methylphenol (o-Cresol)	860.	U	860.	U	860.	U		
95-50-1	1,2-Dichlorobenzene	860.	U	860.	U	860.	U		
95-57-8	2-Chlorophenol	860.	U	860.	U	860.	U		
95-76-1	3,4-Dichloroaniline	1200.		860.	U	860.	U		
95-95-4	2,4,5-Trichlorophenol	4300.	U	860.	U	4300.	U		
98-95-3	Nitrobenzene	860.	U	860.	U	860.	U		
99-09-2	3-Nitroaniline	4300.	U	4300.	U	4300.	U		

*** Validation Complete ***

CEDAR CHEMICAL CORPORATION
WEST HELENA, ARKANSAS
SITE 5 PHASE I SUBSURFACE SOIL DATA

VOA											
	SHORT ID --------->	5SB-1 (21-23')		5SB-2 (21-23')		5SB-3 (23-25')					
	ORIGINAL ID ----->	CED5SB1-2		CED5SB2-2		CED5SB32					
	SAMPLE DATE ----->	09/07/93		09/08/93		09/30/93					
	DATE ANALYZED --->	09/15/93		09/22/93		10/08/93					
	MATRIX ---------->	Soil		Soil		Soil					
	UNITS ----------->	UG/KG		UG/KG		UG/KG					
CAS #	Parameter	E006	VAL	E003	VAL	E014	VAL				
100-41-4	Ethylbenzene	6.	U	820.	U	7.	U				
100-42-5	Styrene	6.	U	820.	U	7.	U				
10061-01-5	cis-1,3-Dichloropropene	6.	U	820.	U	7.	U				
10061-02-6	trans-1,3-Dichloropropene	6.	U	820.	U	7.	U				
107-06-2	1,2-Dichloroethane	6.	U	820.	U	4.					
108-05-4	Vinyl acetate	6.	U	820.	U	7.	U				
108-10-1	4-Methyl-2-Pentanone (MIBK)	61.	U	8200.	U	170.					
108-88-3	Toluene	6.	U	300.		6.					
108-90-7	Chlorobenzene	6.	U	820.	U	7.	U				
124-48-1	Dibromochloromethane	6.	U	820.	U	7.	U				
127-18-4	Tetrachloroethene	6.	U	820.	U	7.	U				
1330-20-7	Xylene (total)	20.		820.	U	6.					
540-59-0	1,2-Dichloroethene (total)	6.	U	820.	U	7.	U				
56-23-5	Carbon tetrachloride	6.	U	820.	U	7.	U				
591-78-6	2-Hexanone	61.	U	8200.	U	69.	U				
67-64-1	Acetone	12.	U	3900.		21000.					
67-66-3	Chloroform	6.	U	820.	U	4.					
71-43-2	Benzene	6.	U	820.	U	7.	U				
71-55-6	1,1,1-Trichloroethane	6.	U	820.	U	7.	U				
74-83-9	Bromomethane	12.	U	1600.	U	14.	U				
74-87-3	Chloromethane	12.	U	1600.	U	14.	U				
75-00-3	Chloroethane	12.	U	1600.	U	14.	U				
75-01-4	Vinyl chloride	6.	U	820.	U	7.	U				
75-09-2	Methylene chloride	140.		820.	U	33.					
75-15-0	Carbon disulfide	6.	U	820.	U	7.	U				
75-25-2	Bromoform	6.	U	820.	U	7.	U				
75-27-4	Bromodichloromethane	6.	U	820.	U	7.	U				
75-34-3	1,1-Dichloroethane	6.	U	820.	U	7.	U				
75-35-4	1,1-Dichloroethene	6.	U	820.	U	7.	U				
78-87-5	1,2-Dichloropropane	6.	U	820.	U	7.	U				
78-93-3	2-Butanone (MEK)	12.	U	44000.		120.					
79-00-5	1,1,2-Trichloroethane	6.	U	820.	U	7.	U				
79-01-6	Trichloroethene	6.	U	820.	U	7.	U				
79-34-5	1,1,2,2-Tetrachloroethane	6.	U	820.	U	7.	U				

*** Validation Complete ***

CEDAR CHEMICAL CORPORATION
WEST HELENA, ARKANSAS
SITE 6 PHASE I SURFACE SOIL DATA

PEST	SHORT ID --------->	6SB-A (0-5')		6SB-A (5-10')		6SB-C (0-5')		6SB-C (5-10')		6SB-D (0-5')		6SB-D (5-10')	
	ORIGINAL ID ----->	CED6SBA1		CED6SBA2		CED6SBC1		CED6SBC2		CED6SBD1		CED6SBD2	
	SAMPLE DATE ----->	09/27/93		09/27/93		09/29/93		09/29/93		09/29/93		09/29/93	
	DATE ANALYZED --->	10/16/93		10/14/93		10/16/93		10/16/93		10/16/93		10/16/93	
	MATRIX ---------->	Soil		Soil		Soil		Soil		Soil		Soil	
	UNITS ---------->	UG/KG		UG/KG		UG/KG		UG/KG		UG/KG		UG/KG	
CAS #	Parameter	ED14	VAL	ED13	VAL	ED14	VAL	ED14	VAL	ED14	VAL	ED14	VAL
1024-57-3	Heptachlor Epoxide	67.	U	69.	U	68.	U	67.	U	69.	U	70.	U
1031-07-8	Endosulfan Sulfate	53.	U	55.	U	54.	U	54.	U	54.	U	56.	U
309-00-2	Aldrin	4.3		3.3	U	3.3	U	3.3	U	3.3	U	3.4	U
319-84-6	Alpha-BHC	2.4	U	2.5	U	2.7		2.4	U	2.5	U	2.5	U
319-85-7	Beta-BHC	7.		5.	U	4.9	U	4.9	U	5.	U	5.	U
319-86-8	Delta-BHC	7.2	U	7.5	U	7.3	U	7.3	U	7.4	U	7.6	U
33213-65-9	Endosulfan II	3.2	U	3.3	U	3.3	U	3.3	U	3.3	U	3.4	U
50-29-3	4,4'-DDT	58.		10.	U	9.8	U	9.8	U	9.9	U	10.	U
5103-71-9	alpha-Chlordane	11.	U	12.	U	11.	U	11.	U	12.	U	12.	U
5103-74-2	gamma-Chlordane	11.	U	12.	U	11.	U	11.	U	12.	U	12.	U
53494-70-5	Endrin ketone	19.	U	20.	U	20.	U	20.	U	20.	U	20.	U
58-89-9	gamma-BHC (Lindane)	3.2	U	3.3	U	3.2	U	3.3	U	3.3	U	3.4	U
60-57-1	Dieldrin	30.		5.5		1.6	U	1.6	U	1.7	U	1.7	U
72-20-8	Endrin	4.8	U	5.	U	4.9	U	4.9	U	5.	U	5.	U
72-43-5	Methoxychlor	140.	U	150.	U	150.	U	150.	U	150.	U	150.	U
72-54-8	4,4'-DDD	8.9	U	9.2	U	9.	U	9.	U	9.1	U	9.3	U
72-55-9	4,4'-DDE	26.		3.3	U	3.3	U	3.3	U	3.3	U	3.4	U
76-44-8	Heptachlor	2.4	U	2.5	U	2.4	U	2.4	U	2.5	U	2.5	U
8001-35-2	Toxaphene	190.	U	200.	U	200.	U	200.	U	200.	U	200.	U
959-98-8	Endosulfan I	11.	U	12.	U	11.	U	11.	U	12.	U	12.	U

*** Validation Complete ***

CEDAR CHEMICAL CORPORATION
WEST HELENA, ARKANSAS
SITE 6 PHASE I SURFACE SOIL DATA

PEST	SHORT ID --------->	6SB-E (0-5')		6SB-E (5-10')		6SB-F (0-5')		6SB-F (5-10')		6SB-G (0-5')		6SB-G (0-5')DUP	
	ORIGINAL ID ----->	CED6SBE1		CED6SBE2		CED6SBF1		CED6SBF2		CED6SBG1		CED6SBG1	
	SAMPLE DATE ----->	09/27/93		09/27/93		09/27/93		09/27/93		09/29/93		09/29/93	
	DATE ANALYZED --->	10/16/93		10/26/93		10/15/93		10/17/93		10/27/93		10/16/93	
	MATRIX ---------->	Soil		Soil		Soil		Soil		Soil		Soil	
	UNITS ---------->	UG/KG		UG/KG		UG/KG		UG/KG		UG/KG		UG/KG	
CAS #	Parameter	E014	VAL	E014	VAL	E013	VAL	E013	VAL	E014	VAL	E014	VAL
1024-57-3	Heptachlor Epoxide	130.	U	670.	U	68.	U	70.	U	260.	U	520.	U
1031-07-8	Endosulfan Sulfate	110.	U	530.	U	54.	U	56.	U	210.	U	420.	U
309-00-2	Aldrin	18.		32.	U	3.3	U	3.4	U	13.	U	25.	U
319-84-6	Alpha-BHC	4.8	U	24.	U	2.4	U	8.8	U	9.4	U	19.	U
319-85-7	Beta-BHC	9.6	U	48.	U	4.9	U	51.	U	19.	U	38.	U
319-86-8	Delta-BHC	14.	U	73.	U	7.3	U	7.6	U	28.	U	57.	U
33213-65-9	Endosulfan II	6.4	U	32.	U	3.3	U	3.4	U	13.	U	25.	U
50-29-3	4,4'-DDT	21.		97.	U	10.	U	10.	U	38.	U	76.	U
5103-71-9	alpha-Chlordane	23.	U	110.	U	11.	U	12.	U	44.	U	89.	U
5103-74-2	gamma-Chlordane	23.	U	110.	U	11.	U	12.	U	44.	U	89.	U
53494-70-5	Endrin ketone	39.	U	190.	U	20.	U	20.	U	76.	U	150.	U
58-89-9	gamma-BHC (Lindane)	6.4	U	32.	U	3.3	U	3.8	U	13.	U	25.	U
60-57-1	Dieldrin	8.6		16.	U	1.6	U	1.7	U	6.2	U	13.	U
72-20-8	Endrin	9.6	U	48.	U	4.9	U	5.1	U	19.	U	38.	U
72-43-5	Methoxychlor	510.		3400.		150.	U	150.	U	930.		2600.	
72-54-8	4,4'-DDD	28.		89.	U	9.	U	9.3	U	35.	U	70.	U
72-55-9	4,4'-DDE	8.6		32.	U	9.8		3.4	U	13.	U	25.	U
76-44-8	Heptachlor	4.8	U	24.	U	2.4	U	2.5	U	9.4	U	19.	U
8001-35-2	Toxaphene	390.	U	1900.	U	200.	U	200.	U	750.	U	1500.	U
959-98-8	Endosulfan I	23.	U	110.	U	11.	U	12.	U	44.	U	89.	U

*** Validation Complete ***

CEDAR CHEMICAL CORPORATION
WEST HELENA, ARKANSAS
SITE 6 PHASE I SURFACE SOIL DATA

PEST	SHORT ID --------->	6SB-G (5-10')		6SB-H (0-5')		6SB-H (5-10')		6SB-J (5-10')		6SB-J (10-15')		6SB-K (0-5')	
	ORIGINAL ID ----->	CED6SBG2		CED6SBH1		CED6SBH2		CED6SBJ2		CED6SBJ3		CED6SBK1	
	SAMPLE DATE ----->	09/29/93		09/30/93		09/30/93		09/27/93		09/27/93		09/29/93	
	DATE ANALYZED --->	10/16/93		10/26/93		10/26/93		10/15/93		10/16/93		10/22/93	
	MATRIX ---------->	Soil		Soil		Soil		Soil		Soil		Soil	
	UNITS ---------->	UG/KG		UG/KG		UG/KG		UG/KG		UG/KG		UG/KG	
CAS #	Parameter	E014	VAL	E014	VAL	E014	VAL	E013	VAL	E013	VAL	ED14	VAL
1024-57-3	Heptachlor Epoxide	67.	U	320.	U	270.	U	69.	U	71.	U	2000.	U
1031-07-8	Endosulfan Sulfate	54.	U	250.	U	210.	U	55.	U	56.	U	1600.	U
309-00-2	Aldrin	3.3	U	15.	U	13.	U	3.3	U	3.4	U	98.	U
319-84-6	Alpha-BHC	3.6		12.	U	9.7	U	2.9		2.6	U	74.	U
319-85-7	Beta-BHC	4.9	U	23.	U	19.	U	5.	U	5.1	U	150.	U
319-86-8	Delta-BHC	7.3	U	35.	U	29.	U	7.5	U	7.7	U	220.	U
33213-65-9	Endosulfan II	3.3	U	15.	U	13.	U	3.3	U	3.4	U	98.	U
50-29-3	4,4'-DDT	9.8	U	200.		190.		10.	U	10.	U	290.	U
5103-71-9	alpha-Chlordane	11.	U	54.	U	45.	U	12.	U	12.	U	340.	U
5103-74-2	gamma-Chlordane	11.	U	54.	U	45.	U	12.	U	12.	U	340.	U
53494-70-5	Endrin ketone	20.	U	92.	U	77.	U	20.	U	20.	U	590.	U
58-89-9	gamma-BHC (Lindane)	3.3	U	15.	U	13.	U	3.3	U	3.4	U	98.	U
60-57-1	Dieldrin	1.6	U	7.7	U	6.4	U	1.7	U	1.7	U	49.	U
72-20-8	Endrin	4.9	U	23.	U	19.	U	5.	U	5.1	U	150.	U
72-43-5	Methoxychlor	150.	U	690.	U	580.	U	150.	U	150.	U	98000.	
72-54-8	4,4'-DDD	8.9	U	42.	U	35.	U	16.		9.4	U	270.	U
72-55-9	4,4'-DDE	3.3	U	48.		46.		4.4		3.4	U	98.	U
76-44-8	Heptachlor	2.4	U	12.	U	9.7	U	2.5	U	2.6	U	74.	U
8001-35-2	Toxaphene	200.	U	920.	U	770.	U	200.	U	200.	U	5900.	U
959-98-8	Endosulfan I	11.	U	54.	U	45.	U	12.	U	12.	U	340.	U

*** Validation Complete ***

CEDAR CHEMICAL CORPORATION
WEST HELENA, ARKANSAS
SITE 6 PHASE I SURFACE SOIL DATA

PEST				
SHORT ID --------->	6SB-K (5-10')		6SB-L (0-5')		6SB-L (5-10')	
ORIGINAL ID ----->	CED6SBK2		CED6SBL1		CED6SBL2	
SAMPLE DATE ----->	09/29/93		09/30/93		09/30/93	
DATE ANALYZED --->	10/22/93		10/21/93		10/21/93	
MATRIX ---------->	Soil		Soil		Soil	
UNITS ----------->	UG/KG		UG/KG		UG/KG	
CAS #	Parameter	E014 VAL	E014 VAL		E014 VAL	
1024-57-3	Heptachlor Epoxide	700. U	63. U		70. U	
1031-07-8	Endosulfan Sulfate	560. U	50. U		56. U	
309-00-2	Aldrin	240.	3. U		3.4 U	
319-84-6	Alpha-BHC	25. U	2.3 U		2.5 U	
319-85-7	Beta-BHC	51. U	4.6 U		5. U	
319-86-8	Delta-BHC	76. U	6.9 U		7.6 U	
33213-65-9	Endosulfan II	34. U	3. U		3.4 U	
50-29-3	4,4'-DDT	100. U	9.1 U		36.	
5103-71-9	alpha-Chlordane	120. U	11. U		12. U	
5103-74-2	gamma-Chlordane	120. U	11. U		12. U	
53494-70-5	Endrin ketone	202. U	18. U		20. U	
58-89-9	gamma-BHC (Lindane)	34. U	3. U		3.4 U	
60-57-1	Dieldrin	17. U	1.5 U		1.7 U	
72-20-8	Endrin	51. U	4.6 U		5. U	
72-43-5	Methoxychlor	1500. U	140. U		150. U	
72-54-8	4,4'-DDD	93. U	8.4 U		28.	
72-55-9	4,4'-DDE	34. U	3. U		23.	
76-44-8	Heptachlor	25. U	2.3 U		2.5 U	
8001-35-2	Toxaphene	2000. U	180. U		200. U	
959-98-8	Endosulfan I	120. U	11. U		12. U	

*** Validation Complete ***

CEDAR CHEMICAL CORPORATION
WEST HELENA, ARKANSAS
SITE 6 PHASE I SURFACE SOIL DATA

RCRA METAL	SHORT ID --------->	6SB-A (0-5')	6SB-A (5-10')	6SB-C (0-5')	6SB-C (5-10')	6SB-D (0-5')	6SB-D (5-10')
	ORIGINAL ID ----->	CED6SBA1	CED6SBA2	CED6SBC1	CED6SBC2	CED6SBD1	CED6SBD2
	SAMPLE DATE ----->	09/27/93	09/27/93	09/29/93	09/29/93	09/29/93	09/29/93
	DATE ANALYZED --->	10/21/93	10/15/93	10/21/93	10/21/93	10/21/93	10/21/93
	MATRIX ---------->	Soil	Soil	Soil	Soil	Soil	Soil
	UNITS ---------->	MG/KG	MG/KG	MG/KG	MG/KG	MG/KG	MG/KG
CAS #	Parameter	E014 VAL	E013 VAL	E014 VAL	E014 VAL	E014 VAL	E014 VAL
7440-38-2	Arsenic (As)	7.4	10.3	6.3	9.6	6.8	6.8
7440-39-3	Barium (Ba)	251.	398.	93.2	187.	123.	144.
7440-43-9	Cadmium (Cd)	0.24 U	0.25 U	0.24 U	0.26	0.25 U	0.25 U
7440-47-3	Chromium (Cr)	14.5	9.5	11.	10.1	13.7	8.6
7439-92-1	Lead (Pb)	13.8	13.1	9.2	11.	10.9	8.7
7439-97-6	Mercury (Hg)	0.12 U	0.12 U	0.12 U	0.12 U	0.12 U	0.12 U
7782-49-2	Selenium (Se)	0.59 U	0.62 U	0.6 U	0.59 U	0.62 U	0.63 U
7440-22-4	Silver (Ag)	0.36 U	0.37 U	0.36 U	0.36 U	0.37 U	0.38 U

*** Validation Complete ***

CEDAR CHEMICAL CORPORATION
WEST HELENA, ARKANSAS
SITE 6 PHASE I SURFACE SOIL DATA

RCRA METAL		SHORT ID --------->	6SB-E (0-5')		6SB-E (5-10')		6SB-F (0-5')		6SB-F (5-10')		6SB-G (0-5')		6SB-G (0-5')DUP	
		ORIGINAL ID ----->	CED6SBE1		CED6SBE2		CED6SBF1		CED6SBF2		CED6SBG1		CED6SBG1DUP	
		SAMPLE DATE ----->	09/27/93		09/27/93		09/27/93		09/27/93		09/29/93		09/29/93	
		DATE ANALYZED --->	10/21/93		10/21/93		10/15/93		10/15/93		10/21/93		10/21/93	
		MATRIX ---------->	Soil		Soil		Soil		Soil		Soil		Soil	
		UNITS ---------->	MG/KG		MG/KG		MG/KG		MG/KG		MG/KG		MG/KG	
CAS #	Parameter		E014	VAL	E014	VAL	E013	VAL	E013	VAL	E014	VAL	E014	VAL
7440-38-2	Arsenic (As)		8.9		8.		6.5		6.1		6.5		7.1	
7440-39-3	Barium (Ba)		126.		134.		164.		152.		101.		113.	
7440-43-9	Cadmium (Cd)		0.24	U	0.24	U	0.23	U	0.25	U	0.24	U	0.24	U
7440-47-3	Chromium (Cr)		9.9		12.3		9.3		13.4		10.7		10.8	
7439-92-1	Lead (Pb)		10.1		10.9		12.		10.8		10.4		10.6	
7439-97-6	Mercury (Hg)		0.12	U	0.12	U	0.12	U	0.12	U	0.12	U	0.12	U
7782-49-2	Selenium (Se)		0.6	U	0.59	U	0.58	U	0.61	U	0.59	U	0.59	U
7440-22-4	Silver (Ag)		0.36	U	0.35	U	0.35	U	0.37	U	0.35	U	0.36	U

*** Validation Complete ***

CEDAR CHEMICAL CORPORATION
WEST HELENA, ARKANSAS
SITE 6 PHASE I SURFACE SOIL DATA

RCRA METAL														
	SHORT ID --------->	6SB-G (5-10')		6SB-H (0-5')		6SB-H (5-10')		6SB-J (5-10')		6SB-J (10-15')		6SB-K (0-5')	
	ORIGINAL ID ----->	CED6SBG2		CED6SBH1		CED6SBH2		CED6SBJ2		CED6SBJ3		CED6SBK1	
	SAMPLE DATE ----->	09/29/93		09/30/93		09/30/93		09/27/93		09/27/93		09/29/93	
	DATE ANALYZED --->	10/21/93		10/21/93		10/21/93		10/15/93		10/15/93		10/21/93	
	MATRIX ---------->	Soil		Soil		Soil		Soil		Soil		Soil	
	UNITS ---------->	MG/KG		MG/KG		MG/KG		MG/KG		MG/KG		MG/KG	
CAS #	Parameter	E014	VAL	E014	VAL	E014	VAL	E013	VAL	E013	VAL	E014	VAL
7440-38-2	Arsenic (As)	7.1		5.4		6.2		7.9		7.4		9.	
7440-39-3	Barium (Ba)	103.		103.		86.4		127.		150.		115.	
7440-43-9	Cadmium (Cd)	0.24	U	0.23	U	0.24	U	0.24	U	0.25	U	0.29	
7440-47-3	Chromium (Cr)	12.6		8.9		14.4		12.1		10.1		11.3	
7439-92-1	Lead (Pb)	11.5		8.8		10.6		12.9		11.9		11.7	
7439-97-6	Mercury (Hg)	0.12	U	0.12	U	0.12	U	0.12	U	0.12	U	0.12	U
7782-49-2	Selenium (Se)	0.6	U	0.58	U	0.61	U	0.61	U	0.63	U	0.61	U
7440-22-4	Silver (Ag)	0.36	U	0.35	U	0.36	U	0.36	U	0.38	U	0.36	U

*** Validation Complete ***

CEDAR CHEMICAL CORPORATION
WEST HELENA, ARKANSAS
SITE 6 PHASE I SURFACE SOIL DATA

RCRA METAL		SHORT ID --------->	6SB-K (5-10')		6SB-L (0-5')		6SB-L (5-10')				
		ORIGINAL ID ----->	CED6SBK2		CED6SBL1		CED6SBL2				
		SAMPLE DATE ----->	09/29/93		09/30/93		09/30/93				
		DATE ANALYZED --->	10/21/93		10/21/93		10/21/93				
		MATRIX ---------->	Soil		Soil		Soil				
		UNITS ----------->	MG/KG		MG/KG		MG/KG				
CAS #	Parameter		E014	VAL	E014	VAL	E014	VAL			
7440-38-2	Arsenic (As)		8.5		5.8		6.3				
7440-39-3	Barium (Ba)		108.		111.		78.9				
7440-43-9	Cadmium (Cd)		0.25	U	0.23	U	0.25	U			
7440-47-3	Chromium (Cr)		11.9		10.3		14.7				
7439-92-1	Lead (Pb)		12.9		7.4		11.4				
7439-97-6	Mercury (Hg)		0.12	U	0.11	U	0.13	U			
7782-49-2	Selenium (Se)		0.64	U	0.57	U	0.63	U			
7440-22-4	Silver (Ag)		0.38	U	0.34	U	0.38	U			

*** Validation Complete ***

CEDAR CHEMICAL CORPORATION
WEST HELENA, ARKANSAS
SITE 6 PHASE I SURFACE SOIL DATA

CAS #	Parameter	6SB-A (0-5')		6SB-A (5-10')		6SB-C (0-5')		6SB-C (5-10')		6SB-D (0-5')		6SB-D (5-10')	
SVOA	ORIGINAL ID	CED6SBA1		CED6SBA2		CED6SBC1		CED6SBC2		CED6SBD1		CED6SBD2	
	SAMPLE DATE	09/27/93		09/27/93		09/29/93		09/29/93		09/29/93		09/29/93	
	DATE ANALYZED	10/23/93		10/19/93		10/23/93		10/22/93		10/22/93		10/22/93	
	MATRIX	Soil		Soil		Soil		Soil		Soil		Soil	
	UNITS	UG/KG		UG/KG		UG/KG		UG/KG		UG/KG		UG/KG	
CAS #	Parameter	E014	VAL	E013	VAL	E014	VAL	E014	VAL	E014	VAL	E014	VAL
100-01-6	4-Nitroaniline	4000.	U	1000.	U	4100.	U	4100.	U	4100.	U	4200.	U
100-02-7	4-Nitrophenol	4000.	U	1000.	U	4100.	U	4100.	U	4100.	U	4200.	U
100-51-6	Benzyl alcohol	810.	U	NR		820.	U	810.	U	830.	U	840.	U
101-55-3	4-Bromophenyl-phenylether	810.	U	410.	U	820.	U	810.	U	830.	U	840.	U
105-67-9	2,4-Dimethylphenol	810.	U	410.	U	820.	U	810.	U	830.	U	840.	U
106-44-5	4-Methylphenol (p-Cresol)	810.	U	410.	U	820.	U	810.	U	830.	U	840.	U
106-46-7	1,4-Dichlorobenzene	810.	U	410.	U	820.	U	810.	U	830.	U	840.	U
106-47-8	4-Chloroaniline	810.	U	410.	U	820.	U	810.	U	830.	U	840.	U
108-60-1	bis(2-chloroisopropyl) ether	810.	U	410.	U	820.	U	810.	U	830.	U	840.	U
108-95-2	Phenol	810.	U	410.	U	820.	U	810.	U	830.	U	6900.	
111-44-4	bis(2-Chloroethyl)ether	810.	U	410.	U	820.	U	810.	U	830.	U	840.	U
111-91-1	bis(2-Chloroethoxy)methane	810.	U	410.	U	820.	U	810.	U	830.	U	840.	U
117-81-7	bis(2-Ethylhexyl)phthalate (BEHP)	810.	U	410.	U	820.	U	90.		110.		104.	
117-84-0	Di-n-octylphthalate	810.	U	410.	U	820.	U	810.	U	830.	U	840.	U
118-74-1	Hexachlorobenzene	810.	U	410.	U	820.	U	810.	U	830.	U	840.	U
120-12-7	Anthracene	810.	U	410.	U	820.	U	810.	U	830.	U	840.	U
120-82-1	1,2,4-Trichlorobenzene	810.	U	410.	U	820.	U	810.	U	830.	U	840.	U
120-83-2	2,4-Dichlorophenol	810.	U	410.	U	820.	U	810.	U	830.	U	840.	U
121-14-2	2,4-Dinitrotoluene	810.	U	410.	U	820.	U	810.	U	830.	U	840.	U
129-00-0	Pyrene	810.	U	410.	U	820.	U	810.	U	830.	U	840.	U
131-11-3	Dimethylphthalate	810.	U	410.	U	820.	U	810.	U	830.	U	840.	U
132-64-9	Dibenzofuran	810.	U	410.	U	820.	U	810.	U	830.	U	840.	U
191-24-2	Benzo(g,h,i)perylene	810.	U	410.	U	820.	U	810.	U	830.	U	840.	U
193-39-5	Indeno(1,2,3-cd)pyrene	810.	U	410.	U	820.	U	810.	U	830.	U	840.	U
205-99-2	Benzo(b)fluoranthene	810.	U	410.	U	820.	U	810.	U	830.	U	840.	U
206-44-0	Fluoranthene	810.	U	410.	U	820.	U	810.	U	830.	U	840.	U
207-08-9	Benzo(k)fluoranthene	810.	U	410.	U	820.	U	810.	U	830.	U	840.	U
208-96-8	Acenaphthylene	810.	U	410.	U	820.	U	810.	U	830.	U	840.	U
218-01-9	Chrysene	810.	U	410.	U	820.	U	810.	U	830.	U	840.	U
50-32-8	Benzo(a)pyrene	810.	U	410.	U	820.	U	810.	U	830.	U	840.	U
51-28-5	2,4-Dinitrophenol	4000.	U	1000.	U	4100.	U	4100.	U	4100.	U	4200.	U
534-52-1	4,6-Dinitro-2-methylphenol	4000.	U	1000.	U	4100.	U	4100.	U	4100.	U	4200.	U
53-70-3	Dibenz(a,h)anthracene	810.	U	410.	U	820.	U	810.	U	830.	U	840.	U
541-73-1	1,3-Dichlorobenzene	810.	U	410.	U	820.	U	810.	U	830.	U	840.	U
56-55-3	Benzo(a)anthracene	810.	U	410.	U	820.	U	810.	U	830.	U	840.	U
59-50-7	4-Chloro-3-methylphenol	810.	U	410.	U	820.	U	810.	U	830.	U	840.	U
606-20-2	2,6-Dinitrotoluene	810.	U	410.	U	820.	U	810.	U	830.	U	840.	U
621-64-7	N-Nitroso-di-n-propylamine	810.	U	410.	U	820.	U	810.	U	830.	U	840.	U
65-85-0	Benzoic acid	4000.	U	NR		4100.	U	4100.	U	4100.	U	4200.	U

*** Validation Complete ***

CEDAR CHEMICAL CORPORATION
WEST HELENA, ARKANSAS
SITE 6 PHASE I SURFACE SOIL DATA

SVOA													
	SHORT ID --------->	6SB-A (0-5')		6SB-A (5-10')		6SB-C (0-5')		6SB-C (5-10')		6SB-D (0-5')		6SB-D (5-10')	
	ORIGINAL ID ----->	CED6SBA1		CED6SBA2		CED6SBC1		CED6SBC2		CED6SBD1		CED6SBD2	
	SAMPLE DATE ----->	09/27/93		09/27/93		09/29/93		09/29/93		09/29/93		09/29/93	
	DATE ANALYZED --->	10/23/93		10/19/93		10/23/93		10/22/93		10/22/93		10/22/93	
	MATRIX ---------->	Soil		Soil		Soil		Soil		Soil		Soil	
	UNITS ---------->	UG/KG		UG/KG		UG/KG		UG/KG		UG/KG		UG/KG	
CAS #	Parameter	E014	VAL	E013	VAL	E014	VAL	E014	VAL	E014	VAL	E014	VAL
67-72-1	Hexachloroethane	810.	U	410.	U	820.	U	810.	U	830.	U	840.	U
7005-72-3	4-Chlorophenyl-phenylether	810.	U	410.	U	820.	U	810.	U	830.	U	840.	U
709-98-8	Propanil	810.	U	1000.	U	700.		810.	U	830.	U	910.	
77-47-4	Hexachlorocyclopentadiene	810.	U	410.	U	820.	U	810.	U	830.	U	840.	U
78-59-1	Isophorone	810.	U	410.	U	820.	U	810.	U	830.	U	4500.	
83-32-9	Acenaphthene	810.	U	410.	U	820.	U	810.	U	830.	U	840.	U
84-66-2	Diethylphthalate	810.	U	410.	U	820.	U	810.	U	830.	U	840.	U
84-74-2	Di-n-butylphthalate	810.	U	98.		820.	U	810.	U	830.	U	840.	U
85-01-8	Phenanthrene	810.	U	410.	U	820.	U	810.	U	830.	U	840.	U
85-68-7	Butylbenzylphthalate	810.	U	410.	U	820.	U	810.	U	830.	U	840.	U
86-30-6	N-Nitrosodiphenylamine	810.	U	410.	U	820.	U	810.	U	830.	U	840.	U
86-73-7	Fluorene	810.	U	410.	U	820.	U	810.	U	830.	U	840.	U
87-68-3	Hexachlorobutadiene	810.	U	410.	U	820.	U	810.	U	830.	U	840.	U
87-86-5	Pentachlorophenol	4000.	U	1000.	U	4100.	U	4100.	U	4100.	U	4200.	U
88-06-2	2,4,6-Trichlorophenol	810.	U	410.	U	820.	U	810.	U	830.	U	840.	U
88-74-4	2-Nitroaniline	4000.	U	1000.	U	4100.	U	4100.	U	4100.	U	4200.	U
88-75-5	2-Nitrophenol	810.	U	410.	U	820.	U	810.	U	830.	U	840.	U
88-85-7	Dinoseb	9500.		430.		14000.		4100.	U	6100.		4200.	U
91-20-3	Naphthalene	810.	U	410.	U	820.	U	810.	U	830.	U	840.	U
91-57-6	2-Methylnaphthalene	810.	U	410.	U	820.	U	810.	U	830.	U	840.	U
91-58-7	2-Chloronaphthalene	810.	U	410.	U	820.	U	810.	U	830.	U	840.	U
91-94-1	3,3'-Dichlorobenzidine	1600.	U	410.	U	1600.	U	1600.	U	1700.	U	1700.	U
95-48-7	2-Methylphenol (o-Cresol)	810.	U	410.	U	820.	U	810.	U	830.	U	840.	U
95-50-1	1,2-Dichlorobenzene	810.	U	410.	U	820.	U	810.	U	830.	U	840.	U
95-57-8	2-Chlorophenol	810.	U	410.	U	820.	U	810.	U	830.	U	840.	U
95-76-1	3,4-Dichloroaniline	810.	U	1000.	U	230.		810.	U	830.	U	610.	
95-95-4	2,4,5-Trichlorophenol	4000.	U	1000.	U	4100.	U	4100.	U	4100.	U	4200.	U
98-95-3	Nitrobenzene	810.	U	410.	U	820.	U	810.	U	830.	U	840.	U
99-09-2	3-Nitroaniline	4000.	U	1000.	U	4100.	U	4100.	U	4100.	U	4200.	U

*** Validation Complete ***

CEDAR CHEMICAL CORPORATION
WEST HELENA, ARKANSAS
SITE 6 PHASE I SURFACE SOIL DATA

SVOA	SHORT ID --------->	6SB-E (0-5')		6SB-E (5-10')		6SB-F (0-5')		6SB-F (5-10')		6SB-G (0-5')		6SB-G (5-10')	
	ORIGINAL ID ----->	CED6SBE1		CED6SBE2		CED6SBF1		CED6SBF2		CED6SBG1		CED6SBG2	
	SAMPLE DATE ----->	09/27/93		09/27/93		09/27/93		09/27/93		09/29/93		09/29/93	
	DATE ANALYZED --->	10/22/93		10/23/93		10/20/93		10/19/93		10/24/93		10/23/93	
	MATRIX ---------->	Soil		Soil		Soil		Soil		Soil		Soil	
	UNITS ---------->	UG/KG		UG/KG		UG/KG		UG/KG		UG/KG		UG/KG	
CAS #	Parameter	E014	VAL	E014	VAL	E013	VAL	E013	VAL	E014	VAL	E014	VAL
100-01-6	4-Nitroaniline	4000.	U	4000.	U	20000.	U	10000.	U	3900.	U	4100.	U
100-02-7	4-Nitrophenol	4000.	U	4000.	U	8100.		10000.	U	3900.	U	4100.	U
100-51-6	Benzyl alcohol	810.	U	810.	U	NR		NR		780.	U	810.	U
101-55-3	4-Bromophenyl-phenylether	810.	U	810.	U	8000.	U	4200.	U	780.	U	810.	U
105-67-9	2,4-Dimethylphenol	810.	U	810.	U	8000.	U	4200.	U	780.	U	810.	U
106-44-5	4-Methylphenol (p-Cresol)	810.	U	810.	U	8000.	U	4200.	U	780.	U	810.	U
106-46-7	1,4-Dichlorobenzene	810.	U	810.	U	8000.	U	4200.	U	780.	U	810.	U
106-47-8	4-Chloroaniline	810.	U	810.	U	8000.	U	4200.	U	780.	U	810.	U
108-60-1	bis(2-chloroisopropyl) ether	810.	U	810.	U	8000.	U	4200.	U	780.	U	810.	U
108-95-2	Phenol	810.	U	810.	U	8000.	U	4200.	U	780.	U	810.	U
111-44-4	bis(2-Chloroethyl)ether	810.	U	810.	U	8000.	U	4200.	U	780.	U	810.	U
111-91-1	bis(2-Chloroethoxy)methane	810.	U	810.	U	8000.	U	4200.	U	780.	U	810.	U
117-81-7	bis(2-Ethylhexyl)phthalate (BEHP)	810.	U	810.	U	8000.	U	4200.	U	780.	U	810.	U
117-84-0	Di-n-octylphthalate	810.	U	810.	U	8000.	U	4200.	U	780.	U	810.	U
118-74-1	Hexachlorobenzene	810.	U	810.	U	8000.	U	4200.	U	780.	U	810.	U
120-12-7	Anthracene	810.	U	810.	U	8000.	U	4200.	U	780.	U	810.	U
120-82-1	1,2,4-Trichlorobenzene	810.	U	810.	U	8000.	U	4200.	U	780.	U	810.	U
120-83-2	2,4-Dichlorophenol	810.	U	810.	U	8000.	U	4200.	U	780.	U	810.	U
121-14-2	2,4-Dinitrotoluene	810.	U	810.	U	8000.	U	4200.	U	780.	U	810.	U
129-00-0	Pyrene	810.	U	810.	U	8000.	U	4200.	U	780.	U	810.	U
131-11-3	Dimethylphthalate	810.	U	810.	U	8000.	U	4200.	U	780.	U	810.	U
132-64-9	Dibenzofuran	810.	U	810.	U	8000.	U	4200.	U	780.	U	810.	U
191-24-2	Benzo(g,h,i)perylene	810.	U	810.	U	8000.	U	4200.	U	780.	U	810.	U
193-39-5	Indeno(1,2,3-cd)pyrene	810.	U	810.	U	8000.	U	4200.	U	780.	U	810.	U
205-99-2	Benzo(b)fluoranthene	810.	U	810.	U	8000.	U	4200.	U	780.	U	810.	U
206-44-0	Fluoranthene	810.	U	810.	U	8000.	U	4200.	U	780.	U	810.	U
207-08-9	Benzo(k)fluoranthene	810.	U	810.	U	8000.	U	4200.	U	780.	U	810.	U
208-96-8	Acenaphthylene	810.	U	810.	U	8000.	U	4200.	U	780.	U	810.	U
218-01-9	Chrysene	810.	U	810.	U	8000.	U	4200.	U	780.	U	810.	U
50-32-8	Benzo(a)pyrene	810.	U	810.	U	8000.	U	4200.	U	780.	U	810.	U
51-28-5	2,4-Dinitrophenol	4000.	U	4000.	U	20000.	U	10000.	U	3900.	U	4100.	U
534-52-1	4,6-Dinitro-2-methylphenol	4000.	U	4000.	U	20000.	U	10000.	U	3900.	U	4100.	U
53-70-3	Dibenz(a,h)anthracene	810.	U	810.	U	8000.	U	4200.	U	780.	U	810.	U
541-73-1	1,3-Dichlorobenzene	810.	U	810.	U	8000.	U	4200.	U	780.	U	810.	U
56-55-3	Benzo(a)anthracene	810.	U	810.	U	8000.	U	4200.	U	780.	U	810.	U
59-50-7	4-Chloro-3-methylphenol	810.	U	810.	U	8000.	U	4200.	U	780.	U	810.	U
606-20-2	2,6-Dinitrotoluene	810.	U	810.	U	8000.	U	4200.	U	780.	U	810.	U
621-64-7	N-Nitroso-di-n-propylamine	810.	U	810.	U	8000.	U	4200.	U	780.	U	810.	U
65-85-0	Benzoic acid	4000.	U	4000.	U	NR		NR		3900.	U	4100.	U

*** Validation Complete ***

CEDAR CHEMICAL CORPORATION
WEST HELENA, ARKANSAS
SITE 6 PHASE I SURFACE SOIL DATA

SVOA	SHORT ID --------->	6SB-E (0-5')		6SB-E (5-10')		6SB-F (0-5')		6SB-F (5-10')		6SB-G (0-5')		6SB-G (5-10')	
	ORIGINAL ID ----->	CED6SBE1		CED6SBE2		CED6SBF1		CED6SBF2		CED6SBG1		CED6SBG2	
	SAMPLE DATE ----->	09/27/93		09/27/93		09/27/93		09/27/93		09/29/93		09/29/93	
	DATE ANALYZED --->	10/22/93		10/23/93		10/20/93		10/19/93		10/24/93		10/23/93	
	MATRIX ---------->	Soil		Soil		Soil		Soil		Soil		Soil	
	UNITS ---------->	UG/KG		UG/KG		UG/KG		UG/KG		UG/KG		UG/KG	
CAS #	Parameter	E014	VAL	E014	VAL	E013	VAL	E013	VAL	E014	VAL	E014	VAL
67-72-1	Hexachloroethane	810.	U	810.	U	8000.	U	4200.	U	780.	U	810.	U
7005-72-3	4-Chlorophenyl-phenylether	810.	U	810.	U	8000.	U	4200.	U	780.	U	810.	U
709-98-8	Propanil	810.	U	103.		1300.		18000.		780.	U	810.	U
77-47-4	Hexachlorocyclopentadiene	810.	U	810.	U	8000.	U	4200.	U	780.	U	810.	U
78-59-1	Isophorone	810.	U	810.	U	8000.	U	4200.	U	780.	U	810.	U
83-32-9	Acenaphthene	810.	U	810.	U	8000.	U	4200.	U	780.	U	810.	U
84-66-2	Diethylphthalate	810.	U	810.	U	8000.	U	4200.	U	780.	U	810.	U
84-74-2	Di-n-butylphthalate	810.	U	810.	U	8000.	U	4200.	U	200.		170.	
85-01-8	Phenanthrene	810.	U	810.	U	8000.	U	4200.	U	780.	U	810.	U
85-68-7	Butylbenzylphthalate	810.	U	810.	U	8000.	U	4200.	U	780.	U	810.	U
86-30-6	N-Nitrosodiphenylamine	810.	U	810.	U	8000.	U	4200.	U	780.	U	810.	U
86-73-7	Fluorene	810.	U	810.	U	8000.	U	4200.	U	780.	U	810.	U
87-68-3	Hexachlorobutadiene	810.	U	810.	U	8000.	U	4200.	U	780.	U	810.	U
87-86-5	Pentachlorophenol	4000.	U	4000.	U	20000.	U	10000.	U	3900.	U	4100.	U
88-06-2	2,4,6-Trichlorophenol	810.	U	810.	U	8000.	U	4200.	U	780.	U	810.	U
88-74-4	2-Nitroaniline	4000.	U	4000.	U	20000.	U	10000.	U	3900.	U	4100.	U
88-75-5	2-Nitrophenol	810.	U	810.	U	8000.	U	4200.	U	780.	U	810.	U
88-85-7	Dinoseb	4000.	U	10000.		16000.		21000.		45000.		5300.	
91-20-3	Naphthalene	810.	U	810.	U	8000.	U	4200.	U	780.	U	810.	U
91-57-6	2-Methylnaphthalene	810.	U	810.	U	8000.	U	4200.	U	780.	U	810.	U
91-58-7	2-Chloronaphthalene	810.	U	810.	U	8000.	U	4200.	U	780.	U	810.	U
91-94-1	3,3'-Dichlorobenzidine	1600.	U	1600.	U	8000.	U	4200.	U	1600.	U	1600.	U
95-48-7	2-Methylphenol (o-Cresol)	810.	U	810.	U	8000.	U	4200.	U	780.	U	810.	U
95-50-1	1,2-Dichlorobenzene	810.	U	810.	U	8000.	U	4200.	U	780.	U	810.	U
95-57-8	2-Chlorophenol	810.	U	810.	U	8000.	U	4200.	U	780.	U	810.	U
95-76-1	3,4-Dichloroaniline	84.		810.	U	20000.	U	4900.		1600.		810.	U
95-95-4	2,4,5-Trichlorophenol	4000.	U	4000.	U	8000.	U	10000.	U	3900.	U	4100.	U
98-95-3	Nitrobenzene	810.	U	810.	U	8000.	U	4200.	U	780.	U	810.	U
99-09-2	3-Nitroaniline	4000.	U	4000.	U	20000.	U	10000.	U	3900.	U	4100.	U

*** Validation Complete ***

CEDAR CHEMICAL CORPORATION
WEST HELENA, ARKANSAS
SITE 6 PHASE I SURFACE SOIL DATA

SVOA	SHORT ID	6SB-H (0-5')		6SB-H (5-10')		6SB-J (5-10')		6SB-J (10-15')		6SB-K (0-5')		6SB-K (5-10')	
	ORIGINAL ID	CED6SBH1		CED6SBH2		CED6SBJ2		CED6SBJ3		CED6SBK1		CED6SBK2	
	SAMPLE DATE	09/30/93		09/30/93		09/27/93		09/27/93		09/29/93		09/29/93	
	DATE ANALYZED	10/23/93		10/23/93		10/19/93		10/19/93		10/23/93		10/23/93	
	MATRIX	Soil		Soil		Soil		Soil		Soil		Soil	
	UNITS	UG/KG		UG/KG		UG/KG		UG/KG		UG/KG		UG/KG	
CAS #	Parameter	E014	VAL	E014	VAL	E013	VAL	E013	VAL	E014	VAL	E014	VAL
100-01-6	4-Nitroaniline	3800.	U	4000.	U	5000.	U	1000.	U	4100.	U	4200.	U
100-02-7	4-Nitrophenol	3800.	U	4000.	U	5000.	U	1000.	U	4100.	U	4200.	U
100-51-6	Benzyl alcohol	770.	U	810.	U	NR		NR		820.	U	840.	U
101-55-3	4-Bromophenyl-phenylether	770.	U	810.	U	2100.	U	420.	U	820.	U	840.	U
105-67-9	2,4-Dimethylphenol	770.	U	810.	U	2100.	U	420.	U	820.	U	840.	U
106-44-5	4-Methylphenol (p-Cresol)	770.	U	810.	U	2100.	U	420.	U	820.	U	840.	U
106-46-7	1,4-Dichlorobenzene	770.	U	810.	U	2100.	U	420.	U	820.	U	840.	U
106-47-8	4-Chloroaniline	770.	U	810.	U	2100.	U	420.	U	820.	U	840.	U
108-60-1	bis(2-chloroisopropyl) ether	770.	U	810.	U	2100.	U	420.	U	820.	U	840.	U
108-95-2	Phenol	770.	U	810.	U	2100.	U	420.	U	820.	U	840.	U
111-44-4	bis(2-Chloroethyl)ether	770.	U	810.	U	2100.	U	420.	U	820.	U	840.	U
111-91-1	bis(2-Chloroethoxy)methane	770.	U	810.	U	2100.	U	420.	U	820.	U	840.	U
117-81-7	bis(2-Ethylhexyl)phthalate (BEHP)	770.	U	810.	U	2100.	U	420.	U	820.	U	840.	U
117-84-0	Di-n-octylphthalate	770.	U	810.	U	2100.	U	420.	U	820.	U	840.	U
118-74-1	Hexachlorobenzene	770.	U	810.	U	2100.	U	420.	U	820.	U	840.	U
120-12-7	Anthracene	770.	U	810.	U	2100.	U	420.	U	820.	U	840.	U
120-82-1	1,2,4-Trichlorobenzene	770.	U	810.	U	2100.	U	420.	U	820.	U	840.	U
120-83-2	2,4-Dichlorophenol	770.	U	810.	U	2100.	U	420.	U	820.	U	840.	U
121-14-2	2,4-Dinitrotoluene	770.	U	810.	U	2100.	U	420.	U	820.	U	840.	U
129-00-0	Pyrene	770.	U	810.	U	2100.	U	420.	U	820.	U	840.	U
131-11-3	Dimethylphthalate	770.	U	810.	U	2100.	U	420.	U	820.	U	840.	U
132-64-9	Dibenzofuran	770.	U	810.	U	2100.	U	420.	U	820.	U	840.	U
191-24-2	Benzo(g,h,i)perylene	770.	U	810.	U	2100.	U	420.	U	820.	U	840.	U
193-39-5	Indeno(1,2,3-cd)pyrene	770.	U	810.	U	2100.	U	420.	U	820.	U	840.	U
205-99-2	Benzo(b)fluoranthene	770.	U	810.	U	2100.	U	420.	U	820.	U	840.	U
206-44-0	Fluoranthene	770.	U	810.	U	2100.	U	420.	U	820.	U	840.	U
207-08-9	Benzo(k)fluoranthene	770.	U	810.	U	2100.	U	420.	U	820.	U	840.	U
208-96-8	Acenaphthylene	770.	U	810.	U	2100.	U	420.	U	820.	U	840.	U
218-01-9	Chrysene	770.	U	810.	U	2100.	U	420.	U	820.	U	840.	U
50-32-8	Benzo(a)pyrene	770.	U	810.	U	2100.	U	420.	U	820.	U	840.	U
51-28-5	2,4-Dinitrophenol	3800.	U	4000.	U	5000.	U	1000.	U	4100.	U	4200.	U
534-52-1	4,6-Dinitro-2-methylphenol	3800.	U	4000.	U	5000.	U	1000.	U	4200.	U	4200.	U
53-70-3	Dibenz(a,h)anthracene	770.	U	810.	U	2100.	U	420.	U	820.	U	840.	U
541-73-1	1,3-Dichlorobenzene	770.	U	810.	U	2100.	U	420.	U	820.	U	840.	U
56-55-3	Benzo(a)anthracene	770.	U	810.	U	2100.	U	420.	U	820.	U	840.	U
59-50-7	4-Chloro-3-methylphenol	770.	U	810.	U	2100.	U	420.	U	820.	U	840.	U
606-20-2	2,6-Dinitrotoluene	770.	U	810.	U	2100.	U	420.	U	820.	U	840.	U
621-64-7	N-Nitroso-di-n-propylamine	770.	U	810.	U	2100.	U	420.	U	820.	U	840.	U
65-85-0	Benzoic acid	3800.	U	4000.	U	NR		NR		4100.	U	4200.	U

*** Validation Complete ***

CEDAR CHEMICAL CORPORATION
WEST HELENA, ARKANSAS
SITE 6 PHASE I SURFACE SOIL DATA

SVOA	SHORT ID ---------->	6SB-H (0-5')		6SB-H (5-10')		6SB-J (5-10')		6SB-J (10-15')		6SB-K (0-5')		6SB-K (5-10')	
	ORIGINAL ID ----->	CED6SBH1		CED6SBH2		CED6SBJ2		CED6SBJ3		CED6SBK1		CED6SBK2	
	SAMPLE DATE ----->	09/30/93		09/30/93		09/27/93		09/27/93		09/29/93		09/29/93	
	DATE ANALYZED --->	10/23/93		10/23/93		10/19/93		10/19/93		10/23/93		10/23/93	
	MATRIX ---------->	Soil		Soil		Soil		Soil		Soil		Soil	
	UNITS ---------->	UG/KG		UG/KG		UG/KG		UG/KG		UG/KG		UG/KG	
CAS #	Parameter	E014	VAL	E014	VAL	E013	VAL	E013	VAL	E014	VAL	E014	VAL
67-72-1	Hexachloroethane	770.	U	810.	U	2100.	U	420.	U	820.	U	840.	U
7005-72-3	4-Chlorophenyl-phenylether	770.	U	810.	U	2100.	U	420.	U	820.	U	840.	U
709-98-8	Propanil	770.	U	810.	U	5000.	U	1000.	U	820.	U	840.	U
77-47-4	Hexachlorocyclopentadiene	770.	U	810.	U	2100.	U	420.	U	820.	U	840.	U
78-59-1	Isophorone	770.	U	810.	U	2100.	U	420.	U	820.	U	840.	U
83-32-9	Acenaphthene	770.	U	810.	U	2100.	U	420.	U	820.	U	840.	U
84-66-2	Diethylphthalate	770.	U	810.	U	2100.	U	420.	U	820.	U	840.	U
84-74-2	Di-n-butylphthalate	102.		810.	U	2100.	U	150.		820.	U	200.	
85-01-8	Phenanthrene	770.	U	810.	U	2100.	U	420.	U	820.	U	840.	U
85-68-7	Butylbenzylphthalate	770.	U	810.	U	2100.	U	420.	U	820.	U	840.	U
86-30-6	N-Nitrosodiphenylamine	770.	U	810.	U	2100.	U	420.	U	820.	U	840.	U
86-73-7	Fluorene	770.	U	810.	U	2100.	U	420.	U	820.	U	840.	U
87-68-3	Hexachlorobutadiene	770.	U	810.	U	2100.	U	420.	U	820.	U	840.	U
87-86-5	Pentachlorophenol	3800.	U	4000.	U	5000.	U	1000.	U	4100.	U	4200.	U
88-06-2	2,4,6-Trichlorophenol	770.	U	810.	U	2100.	U	420.	U	820.	U	840.	U
88-74-4	2-Nitroaniline	3800.	U	4000.	U	5000.	U	1000.	U	4100.	U	4200.	U
88-75-5	2-Nitrophenol	770.	U	810.	U	2100.	U	420.	U	820.	U	840.	U
88-85-7	Dinoseb	7700.		10200.		1000.		1000.	U	4100.		1060.	
91-20-3	Naphthalene	770.	U	810.	U	2100.	U	420.	U	820.	U	840.	U
91-57-6	2-Methylnaphthalene	770.	U	810.	U	2100.	U	420.	U	820.	U	840.	U
91-58-7	2-Chloronaphthalene	770.	U	810.	U	2100.	U	420.	U	820.	U	840.	U
91-94-1	3,3'-Dichlorobenzidine	1500.	U	1600.	U	2100.	U	420.	U	1600.	U	1700.	U
95-48-7	2-Methylphenol (o-Cresol)	770.	U	810.	U	2100.	U	420.	U	820.	U	840.	U
95-50-1	1,2-Dichlorobenzene	770.	U	810.	U	2100.	U	420.	U	820.	U	840.	U
95-57-8	2-Chlorophenol	770.	U	810.	U	2100.	U	420.	U	820.	U	840.	U
95-76-1	3,4-Dichloroaniline	770.	U	810.	U	2100.	U	1000.	U	820.	U	840.	U
95-95-4	2,4,5-Trichlorophenol	3800.	U	4000.	U	5000.	U	1000.	U	4100.	U	4200.	U
98-95-3	Nitrobenzene	770.	U	810.	U	2100.	U	420.	U	820.	U	840.	U
99-09-2	3-Nitroaniline	3800.	U	4000.	U	5000.	U	1000.	U	4100.	U	4200.	U

*** Validation Complete ***

CEDAR CHEMICAL CORPORATION
WEST HELENA, ARKANSAS
SITE 6 PHASE I SURFACE SOIL DATA

SVOA	SHORT ID ------>	6SB-L (0-5')		6SB-L (5-10')	
	ORIGINAL ID ----->	CED6SBL1		CED6SBL2	
	SAMPLE DATE ----->	09/30/93		09/30/93	
	DATE ANALYZED --->	10/23/93		10/23/93	
	MATRIX ---------->	Soil		Soil	
	UNITS ---------->	UG/KG		UG/KG	
CAS #	Parameter	E014	VAL	E014	VAL
100-01-6	4-Nitroaniline	3800.	U	4200.	U
100-02-7	4-Nitrophenol	3800.	U	4200.	U
100-51-6	Benzyl alcohol	760.	U	840.	U
101-55-3	4-Bromophenyl-phenylether	760.	U	840.	U
105-67-9	2,4-Dimethylphenol	760.	U	840.	U
106-44-5	4-Methylphenol (p-Cresol)	760.	U	840.	U
106-46-7	1,4-Dichlorobenzene	760.	U	840.	U
106-47-8	4-Chloroaniline	760.	U	840.	U
108-60-1	bis(2-chloroisopropyl) ether	760.	U	840.	U
108-95-2	Phenol	760.	U	840.	U
111-44-4	bis(2-Chloroethyl)ether	760.	U	840.	U
111-91-1	bis(2-Chloroethoxy)methane	760.	U	840.	U
117-81-7	bis(2-Ethylhexyl)phthalate (BEHP)	760.	U	840.	U
117-84-0	Di-n-octylphthalate	760.	U	840.	U
118-74-1	Hexachlorobenzene	760.	U	840.	U
120-12-7	Anthracene	760.	U	840.	U
120-82-1	1,2,4-Trichlorobenzene	760.	U	840.	U
120-83-2	2,4-Dichlorophenol	760.	U	840.	U
121-14-2	2,4-Dinitrotoluene	760.	U	840.	U
129-00-0	Pyrene	760.	U	840.	U
131-11-3	Dimethylphthalate	760.	U	840.	U
132-64-9	Dibenzofuran	760.	U	840.	U
191-24-2	Benzo(g,h,i)perylene	760.	U	840.	U
193-39-5	Indeno(1,2,3-cd)pyrene	760.	U	840.	U
205-99-2	Benzo(b)fluoranthene	760.	U	840.	U
206-44-0	fluoranthene	760.	U	840.	U
207-08-9	Benzo(k)fluoranthene	760.	U	840.	U
208-96-8	Acenaphthylene	760.	U	840.	U
218-01-9	Chrysene	760.	U	840.	U
50-32-8	Benzo(a)pyrene	760.	U	840.	U
51-28-5	2,4-Dinitrophenol	3800.	U	4200.	U
534-52-1	4,6-Dinitro-2-methylphenol	3800.	U	4200.	U
53-70-3	Dibenz(a,h)anthracene	760.	U	840.	U
541-73-1	1,3-Dichlorobenzene	760.	U	840.	U
56-55-3	Benzo(a)anthracene	760.	U	840.	U
59-50-7	4-Chloro-3-methylphenol	760.	U	840.	U
606-20-2	2,6-Dinitrotoluene	760.	U	840.	U
621-64-7	N-Nitroso-di-n-propylamine	760.	U	840.	U
65-85-0	Benzoic acid	3800.	U	4200.	U

*** Validation Complete ***

CEDAR CHEMICAL CORPORATION
WEST HELENA, ARKANSAS
SITE 6 PHASE I SURFACE SOIL DATA

SVOA									
	SHORT ID --------->	6SB-L (0-5')		6SB-L (5-10')					
	ORIGINAL ID ----->	CED6SBL1		CED6SBL2					
	SAMPLE DATE ----->	09/30/93		09/30/93					
	DATE ANALYZED --->	10/23/93		10/23/93					
	MATRIX ---------->	Soil		Soil					
	UNITS ----------->	UG/KG		UG/KG					
CAS #	Parameter	E014	VAL	E014	VAL				
67-72-1	Hexachloroethane	760.	U	840.	U				
7005-72-3	4-Chlorophenyl-phenylether	760.	U	840.	U				
709-98-8	Propanil	760.	U	840.	U				
77-47-4	Hexachlorocyclopentadiene	760.	U	840.	U				
78-59-1	Isophorone	760.	U	840.	U				
83-32-9	Acenaphthene	760.	U	840.	U				
84-66-2	Diethylphthalate	760.	U	840.	U				
84-74-2	Di-n-butylphthalate	760.	U	840.	U				
85-01-8	Phenanthrene	760.	U	840.	U				
85-68-7	Butylbenzylphthalate	760.	U	840.	U				
86-30-6	N-Nitrosodiphenylamine	760.	U	840.	U				
86-73-7	Fluorene	760.	U	840.	U				
87-68-3	Hexachlorobutadiene	760.	U	840.	U				
87-86-5	Pentachlorophenol	3800.	U	4200.	U				
88-06-2	2,4,6-Trichlorophenol	760.	U	840.	U				
88-74-4	2-Nitroaniline	3800.	U	4200.	U				
88-75-5	2-Nitrophenol	760.	U	840.	U				
88-85-7	Dinoseb	3800.	U	4200.	U				
91-20-3	Naphthalene	760.	U	840.	U				
91-57-6	2-Methylnaphthalene	760.	U	840.	U				
91-58-7	2-Chloronaphthalene	760.	U	840.	U				
91-94-1	3,3'-Dichlorobenzidine	1500.	U	1700.	U				
95-48-7	2-Methylphenol (o-Cresol)	760.	U	840.	U				
95-50-1	1,2-Dichlorobenzene	760.	U	840.	U				
95-57-8	2-Chlorophenol	760.	U	840.	U				
95-76-1	3,4-Dichloroaniline	760.	U	840.	U				
95-95-4	2,4,5-Trichlorophenol	3800.	U	4200.	U				
98-95-3	Nitrobenzene	760.	U	840.	U				
99-09-2	3-Nitroaniline	3800.	U	4200.	U				

*** Validation Complete ***

CEDAR CHEMICAL CORPORATION
WEST HELENA, ARKANSAS
SITE 6 PHASE I SURFACE SOIL DATA

VOA	SHORT ID --------->	6SB-A (0-5')		6SB-A (5-10')		6SB-C (0-5')		6SB-C (5-10')		6SB-D (0-5')		6SB-D (5-10')	
	ORIGINAL ID ----->	CED6SBA1		CED6SBA2		CED6SBC1		CED6SBC2		CED6SBD1		CED6SBD2	
	SAMPLE DATE ----->	09/27/93		09/27/93		09/29/93		09/29/93		09/29/93		09/29/93	
	DATE ANALYZED --->	10/07/93		10/07/93		10/07/93		10/08/93		10/08/93		10/08/93	
	MATRIX ----------->	Soil		Soil		Soil		Soil		Soil		Soil	
	UNITS ------------>	UG/KG		UG/KG		UG/KG		UG/KG		UG/KG		UG/KG	
CAS #	Parameter	E014	VAL	E013	VAL	E014	VAL	E014	VAL	E014	VAL	E014	VAL
100-41-4	Ethylbenzene	6.	U	6.	U	6.	U	6.	U	6.	U	24.	U
100-42-5	Styrene	6.	U	6.	U	6.	U	6.	U	6.	U	24.	U
10061-01-5	cis-1,3-Dichloropropene	6.	U	6.	U	6.	U	6.	U	6.	U	24.	U
10061-02-6	trans-1,3-Dichloropropene	6.	U	6.	U	6.	U	6.	U	6.	U	24.	U
107-06-2	1,2-Dichloroethane	6.	U	6.	U	6.	U	6.	U	6.	U	9.	
108-05-4	Vinyl acetate	6.	U	6.	U	6.	U	6.	U	6.	U	24.	U
108-10-1	4-Methyl-2-Pentanone (MIBK)	60.	U	62.	U	61.	U	2.		62.	U	500.	
108-88-3	Toluene	6.	U	6.	U	6.	U	6.	U	6.	U	24.	U
108-90-7	Chlorobenzene	6.	U	6.	U	6.	U	6.	U	6.	U	24.	U
124-48-1	Dibromochloromethane	6.	U	6.	U	6.	U	6.	U	6.	U	24.	U
127-18-4	Tetrachloroethene	6.	U	6.	U	6.	U	6.	U	6.	U	24.	U
1330-20-7	Xylene (total)	6.	U	6.	U	6.	U	6.	U	6.	U	24.	U
540-59-0	1,2-Dichloroethene (total)	6.	U	6.	U	6.	U	6.	U	6.	U	24.	U
56-23-5	Carbon tetrachloride	6.	U	6.	U	6.	U	6.	U	6.	U	24.	U
591-78-6	2-Hexanone	60.	U	62.	U	61.	U	60.	U	62.	U	240.	U
67-64-1	Acetone	53.		12.	U	5.		12.	U	8.		860.	
67-66-3	Chloroform	6.	U	6.	U	6.	U	6.	U	6.	U	24.	U
71-43-2	Benzene	6.	U	6.	U	6.	U	6.	U	6.	U	24.	U
71-55-6	1,1,1-Trichloroethane	6.	U	6.	U	6.	U	6.	U	6.	U	24.	U
74-83-9	Bromomethane	12.	U	12.	U	12.	U	12.	U	12.	U	49.	U
74-87-3	Chloromethane	12.	U	12.	U	12.	U	12.	U	12.	U	49.	U
75-00-3	Chloroethane	12.	U	12.	U	12.	U	12.	U	12.	U	49.	U
75-01-4	Vinyl chloride	6.	U	6.	U	6.	U	6.	U	6.	U	24.	U
75-09-2	Methylene chloride	6.	U	6.	U	14.		23.		20.		44.	U
75-15-0	Carbon disulfide	6.	U	6.	U	6.	U	6.	U	6.	U	24.	U
75-25-2	Bromoform	6.	U	6.	U	6.	U	6.	U	6.	U	24.	U
75-27-4	Bromodichloromethane	6.	U	6.	U	6.	U	6.	U	6.	U	24.	U
75-34-3	1,1-Dichloroethane	6.	U	6.	U	6.	U	6.	U	6.	U	24.	U
75-35-4	1,1-Dichloroethene	6.	U	6.	U	6.	U	6.	U	6.	U	24.	U
78-87-5	1,2-Dichloropropane	6.	U	6.	U	6.	U	6.	U	6.	U	24.	U
78-93-3	2-Butanone (MEK)	15.	U	12.	U	6.	U	12.	U	12.	U	49.	
79-00-5	1,1,2-Trichloroethane	6.	U	6.	U	6.	U	6.	U	6.	U	24.	U
79-01-6	Trichloroethene	6.	U	6.	U	6.	U	6.	U	6.	U	24.	U
79-34-5	1,1,2,2-Tetrachloroethane	6.	U	6.	U	6.	U	6.	U	6.	U	24.	U

*** Validation Complete ***

CEDAR CHEMICAL CORPORATION
WEST HELENA, ARKANSAS
SITE 6 PHASE I SURFACE SOIL DATA

VOA	SHORT ID --------->	6SB-E (0-5')		6SB-E (5-10')		6SB-F (0-5')		6SB-F (5-10')		6SB-G (0-5')		6SB-G (0-5')DUP	
	ORIGINAL ID ----->	CED6SBE1		CED6SBE2		CED6SBF1		CED6SBF2		CED6SBG1		CED6SBG1DUP	
	SAMPLE DATE ----->	09/27/93		09/27/93		09/27/93		09/27/93		09/29/93		09/29/93	
	DATE ANALYZED --->	10/07/93		10/07/93		10/07/93		10/07/93		10/08/93		10/08/93	
	MATRIX ---------->	Soil		Soil		Soil		Soil		Soil		Soil	
	UNITS ----------->	UG/KG		UG/KG		UG/KG		UG/KG		UG/KG		UG/KG	
CAS #	Parameter	E014	VAL	E014	VAL	E013	VAL	E013	VAL	E014	VAL	E014	VAL
100-41-4	Ethylbenzene	6.	U	6.	U	2.		6.		29.	U	30.	U
100-42-5	Styrene	6.	U	6.	U	6.	U	6.	U	29.	U	30.	U
10061-01-5	cis-1,3-Dichloropropene	6.	U	6.	U	6.	U	6.	U	29.	U	30.	U
10061-02-6	trans-1,3-Dichloropropene	6.	U	6.	U	6.	U	6.	U	29.	U	30.	U
107-06-2	1,2-Dichloroethane	6.	U	6.	U	6.	U	6.	U	29.	U	30.	U
108-05-4	Vinyl acetate	6.	U	6.	U	6.	U	6.	U	29.	U	30.	U
108-10-1	4-Methyl-2-Pentanone (MIBK)	60.	U	59.	U	62.	U	1.		290.	U	300.	U
108-88-3	Toluene	6.	U	6.	U	2.		10.		29.	U	30.	U
108-90-7	Chlorobenzene	6.	U	6.	U	6.	U	6.	U	29.	U	30.	U
124-48-1	Dibromochloromethane	6.	U	6.	U	6.	U	6.	U	29.	U	30.	U
127-18-4	Tetrachloroethene	6.	U	6.	U	6.	U	6.	U	29.	U	30.	U
1330-20-7	Xylene (total)	6.	U	6.	U	8.		43.		29.	U	30.	U
540-59-0	1,2-Dichloroethene (total)	6.	U	6.	U	6.	U	6.	U	29.	U	30.	U
56-23-5	Carbon tetrachloride	6.	U	6.	U	6.	U	6.	U	29.	U	30.	U
591-78-6	2-Hexanone	60.	U	59.	U	62.	U	3.		290.	U	300.	U
67-64-1	Acetone	67.		31.		12.	U	240.		890.		1800.	
67-66-3	Chloroform	6.	U	6.	U	6.	U	6.	U	29.	U	30.	U
71-43-2	Benzene	6.	U	6.	U	6.	U	6.	U	29.	U	30.	U
71-55-6	1,1,1-Trichloroethane	6.	U	6.	U	6.	U	6.	U	29.	U	30.	U
74-83-9	Bromomethane	12.	U	12.	U	12.	U	12.	U	59.	U	60.	U
74-87-3	Chloromethane	12.	U	12.	U	12.	U	12.	U	59.	U	60.	U
75-00-3	Chloroethane	12.	U	12.	U	12.	U	12.	U	59.	U	60.	U
75-01-4	Vinyl chloride	6.	U	6.	U	6.	U	6.	U	29.	U	30.	U
75-09-2	Methylene chloride	6.	U	6.	U	8.	U	14.		29.	U	30.	U
75-15-0	Carbon disulfide	6.	U	6.	U	6.	U	6.	U	29.	U	30.	U
75-25-2	Bromoform	6.	U	6.	U	6.	U	6.	U	29.	U	30.	U
75-27-4	Bromodichloromethane	6.	U	6.	U	6.	U	6.	U	29.	U	30.	U
75-34-3	1,1-Dichloroethane	6.	U	6.	U	6.	U	6.	U	29.	U	30.	U
75-35-4	1,1-Dichloroethene	6.	U	6.	U	6.	U	6.	U	29.	U	30.	U
78-87-5	1,2-Dichloropropane	6.	U	6.	U	6.	U	6.	U	29.	U	30.	U
78-93-3	2-Butanone (MEK)	12.	U	12.	U	12.	U	93.		59.	U	60.	U
79-00-5	1,1,2-Trichloroethane	6.	U	6.	U	6.	U	6.	U	29.	U	30.	U
79-01-6	Trichloroethene	6.	U	6.	U	6.	U	6.	U	29.	U	30.	U
79-34-5	1,1,2,2-Tetrachloroethane	6.	U	6.	U	6.	U	6.	U	29.	U	30.	U

*** Validation Complete ***

CEDAR CHEMICAL CORPORATION
WEST HELENA, ARKANSAS
SITE 6 PHASE I SURFACE SOIL DATA

VOA	SHORT ID --------->	6SB-G (5-10')		6SB-H (0-5')		6SB-H (5-10')		6SB-J (5-10')		6SB-J (10-15')		6SB-K (0-5')	
	ORIGINAL ID ----->	CED6SBG2		CED6SBH1		CED6SBH2		CED6SBJ2		CED6SBJ3		CED6SBK1	
	SAMPLE DATE ----->	09/29/93		09/30/93		09/30/93		09/27/93		09/27/93		09/29/93	
	DATE ANALYZED --->	10/08/93		10/08/93		10/08/93		10/07/93		10/07/93		10/08/93	
	MATRIX ---------->	Soil		Soil		Soil		Soil		Soil		Soil	
	UNITS ---------->	UG/KG		UG/KG		UG/KG		UG/KG		UG/KG		UG/KG	
CAS #	Parameter	E014	VAL	E014	VAL	E014	VAL	E013	VAL	E013	VAL	E014	VAL
100-41-4	Ethylbenzene	6.	U	6.	U	6.	U	6.	U	6.	U	6.	U
100-42-5	Styrene	6.	U	6.	U	6.	U	6.	U	6.	U	6.	U
10061-01-5	cis-1,3-Dichloropropene	6.	U	6.	U	6.	U	6.	U	6.	U	6.	U
10061-02-6	trans-1,3-Dichloropropene	6.	U	6.	U	6.	U	6.	U	6.	U	6.	U
107-06-2	1,2-Dichloroethane	6.	U	6.	U	6.	U	6.	U	9.		6.	U
108-05-4	Vinyl acetate	6.	U	6.	U	6.	U	6.	U	6.	U	6.	U
108-10-1	4-Methyl-2-Pentanone (MIBK)	63.	U	57.	U	64.	U	65.	U	64.	U	63.	U
108-88-3	Toluene	6.	U	6.	U	6.	U	6.	U	6.	U	6.	U
108-90-7	Chlorobenzene	6.	U	6.	U	6.	U	6.	U	6.	U	6.	U
124-48-1	Dibromochloromethane	6.	U	6.	U	6.	U	6.	U	6.	U	6.	U
127-18-4	Tetrachloroethene	6.	U	6.	U	6.	U	6.	U	6.	U	6.	U
1330-20-7	Xylene (total)	6.	U	6.	U	6.	U	6.	U	6.	U	6.	U
540-59-0	1,2-Dichloroethene (total)	6.	U	6.	U	6.	U	6.	U	6.	U	6.	U
56-23-5	Carbon tetrachloride	6.	U	6.	U	6.	U	6.	U	6.	U	6.	U
591-78-6	2-Hexanone	63.	U	57.	U	64.	U	65.	U	64.	U	63.	U
67-64-1	Acetone	15.		37.		13.	U	55.		13.	U	180.	
67-66-3	Chloroform	6.	U	6.	U	6.	U	6.	U	6.	U	6.	U
71-43-2	Benzene	6.	U	6.	U	6.	U	6.	U	6.	U	6.	U
71-55-6	1,1,1-Trichloroethane	6.	U	6.	U	6.	U	6.	U	6.	U	6.	U
74-83-9	Bromomethane	13.	U	11.	U	13.	U	13.	U	13.	U	13.	U
74-87-3	Chloromethane	13.	U	11.	U	13.	U	13.	U	13.	U	13.	U
75-00-3	Chloroethane	13.	U	11.	U	13.	U	13.	U	13.	U	13.	U
75-01-4	Vinyl chloride	6.	U	6.	U	6.	U	6.	U	6.	U	6.	U
75-09-2	Methylene chloride	10.	U	6.	U	7.	U	6.	U	10.		7.	U
75-15-0	Carbon disulfide	6.	U	6.	U	6.	U	6.	U	6.	U	6.	U
75-25-2	Bromoform	6.	U	6.	U	6.	U	6.	U	6.	U	6.	U
75-27-4	Bromodichloromethane	6.	U	6.	U	6.	U	6.	U	6.	U	6.	U
75-34-3	1,1-Dichloroethane	6.	U	6.	U	6.	U	6.	U	6.	U	6.	U
75-35-4	1,1-Dichloroethene	6.	U	6.	U	6.	U	6.	U	6.	U	6.	U
78-87-5	1,2-Dichloropropane	6.	U	6.	U	6.	U	6.	U	6.	U	6.	U
78-93-3	2-Butanone (MEK)	13.	U	11.	U	3.		66.	U	6.	U	13.	U
79-00-5	1,1,2-Trichloroethane	6.	U	6.	U	6.	U	6.	U	6.	U	6.	U
79-01-6	Trichloroethene	6.	U	6.	U	6.	U	6.	U	6.	U	6.	U
79-34-5	1,1,2,2-Tetrachloroethane	6.	U	6.	U	6.	U	6.	U	6.	U	6.	U

*** Validation Complete ***

CEDAR CHEMICAL CORPORATION
WEST HELENA, ARKANSAS
SITE 6 PHASE I SURFACE SOIL DATA

VOA											
	SHORT ID --------->	6SB-K (5-10')		6SB-L (0-5')		6SB-L (5-10')					
	ORIGINAL ID ----->	CED6SBK2		CED6SBL1		CED6SBL2					
	SAMPLE DATE ----->	09/29/93		09/30/93		09/30/93					
	DATE ANALYZED --->	10/08/93		10/08/93		10/09/93					
	MATRIX ---------->	Soil		Soil		Soil					
	UNITS ----------->	UG/KG		UG/KG		UG/KG					
CAS #	Parameter	E014	VAL	E014	VAL	E014	VAL				
100-41-4	Ethylbenzene	7.	U	6.	U	6.	U				
100-42-5	Styrene	7.	U	6.	U	6.	U				
10061-01-5	cis-1,3-Dichloropropene	7.	U	6.	U	6.	U				
10061-02-6	trans-1,3-Dichloropropene	7.	U	6.	U	6.	U				
107-06-2	1,2-Dichloroethane	7.	U	6.	U	6.	U				
108-05-4	Vinyl acetate	7.	U	6.	U	6.	U				
108-10-1	4-Methyl-2-Pentanone (MIBK)	66.	U	59.	U	65.	U				
108-88-3	Toluene	7.	U	6.	U	6.	U				
108-90-7	Chlorobenzene	7.	U	6.	U	6.	U				
124-48-1	Dibromochloromethane	7.	U	6.	U	6.	U				
127-18-4	Tetrachloroethene	7.	U	6.	U	6.	U				
1330-20-7	Xylene (total)	7.	U	6.	U	6.	U				
540-59-0	1,2-Dichloroethene (total)	7.	U	6.	U	6.	U				
56-23-5	Carbon tetrachloride	7.	U	6.	U	6.	U				
591-78-6	2-Hexanone	66.	U	59.	U	65.	U				
67-64-1	Acetone	25.		27.		13.	U				
67-66-3	Chloroform	7.	U	6.	U	6.	U				
71-43-2	Benzene	7.	U	6.	U	6.	U				
71-55-6	1,1,1-Trichloroethane	7.	U	6.	U	6.	U				
74-83-9	Bromomethane	13.	U	12.	U	13.	U				
74-87-3	Chloromethane	13.	U	12.	U	13.	U				
75-00-3	Chloroethane	13.	U	12.	U	13.	U				
75-01-4	Vinyl chloride	7.	U	6.	U	6.	U				
75-09-2	Methylene chloride	24.		6.	U	41.					
75-15-0	Carbon disulfide	7.	U	6.	U	6.	U				
75-25-2	Bromoform	7.	U	6.	U	6.	U				
75-27-4	Bromodichloromethane	7.	U	6.	U	6.	U				
75-34-3	1,1-Dichloroethane	7.	U	6.	U	6.	U				
75-35-4	1,1-Dichloroethene	7.	U	6.	U	6.	U				
78-87-5	1,2-Dichloropropane	7.	U	6.	U	6.	U				
78-93-3	2-Butanone (MEK)	13.	U	12.	U	13.	U				
79-00-5	1,1,2-Trichloroethane	7.	U	6.	U	6.	U				
79-01-6	Trichloroethene	7.	U	6.	U	6.	U				
79-34-5	1,1,2,2-Tetrachloroethane	7.	U	6.	U	6.	U				

*** Validation Complete ***

CEDAR CHEMICAL CORPORATION
WEST HELENA, ARKANSAS
SITE 6 PHASE II SURFACE SOIL DATA

PEST		SHORT ID --------->	6HA-B1 (0-1')		6HA-B2 (0-1')		6HA-C1 (0-1')		6HA-C2 (0-1')		6HA-D1 (0-1')		6HA-F1 (0-1')	
		ORIGINAL ID ----->	006S00B101		006S00B202		006S00C101		006S00C201		006S00D101		006S00F101	
		SAMPLE DATE ----->	12/02/94		12/02/94		12/02/94		12/02/94		12/02/94		12/02/94	
		DATE EXTRACTED -->	12/05/94		12/05/94		12/05/94		12/05/94		12/05/94		12/05/94	
		DATE ANALYZED --->	12/10/94		12/10/94		12/10/94		12/10/94		12/10/94		12/10/94	
		MATRIX ---------->	Soil		Soil		Soil		Soil		Soil		Soil	
		UNITS ---------->	UG/KG		UG/KG		UG/KG		UG/KG		UG/KG		UG/KG	
CAS #	Parameter		10867	VAL	10867	VAL	10867	VAL	10867	VAL	10867	VAL	10867	VAL
319-84-6	Alpha-BHC		2.	U	2.	U	2.	U	2.	U	2.	U	2.	U
319-85-7	Beta-BHC		4.	U	4.	U	4.	U	4.	U	4.	U	4.	U
319-86-8	Delta-BHC		6.	U	6.	U	6.	U	6.	U	6.	U	6.	U
58-89-9	gamma-BHC (Lindane)		2.7	U	2.7	U	2.7	U	2.7	U	2.7	U	2.7	U
76-44-8	Heptachlor		2.	U	2.	U	2.	U	2.	U	2.	U	2.	U
309-00-2	Aldrin		2.7	U	15.		2.7	U	24.		2.7	U	17.	
1024-57-3	Heptachlor Epoxide		56.	U	56.	U	56.	U	56.	U	56.	U	56.	U
959-98-8	Endosulfan I		9.4	U	9.4	U	9.4	U	9.4	U	9.4	U	9.4	U
60-57-1	Dieldrin		1.3	U	1.3	U	26.		78.		1.3	U	36.	
72-55-9	4,4'-DDE		2.7	U	27.		2.7	U	2.7	U	25.		2.7	U
72-20-8	Endrin		34.		4.	U	4.	U	4.	U	22.		4.	U
33213-65-9	Endosulfan II		2.7	U	2.7	U	2.7	U	2.7	U	2.7	U	2.7	U
72-54-8	4,4'-DDD		7.	U	150.		25.		47.		7.	U	46.	
7421-93-4	Endrin aldehyde		15.	U	15.	U	15.	U	15.	U	15.	U	15.	U
1031-07-8	Endosulfan Sulfate		44.	U	44.	U	44.	U	44.	U	44.	U	44.	U
50-29-3	4,4'-DDT		8.	U	8.	U	8.	U	8.	U	190.		44.	
72-43-5	Methoxychlor		5000.		240.		9200.		1300.		1500.		300.	
57-74-9	Chlordane		9.4	U	9.4	U	9.4	U	9.4	U	9.4	U	9.4	U
8001-35-2	Toxaphene		160.	U	160.	U	14000.		160.	U	160.	U	160.	U
12674-11-2	Aroclor-1016		60.	U	60.	U	60.	U	60.	U	60.	U	60.	U
11104-28-2	Aroclor-1221		180.	U	180.	U	180.	U	180.	U	180.	U	180.	U
11141-16-5	Aroclor-1232		32.	U	32.	U	32.	U	32.	U	32.	U	32.	U
53469-21-9	Aroclor-1242		44.	U	44.	U	44.	U	44.	U	44.	U	44.	U
12672-29-6	Aroclor-1248		170.	U	170.	U	170.	U	170.	U	170.	U	170.	U
11097-69-1	Aroclor-1254		80.	U	80.	U	80.	U	80.	U	80.	U	80.	U
11096-82-5	Aroclor-1260		24.	U	24.	U	24.	U	24.	U	24.	U	24.	U

*** Validation Complete ***

CEDAR CHEMICAL CORPORATION
WEST HELENA, ARKANSAS
SITE 6 PHASE II SURFACE SOIL DATA

PEST	SHORT ID --------->	6HA-F2 (0-1')		6HA-G1 (0-1')		6HA-G1 (0-1')		6HA-G2 (0-1')		6HA-H1 (0-1')		6HA-H2 (0-1')	
	ORIGINAL ID ----->	006S00F202		006C00G101		006S00G101		006S00G201		006S00H101		006S00H201	
	SAMPLE DATE ----->	12/02/94		12/02/94		12/02/94		12/02/94		12/02/94		12/02/94	
	DATE EXTRACTED -->	12/05/94		12/05/94		12/05/94		12/05/94		12/05/94		12/05/94	
	DATE ANALYZED --->	12/10/94		12/10/94		12/10/94		12/10/94		12/10/94		12/10/94	
	MATRIX ---------->	Soil		Soil		Soil		Soil		Soil		Soil	
	UNITS ---------->	UG/KG		UG/KG		UG/KG		UG/KG		UG/KG		UG/KG	
CAS #	Parameter	10867	VAL	10867	VAL	10867	VAL	10867	VAL	10867	VAL	10867	VAL
319-84-6	Alpha-BHC	2.	U	2.	U	2.	U	2.	U	2.	U	2.	U
319-85-7	Beta-BHC	4.	U	4.	U	4.	U	4.	U	4.	U	4.	U
319-86-8	Delta-BHC	6.	U	6.	U	6.	U	6.	U	6.	U	6.	U
58-89-9	gamma-BHC (Lindane)	2.7	U	2.7	U	2.7	U	2.7	U	2.7	U	2.7	U
76-44-8	Heptachlor	2.	U	2.	U	2.	U	2.	U	2.	U	2.	U
309-00-2	Aldrin	2.7	U	2.7	U	2.7	U	2.7	U	2.7	U	18.	
1024-57-3	Heptachlor Epoxide	56.	U	56.	U	56.	U	56.	U	56.	U	56.	U
959-98-8	Endosulfan I	9.4	U	9.4	U	9.4	U	9.4	U	9.4	U	9.4	U
60-57-1	Dieldrin	1.3	U	1.3	U	1.3	U	1.3	U	1.3	U	1.3	U
72-55-9	4,4'-DDE	2.7	U	2.7	U	2.7	U	2.7	U	73.		2.7	U
72-20-8	Endrin	4.	U	4.	U	4.	U	4.	U	4.	U	4.	U
33213-65-9	Endosulfan II	2.7	U	2.7	U	2.7	U	2.7	U	2.7	U	2.7	U
72-54-8	4,4'-DDD	7.	U	7.	U	7.	U	7.	U	120.		7.	U
7421-93-4	Endrin aldehyde	15.	U	15.	U	15.	U	15.	U	15.	U	15.	U
1031-07-8	Endosulfan Sulfate	44.	U	44.	U	44.	U	44.	U	44.	U	44.	U
50-29-3	4,4'-DDT	8.	U	8.	U	8.	U	8.	U	58.		8.	U
72-43-5	Methoxychlor	170.		300.		350.		2500.		120.	U	340000.	
57-74-9	Chlordane	9.4	U	9.4	U	9.4	U	9.4	U	9.4	U	9.4	U
8001-35-2	Toxaphene	160.	U	160.	U	160.	U	160.	U	160.	U	160.	U
12674-11-2	Aroclor-1016	60.	U	60.	U	60.	U	60.	U	60.	U	60.	U
11104-28-2	Aroclor-1221	180.	U	180.	U	180.	U	180.	U	180.	U	180.	U
11141-16-5	Aroclor-1232	32.	U	32.	U	32.	U	32.	U	32.	U	32.	U
53469-21-9	Aroclor-1242	44.	U	44.	U	44.	U	44.	U	44.	U	44.	U
12672-29-6	Aroclor-1248	170.	U	170.	U	170.	U	170.	U	170.	U	170.	U
11097-69-1	Aroclor-1254	80.	U	80.	U	80.	U	80.	U	80.	U	80.	U
11096-82-5	Aroclor-1260	24.	U	24.	U	24.	U	24.	U	24.	U	24.	U

*** Validation Complete ***

CEDAR CHEMICAL CORPORATION
WEST HELENA, ARKANSAS
SITE 6 PHASE II SURFACE SOIL DATA

PEST	SHORT ID --------->	6HA-I1 (0-1')		6HA-J1 (0-1')		6HA-K1 (0-1')		6HA-L1 (0-1')	
	ORIGINAL ID ----->	006S00I101		006S00J101		006S00K101		006S00L101	
	SAMPLE DATE ----->	12/02/94		12/02/94		12/02/94		12/02/94	
	DATE EXTRACTED -->	12/05/94		12/05/94		12/05/94		12/05/94	
	DATE ANALYZED --->	12/10/94		12/10/94		12/10/94		12/10/94	
	MATRIX ---------->	Soil		Soil		Soil		Soil	
	UNITS ---------->	UG/KG		UG/KG		UG/KG		UG/KG	
CAS #	Parameter	10867	VAL	10867	VAL	10867	VAL	10867	VAL
319-84-6	Alpha-BHC	2.	U	2.	U	2.	U	2.	U
319-85-7	Beta-BHC	4.	U	4.	U	4.	U	4.	U
319-86-8	Delta-BHC	6.	U	6.	U	6.	U	6.	U
58-89-9	gamma-BHC (Lindane)	2.7	U	2.7	U	2.7	U	2.7	U
76-44-8	Heptachlor	2.	U	2.	U	2.	U	2.	U
309-00-2	Aldrin	2.7	U	14.		2.7	U	4.8	
1024-57-3	Heptachlor Epoxide	56.	U	56.	U	56.	U	56.	U
959-98-8	Endosulfan I	9.4	U	9.4	U	9.4	U	9.4	U
60-57-1	Dieldrin	1.3	U	42.		44.		29.	
72-55-9	4,4'-DDE	2.7	U	2.7	U	2.7	U	64.	
72-20-8	Endrin	4.	U	4.	U	4.	U	63.	
33213-65-9	Endosulfan II	2.7	U	2.7	U	2.7	U	2.7	U
72-54-8	4,4'-DDD	7.	U	31.		7.	U	84.	
7421-93-4	Endrin aldehyde	15.	U	15.	U	15.	U	15.	U
1031-07-8	Endosulfan Sulfate	44.	U	44.	U	44.	U	44.	U
50-29-3	4,4'-DDT	8.	U	27.		8.	U	140.	
72-43-5	Methoxychlor	120.	U	420.		820.		210.	
57-74-9	Chlordane	9.4	U	9.4	U	9.4	U	9.4	U
8001-35-2	Toxaphene	160.	U	160.	U	160.	U	2500.	
12674-11-2	Aroclor-1016	60.	U	60.	U	60.	U	60.	U
11104-28-2	Aroclor-1221	180.	U	180.	U	180.	U	180.	U
11141-16-5	Aroclor-1232	32.	U	32.	U	32.	U	32.	U
53469-21-9	Aroclor-1242	44.	U	44.	U	44.	U	44.	U
12672-29-6	Aroclor-1248	170.	U	170.	U	170.	U	170.	U
11097-69-1	Aroclor-1254	80.	U	80.	U	80.	U	80.	U
11096-82-5	Aroclor-1260	24.	U	24.	U	24.	U	24.	U

*** Validation Complete ***

CEDAR CHEMICAL CORPORATION
WEST HELENA, ARKANSAS
SITE 6 PHASE II SURFACE SOIL DATA

SVOA	SHORT ID --------->	6HA-B1 (0-1')		6HA-B2 (0-1')		6HA-C1 (0-1')		6HA-C2 (0-1')		6HA-D1 (0-1')		6HA-F1 (0-1')	
	ORIGINAL ID ----->	006S00B101		006S00B202		006S00C101		006S00C201		006S00D101		006S00F101	
	SAMPLE DATE ----->	12/02/94		12/02/94		12/02/94		12/02/94		12/02/94		12/02/94	
	DATE EXTRACTED -->	12/05/94		12/05/94		12/05/94		12/05/94		12/05/94		12/05/94	
	DATE ANALYZED --->	12/13/94		12/13/94		12/13/94		12/13/94		12/13/94		12/12/94	
	MATRIX ---------->	Soil		Soil		Soil		Soil		Soil		Soil	
	UNITS ---------->	UG/KG		UG/KG		UG/KG		UG/KG		UG/KG		UG/KG	
CAS #	Parameter	10867	VAL	10867	VAL	10867	VAL	10867	VAL	10867	VAL	10867	VAL
108-95-2	Phenol	660.	U	660.	U	660.	U	660.	U	660.	U	660.	U
111-44-4	bis(2-Chloroethyl)ether	660.	U	660.	U	660.	U	660.	U	660.	U	660.	U
95-57-8	2-Chlorophenol	660.	U	660.	U	660.	U	660.	U	660.	U	660.	U
541-73-1	1,3-Dichlorobenzene	660.	U	660.	U	660.	U	660.	U	660.	U	660.	U
106-46-7	1,4-Dichlorobenzene	660.	U	660.	U	660.	U	660.	U	660.	U	660.	U
100-51-6	Benzyl alcohol	1300.	U	1300.	U	1300.	U	1300.	U	1300.	U	1300.	U
95-50-1	1,2-Dichlorobenzene	660.	U	660.	U	660.	U	660.	U	660.	U	660.	U
95-48-7	2-Methylphenol (o-Cresol)	660.	U	660.	U	660.	U	660.	U	660.	U	660.	U
108-60-1	bis(2-chloroisopropyl) ether	660.	U	660.	U	660.	U	660.	U	660.	U	660.	U
106-44-5	4-Methylphenol (p-Cresol)	660.	U	660.	U	660.	U	660.	U	660.	U	660.	U
621-64-7	N-Nitroso-di-n-propylamine	660.	U	660.	U	660.	U	660.	U	660.	U	660.	U
67-72-1	Hexachloroethane	660.	U	660.	U	660.	U	660.	U	660.	U	660.	U
98-95-3	Nitrobenzene	660.	U	660.	U	660.	U	660.	U	660.	U	660.	U
78-59-1	Isophorone	660.	U	660.	U	660.	U	660.	U	660.	U	660.	U
88-75-5	2-Nitrophenol	660.	U	660.	U	660.	U	660.	U	660.	U	660.	U
105-67-9	2,4-Dimethylphenol	660.	U	660.	U	660.	U	660.	U	660.	U	660.	U
111-91-1	bis(2-Chloroethoxy)methane	660.	U	660.	U	660.	U	660.	U	660.	U	660.	U
120-83-2	2,4-Dichlorophenol	660.	U	660.	U	660.	U	660.	U	660.	U	660.	U
120-82-1	1,2,4-Trichlorobenzene	660.	U	660.	U	660.	U	660.	U	660.	U	660.	U
91-20-3	Naphthalene	660.	U	660.	U	660.	U	660.	U	660.	U	660.	U
87-68-3	Hexachlorobutadiene	660.	U	660.	U	660.	U	660.	U	660.	U	660.	U
59-50-7	4-Chloro-3-methylphenol	1300.	U	1300.	U	1300.	U	1300.	U	1300.	U	1300.	U
91-57-6	2-Methylnaphthalene	660.	U	660.	U	660.	U	660.	U	660.	U	660.	U
77-47-4	Hexachlorocyclopentadiene	660.	U	660.	U	660.	U	660.	U	660.	U	660.	U
88-06-2	2,4,6-Trichlorophenol	660.	U	660.	U	660.	U	660.	U	660.	U	660.	U
95-95-4	2,4,5-Trichlorophenol	660.	U	660.	U	660.	U	660.	U	660.	U	660.	U
91-58-7	2-Chloronaphthalene	660.	U	660.	U	660.	U	660.	U	660.	U	660.	U
88-74-4	2-Nitroaniline	3300.	U	3300.	U	3300.	U	3300.	U	3300.	U	3300.	U
131-11-3	Dimethylphthalate	660.	U	660.	U	660.	U	660.	U	660.	U	660.	U
208-96-8	Acenaphthylene	660.	U	660.	U	660.	U	660.	U	660.	U	660.	U
99-09-2	3-Nitroaniline	3300.	U	3300.	U	3300.	U	3300.	U	3300.	U	3300.	U
83-32-9	Acenaphthene	660.	U	660.	U	660.	U	660.	U	660.	U	660.	U
51-28-5	2,4-Dinitrophenol	3300.	U	3300.	U	3300.	U	3300.	U	3300.	U	3300.	U
100-02-7	4-Nitrophenol	3300.	U	3300.	U	3300.	U	3300.	U	3300.	U	3300.	U
132-64-9	Dibenzofuran	660.	U	660.	U	660.	U	660.	U	660.	U	660.	U
121-14-2	2,4-Dinitrotoluene	660.	U	660.	U	660.	U	660.	U	660.	U	660.	U
606-20-2	2,6-Dinitrotoluene	660.	U	660.	U	660.	U	660.	U	660.	U	660.	U
84-66-2	Diethylphthalate	660.	U	660.	U	660.	U	660.	U	660.	U	660.	U

*** Validation Complete ***

CEDAR CHEMICAL CORPORATION
WEST HELENA, ARKANSAS
SITE 6 PHASE II SURFACE SOIL DATA

SVOA													
	SHORT ID --------->	6HA-B1 (0-1')		6HA-B2 (0-1')		6HA-C1 (0-1')		6HA-C2 (0-1')		6HA-D1 (0-1')		6HA-F1 (0-1')	
	ORIGINAL ID ------>	006S00B101		006S00B202		006S00C101		006S00C201		006S00D101		006S00F101	
	SAMPLE DATE ------>	12/02/94		12/02/94		12/02/94		12/02/94		12/02/94		12/02/94	
	DATE EXTRACTED -->	12/05/94		12/05/94		12/05/94		12/05/94		12/05/94		12/05/94	
	DATE ANALYZED --->	12/13/94		12/13/94		12/13/94		12/13/94		12/13/94		12/12/94	
	MATRIX ---------->	Soil		Soil		Soil		Soil		Soil		Soil	
	UNITS ---------->	UG/KG		UG/KG		UG/KG		UG/KG		UG/KG		UG/KG	
CAS #	Parameter	10867	VAL	10867	VAL	10867	VAL	10867	VAL	10867	VAL	10867	VAL
7005-72-3	4-Chlorophenyl-phenylether	660.	U	660.	U	660.	U	660.	U	660.	U	660.	U
86-73-7	Fluorene	660.	U	660.	U	660.	U	660.	U	660.	U	660.	U
100-01-6	4-Nitroaniline	3300.	U	3300.	U	3300.	U	3300.	U	3300.	U	3300.	U
534-52-1	4,6-Dinitro-2-methylphenol	3300.	U	3300.	U	3300.	U	3300.	U	3300.	U	3300.	U
86-30-6	N-Nitrosodiphenylamine	660.	U	660.	U	660.	U	660.	U	660.	U	660.	U
101-55-3	4-Bromophenyl-phenylether	660.	U	660.	U	660.	U	660.	U	660.	U	660.	U
118-74-1	Hexachlorobenzene	660.	U	660.	U	660.	U	660.	U	660.	U	660.	U
87-86-5	Pentachlorophenol	3300.	U	3300.	U	3300.	U	3300.	U	3300.	U	3300.	U
85-01-8	Phenanthrene	660.	U	660.	U	660.	U	660.	U	660.	U	660.	U
120-12-7	Anthracene	660.	U	660.	U	660.	U	660.	U	660.	U	660.	U
206-44-0	Fluoranthene	660.	U	660.	U	660.	U	660.	U	660.	U	660.	U
129-00-0	Pyrene	660.	U	660.	U	660.	U	660.	U	660.	U	660.	U
85-68-7	Butylbenzylphthalate	660.	U	660.	U	660.	U	660.	U	660.	U	660.	U
91-94-1	3,3'-Dichlorobenzidine	1300.	U	1300.	U	1300.	U	1300.	U	1300.	U	1300.	U
56-55-3	Benzo(a)anthracene	870.		660.	U	660.	U	660.	U	660.	U	660.	U
117-81-7	bis(2-Ethylhexyl)phthalate (BEHP)	660.	U	660.	U	660.	U	660.	U	660.	U	660.	U
218-01-9	Chrysene	870.		660.	U	660.	U	660.	U	660.	U	660.	U
117-84-0	Di-n-octylphthalate	660.	U	660.	U	660.	U	660.	U	660.	U	660.	U
205-99-2	Benzo(b)fluoranthene	660.	U	660.	U	660.	U	660.	U	660.	U	660.	U
207-08-9	Benzo(k)fluoranthene	660.	U	660.	U	660.	U	660.	U	660.	U	660.	U
50-32-8	Benzo(a)pyrene	660.	U	660.	U	660.	U	660.	U	660.	U	660.	U
193-39-5	Indeno(1,2,3-cd)pyrene	660.	U	660.	U	660.	U	660.	U	660.	U	660.	U
53-70-3	Dibenz(a,h)anthracene	660.	U	660.	U	660.	U	660.	U	660.	U	660.	U
191-24-2	Benzo(g,h,i)perylene	660.	U	660.	U	660.	U	660.	U	660.	U	660.	U
88-85-7	Dinoseb	160000.		5600.		110000.		5600.		9100.		3800.	
65-85-0	Benzoic acid	3300.	U	3300.	U	3300.	U	3300.	U	3300.	U	3300.	U
106-47-8	4-Chloroaniline	1300.	U	1300.	U	1300.	U	1300.	U	1300.	U	1300.	U
84-74-2	Di-n-butylphthalate	660.	U	660.	U	660.	U	660.	U	660.	U	660.	U

*** Validation Complete ***

CEDAR CHEMICAL CORPORATION
WEST HELENA, ARKANSAS
SITE 6 PHASE II SURFACE SOIL DATA

SVOA	SHORT ID --------->	6HA-F2 (0-1')		6HA-G1 (0-1')		6HA-G1 (0-1')		6HA-G2 (0-1')		6HA-H1 (0-1')		6HA-H2 (0-1')	
	ORIGINAL ID ----->	006S00F202		006C00G101		006S00G101		006S00G201		006S00H101		006S00H201	
	SAMPLE DATE ----->	12/02/94		12/02/94		12/02/94		12/02/94		12/02/94		12/02/94	
	DATE EXTRACTED -->	12/05/94		12/05/94		12/05/94		12/05/94		12/05/94		12/05/94	
	DATE ANALYZED --->	12/13/94		12/13/94		12/13/94		12/13/94		12/10/94		12/10/94	
	MATRIX ---------->	Soil		Soil		Soil		Soil		Soil		Soil	
	UNITS ----------->	UG/KG		UG/KG		UG/KG		UG/KG		UG/KG		UG/KG	
CAS #	Parameter	10867	VAL	10867	VAL	10867	VAL	10867	VAL	10867	VAL	10867	VAL
108-95-2	Phenol	660.	U	660.	U	660.	U	660.	U	660.	U	3300.	U
111-44-4	bis(2-Chloroethyl)ether	660.	U	660.	U	660.	U	660.	U	660.	U	3300.	U
95-57-8	2-Chlorophenol	660.	U	660.	U	660.	U	660.	U	660.	U	3300.	U
541-73-1	1,3-Dichlorobenzene	660.	U	660.	U	660.	U	660.	U	660.	U	3300.	U
106-46-7	1,4-Dichlorobenzene	660.	U	660.	U	660.	U	660.	U	660.	U	3300.	U
100-51-6	Benzyl alcohol	1300.	U	1300.	U	1300.	U	1300.	U	1300.	U	6500.	U
95-50-1	1,2-Dichlorobenzene	660.	U	660.	U	660.	U	660.	U	660.	U	3300.	U
95-48-7	2-Methylphenol (o-Cresol)	660.	U	660.	U	660.	U	660.	U	660.	U	3300.	U
108-60-1	bis(2-chloroisopropyl) ether	660.	U	660.	U	660.	U	660.	U	660.	U	3300.	U
106-44-5	4-Methylphenol (p-Cresol)	660.	U	660.	U	660.	U	660.	U	660.	U	3300.	U
621-64-7	N-Nitroso-di-n-propylamine	660.	U	660.	U	660.	U	660.	U	660.	U	3300.	U
67-72-1	Hexachloroethane	660.	U	660.	U	660.	U	660.	U	660.	U	3300.	U
98-95-3	Nitrobenzene	660.	U	660.	U	660.	U	660.	U	660.	U	3300.	U
78-59-1	Isophorone	660.	U	660.	U	660.	U	660.	U	660.	U	3300.	U
88-75-5	2-Nitrophenol	660.	U	660.	U	660.	U	660.	U	660.	U	3300.	U
105-67-9	2,4-Dimethylphenol	660.	U	660.	U	660.	U	660.	U	660.	U	3300.	U
111-91-1	bis(2-Chloroethoxy)methane	660.	U	660.	U	660.	U	660.	U	660.	U	3300.	U
120-83-2	2,4-Dichlorophenol	660.	U	660.	U	660.	U	660.	U	660.	U	3300.	U
120-82-1	1,2,4-Trichlorobenzene	660.	U	660.	U	660.	U	660.	U	660.	U	3300.	U
91-20-3	Naphthalene	660.	U	660.	U	660.	U	660.	U	660.	U	3300.	U
87-68-3	Hexachlorobutadiene	660.	U	660.	U	660.	U	660.	U	660.	U	3300.	U
59-50-7	4-Chloro-3-methylphenol	1300.	U	1300.	U	1300.	U	1300.	U	1300.	U	6500.	U
91-57-6	2-Methylnaphthalene	660.	U	660.	U	660.	U	660.	U	660.	U	3300.	U
77-47-4	Hexachlorocyclopentadiene	660.	U	660.	U	660.	U	660.	U	660.	U	3300.	U
88-06-2	2,4,6-Trichlorophenol	660.	U	660.	U	660.	U	660.	U	660.	U	3300.	U
95-95-4	2,4,5-Trichlorophenol	660.	U	660.	U	660.	U	660.	U	660.	U	3300.	U
91-58-7	2-Chloronaphthalene	660.	U	660.	U	660.	U	660.	U	660.	U	3300.	U
88-74-4	2-Nitroaniline	3300.	U	3300.	U	3300.	U	3300.	U	3300.	U	16500.	U
131-11-3	Dimethylphthalate	660.	U	660.	U	660.	U	660.	U	660.	U	3300.	U
208-96-8	Acenaphthylene	660.	U	660.	U	660.	U	660.	U	660.	U	3300.	U
99-09-2	3-Nitroaniline	3300.	U	3300.	U	3300.	U	3300.	U	3300.	U	16500.	U
83-32-9	Acenaphthene	660.	U	660.	U	660.	U	660.	U	660.	U	3300.	U
51-28-5	2,4-Dinitrophenol	3300.	U	3300.	U	3300.	U	3300.	U	3300.	U	16500.	U
100-02-7	4-Nitrophenol	3300.	U	3300.	U	3300.	U	3300.	U	3300.	U	16500.	U
132-64-9	Dibenzofuran	660.	U	660.	U	660.	U	660.	U	660.	U	3300.	U
121-14-2	2,4-Dinitrotoluene	660.	U	660.	U	660.	U	660.	U	660.	U	3300.	U
606-20-2	2,6-Dinitrotoluene	660.	U	660.	U	660.	U	660.	U	660.	U	3300.	U
84-66-2	Diethylphthalate	660.	U	660.	U	660.	U	660.	U	660.	U	3300.	U

*** Validation Complete ***

CEDAR CHEMICAL CORPORATION
WEST HELENA, ARKANSAS
SITE 6 PHASE II SURFACE SOIL DATA

SVOA	SHORT ID --------->	6HA-F2 (0-1')		6HA-G1 (0-1')		6HA-G1 (0-1')		6HA-G2 (0-1')		6HA-H1 (0-1')		6HA-H2 (0-1')	
	ORIGINAL ID ----->	006S00F202		006C00G101		006S00G101		006S00G201		006S00H101		006S00H201	
	SAMPLE DATE ----->	12/02/94		12/02/94		12/02/94		12/02/94		12/02/94		12/02/94	
	DATE EXTRACTED -->	12/05/94		12/05/94		12/05/94		12/05/94		12/05/94		12/05/94	
	DATE ANALYZED --->	12/13/94		12/13/94		12/13/94		12/13/94		12/10/94		12/10/94	
	MATRIX ---------->	Soil		Soil		Soil		Soil		Soil		Soil	
	UNITS ---------->	UG/KG		UG/KG		UG/KG		UG/KG		UG/KG		UG/KG	
CAS #	Parameter	10867	VAL	10867	VAL	10867	VAL	10867	VAL	10867	VAL	10867	VAL
7005-72-3	4-Chlorophenyl-phenylether	660.	U	660.	U	660.	U	660.	U	660.	U	3300.	U
86-73-7	Fluorene	660.	U	660.	U	660.	U	660.	U	660.	U	3300.	U
100-01-6	4-Nitroaniline	3300.	U	3300.	U	3300.	U	3300.	U	3300.	U	16500.	U
534-52-1	4,6-Dinitro-2-methylphenol	3300.	U	3300.	U	3300.	U	3300.	U	3300.	U	16500.	U
86-30-6	N-Nitrosodiphenylamine	660.	U	660.	U	660.	U	660.	U	660.	U	3300.	U
101-55-3	4-Bromophenyl-phenylether	660.	U	660.	U	660.	U	660.	U	660.	U	3300.	U
118-74-1	Hexachlorobenzene	660.	U	660.	U	660.	U	660.	U	660.	U	3300.	U
87-86-5	Pentachlorophenol	3300.	U	3300.	U	3300.	U	3300.	U	3300.	U	16500.	U
85-01-8	Phenanthrene	660.	U	660.	U	660.	U	660.	U	660.	U	3300.	U
120-12-7	Anthracene	660.	U	660.	U	660.	U	660.	U	660.	U	3300.	U
206-44-0	Fluoranthene	660.	U	660.	U	660.	U	660.	U	660.	U	3300.	U
129-00-0	Pyrene	660.	U	660.	U	660.	U	660.	U	660.	U	3300.	U
85-68-7	Butylbenzylphthalate	660.	U	660.	U	660.	U	660.	U	660.	U	3300.	U
91-94-1	3,3'-Dichlorobenzidine	1300.	U	1300.	U	1300.	U	1300.	U	1300.	U	6500.	U
56-55-3	Benzo(a)anthracene	660.	U	660.	U	660.	U	660.	U	660.	U	3300.	U
117-81-7	bis(2-Ethylhexyl)phthalate (BEHP)	660.	U	660.	U	660.	U	660.	U	660.	U	3300.	U
218-01-9	Chrysene	660.	U	660.	U	660.	U	660.	U	660.	U	3300.	U
117-84-0	Di-n-octylphthalate	660.	U	660.	U	660.	U	660.	U	660.	U	3300.	U
205-99-2	Benzo(b)fluoranthene	660.	U	660.	U	660.	U	660.	U	660.	U	3300.	U
207-08-9	Benzo(k)fluoranthene	660.	U	660.	U	660.	U	660.	U	660.	U	3300.	U
50-32-8	Benzo(a)pyrene	660.	U	660.	U	660.	U	660.	U	660.	U	3300.	U
193-39-5	Indeno(1,2,3-cd)pyrene	660.	U	660.	U	660.	U	660.	U	660.	U	3300.	U
53-70-3	Dibenz(a,h)anthracene	660.	U	660.	U	660.	U	660.	U	660.	U	3300.	U
191-24-2	Benzo(g,h,i)perylene	660.	U	660.	U	660.	U	660.	U	660.	U	3300.	U
88-85-7	Dinoseb	462.	U	462.	U	462.	U	2200.		462.	U	2310.	U
65-85-0	Benzoic acid	3300.	U	3300.	U	3300.	U	3300.	U	3300.	U	16500.	U
106-47-8	4-Chloroaniline	1300.	U	1300.	U	1300.	U	1300.	U	1300.	U	6500.	U
84-74-2	Di-n-butylphthalate	660.	U	660.	U	660.	U	660.	U	660.	U	3300.	U

*** Validation Complete ***

CEDAR CHEMICAL CORPORATION
WEST HELENA, ARKANSAS
SITE 6 PHASE II SURFACE SOIL DATA

SVOA									
	SHORT ID --------->	6HA-I1 (0-1')		6HA-J1 (0-1')		6HA-K1 (0-1')		6HA-L1 (0-1')	
	ORIGINAL ID ----->	006S00I101		006S00J101		006S00K101		006S00L101	
	SAMPLE DATE ----->	12/02/94		12/02/94		12/02/94		12/02/94	
	DATE EXTRACTED -->	12/05/94		12/05/94		12/05/94		12/05/94	
	DATE ANALYZED --->	12/12/94		12/13/94		12/13/94		12/12/94	
	MATRIX ---------->	Soil		Soil		Soil		Soil	
	UNITS ---------->	UG/KG		UG/KG		UG/KG		UG/KG	
CAS #	Parameter	10867	VAL	10867	VAL	10867	VAL	10867	VAL
108-95-2	Phenol	660.	U	660.	U	660.	U	660.	U
111-44-4	bis(2-Chloroethyl)ether	660.	U	660.	U	660.	U	660.	U
95-57-8	2-Chlorophenol	660.	U	660.	U	660.	U	660.	U
541-73-1	1,3-Dichlorobenzene	660.	U	660.	U	660.	U	660.	U
106-46-7	1,4-Dichlorobenzene	660.	U	660.	U	660.	U	660.	U
100-51-6	Benzyl alcohol	1300.	U	1300.	U	1300.	U	1300.	U
95-50-1	1,2-Dichlorobenzene	660.	U	660.	U	660.	U	660.	U
95-48-7	2-Methylphenol (o-Cresol)	660.	U	660.	U	660.	U	660.	U
108-60-1	bis(2-chloroisopropyl) ether	660.	U	660.	U	660.	U	660.	U
106-44-5	4-Methylphenol (p-Cresol)	660.	U	660.	U	660.	U	660.	U
621-64-7	N-Nitroso-di-n-propylamine	660.	U	660.	U	660.	U	660.	U
67-72-1	Hexachloroethane	660.	U	660.	U	660.	U	660.	U
98-95-3	Nitrobenzene	660.	U	660.	U	660.	U	660.	U
78-59-1	Isophorone	660.	U	660.	U	660.	U	660.	U
88-75-5	2-Nitrophenol	660.	U	660.	U	660.	U	660.	U
105-67-9	2,4-Dimethylphenol	660.	U	660.	U	660.	U	660.	U
111-91-1	bis(2-Chloroethoxy)methane	660.	U	660.	U	660.	U	660.	U
120-83-2	2,4-Dichlorophenol	660.	U	660.	U	660.	U	660.	U
120-82-1	1,2,4-Trichlorobenzene	660.	U	660.	U	660.	U	660.	U
91-20-3	Naphthalene	660.	U	660.	U	660.	U	660.	U
87-68-3	Hexachlorobutadiene	660.	U	660.	U	660.	U	660.	U
59-50-7	4-Chloro-3-methylphenol	1300.	U	1300.	U	1300.	U	1300.	U
91-57-6	2-Methylnaphthalene	660.	U	660.	U	660.	U	660.	U
77-47-4	Hexachlorocyclopentadiene	660.	U	660.	U	660.	U	660.	U
88-06-2	2,4,6-Trichlorophenol	660.	U	660.	U	660.	U	660.	U
95-95-4	2,4,5-Trichlorophenol	660.	U	660.	U	660.	U	660.	U
91-58-7	2-Chloronaphthalene	660.	U	660.	U	660.	U	660.	U
88-74-4	2-Nitroaniline	3300.	U	3300.	U	3300.	U	3300.	U
131-11-3	Dimethylphthalate	660.	U	660.	U	660.	U	660.	U
208-96-8	Acenaphthylene	660.	U	660.	U	660.	U	660.	U
99-09-2	3-Nitroaniline	3300.	U	3300.	U	3300.	U	3300.	U
83-32-9	Acenaphthene	660.	U	660.	U	660.	U	660.	U
51-28-5	2,4-Dinitrophenol	3300.	U	3300.	U	3300.	U	3300.	U
100-02-7	4-Nitrophenol	3300.	U	3300.	U	3300.	U	3300.	U
132-64-9	Dibenzofuran	660.	U	660.	U	660.	U	660.	U
121-14-2	2,4-Dinitrotoluene	660.	U	660.	U	660.	U	660.	U
606-20-2	2,6-Dinitrotoluene	660.	U	660.	U	660.	U	660.	U
84-66-2	Diethylphthalate	660.	U	660.	U	660.	U	660.	U

*** Validation Complete ***

CEDAR CHEMICAL CORPORATION
WEST HELENA, ARKANSAS
SITE 6 PHASE II SURFACE SOIL DATA

SVOA	SHORT ID --------->	6HA-I1 (0-1')		6HA-J1 (0-1')		6HA-K1 (0-1')		6HA-L1 (0-1')	
	ORIGINAL ID ----->	006S00I101		006S00J101		006S00K101		006S00L101	
	SAMPLE DATE ----->	12/02/94		12/02/94		12/02/94		12/02/94	
	DATE EXTRACTED -->	12/05/94		12/05/94		12/05/94		12/05/94	
	DATE ANALYZED --->	12/12/94		12/13/94		12/13/94		12/12/94	
	MATRIX ---------->	Soil		Soil		Soil		Soil	
	UNITS ---------->	UG/KG		UG/KG		UG/KG		UG/KG	
CAS #	Parameter	10867	VAL	10867	VAL	10867	VAL	10867	VAL
7005-72-3	4-Chlorophenyl-phenylether	660.	U	660.	U	660.	U	660.	U
86-73-7	Fluorene	660.	U	660.	U	660.	U	660.	U
100-01-6	4-Nitroaniline	3300.	U	3300.	U	3300.	U	3300.	U
534-52-1	4,6-Dinitro-2-methylphenol	3300.	U	3300.	U	3300.	U	3300.	U
86-30-6	N-Nitrosodiphenylamine	660.	U	660.	U	660.	U	660.	U
101-55-3	4-Bromophenyl-phenylether	660.	U	660.	U	660.	U	660.	U
118-74-1	Hexachlorobenzene	660.	U	660.	U	660.	U	660.	U
87-86-5	Pentachlorophenol	3300.	U	3300.	U	3300.	U	3300.	U
85-01-8	Phenanthrene	660.	U	660.	U	660.	U	660.	U
120-12-7	Anthracene	660.	U	660.	U	660.	U	660.	U
206-44-0	Fluoranthene	660.	U	660.	U	660.	U	660.	U
129-00-0	Pyrene	660.	U	660.	U	660.	U	660.	U
85-68-7	Butylbenzylphthalate	660.	U	660.	U	660.	U	660.	U
91-94-1	3,3'-Dichlorobenzidine	1300.	U	1300.	U	1300.	U	1300.	U
56-55-3	Benzo(a)anthracene	660.	U	660.	U	660.	U	660.	U
117-81-7	bis(2-Ethylhexyl)phthalate (BEHP)	660.	U	660.	U	660.	U	660.	U
218-01-9	Chrysene	660.	U	660.	U	660.	U	660.	U
117-84-0	Di-n-octylphthalate	660.	U	660.	U	660.	U	660.	U
205-99-2	Benzo(b)fluoranthene	660.	U	660.	U	660.	U	660.	U
207-08-9	Benzo(k)fluoranthene	660.	U	660.	U	660.	U	660.	U
50-32-8	Benzo(a)pyrene	660.	U	660.	U	660.	U	660.	U
193-39-5	Indeno(1,2,3-cd)pyrene	660.	U	660.	U	660.	U	660.	U
53-70-3	Dibenz(a,h)anthracene	660.	U	660.	U	660.	U	660.	U
191-24-2	Benzo(g,h,i)perylene	660.	U	660.	U	660.	U	660.	U
88-85-7	Dinoseb	462.	U	2900.		960.		462.	U
65-85-0	Benzoic acid	3300.	U	3300.	U	3300.	U	3300.	U
106-47-8	4-Chloroaniline	1300.	U	1300.	U	1300.	U	1300.	U
84-74-2	Di-n-butylphthalate	660.	U	660.	U	660.	U	660.	U

*** Validation Complete ***

CEDAR CHEMICAL GROUNDWATER
WEST HELENA, ARKANSAS
PHASE I GROUNDWATER

METAL	SHORT ID -------->	1MW-1	1MW-2	1MW-3	1MW-3 DUP	1MW-4	1MW-5
	ORIGINAL ID ----->	CED1-GWMW-1	CED1-GWMW-2	CED1-GWMW-3	CED1-GWMW-3D	CED1-GWMW-4	CED1-GWMW-5
	SAMPLE DATE ----->	09/14/93	09/14/93	09/14/93	09/14/93	09/15/93	09/15/93
	DATE ANALYZED --->	10/01/93	10/01/93	10/01/93	10/01/93	10/01/93	10/01/93
	MATRIX ---------->	Water	Water	Water	Water	Water	Water
	UNITS ---------->	UG/L	UG/L	UG/L	UG/L	UG/L	UG/L

CAS #	Parameter	E009	VAL	E009	VAL	E009	VAL	E009	VAL	E009	VAL	E009	VAL
7440-38-2	Arsenic (As)	38.5		21.8		44.6		49.3		13.5		20.1	
7440-39-3	Barium (Ba)	923.		513.		639.		955.		441.		324.	
7440-43-9	Cadmium (Cd)	3.	U	3.	U	3.	U	3.	U	3.	U	3.	U
7440-70-2	Calcium (Ca)	304000.		74100.		294000.		456000.		285000.		360000.	
7440-47-3	Chromium (Cr)	81.4		47.1		80.8		113.		21.2		47.5	
7439-89-6	Iron (Fe)	109000.		53600.		107000.		169000.		22500.		42300.	
7439-92-1	Lead (Pb)	41.1		25.3		38.		48.9		10.8		16.1	
7439-95-4	Magnesium (Mg)	174000.		65100.		261000.		383000.		240000.		197000.	
7439-97-6	Mercury (Hg)	0.2	U	0.2	U	0.2	U	0.2	U	0.2	U	0.2	U
7782-49-2	Selenium (Se)	5.	U	5.	U	5.	U	5.	U	5.	U	5.	U
7440-22-4	Silver (Ag)	3.	U	3.	U	3.	U	3.	U	3.	U	3.	U
7440-23-5	Sodium (Na)	92100.		67700.		525000.		558000.		379000.		906000.	

*** Validation Complete ***

CEDAR CHEMICAL GROUNDWATER
WEST HELENA, ARKANSAS
PHASE I GROUNDWATER

METAL													
	SHORT ID --------->	1MW-6		2MW-2		2MW-3		2MW-4		2MW-5		4MW-1	
	ORIGINAL ID ----->	CED1GWMW6		CED2GWMW2		CED2-GWMW-3		CED2-GWMW-4		CED2-GWMW-5		CED4GWMW1	
	SAMPLE DATE ----->	09/29/93		09/30/93		09/28/93		09/28/93		09/28/93		09/29/93	
	DATE ANALYZED --->	10/21/93		10/21/93		10/19/93		10/19/93		10/19/93		10/21/93	
	MATRIX ---------->	Water		Water		Water		Water		Water		Water	
	UNITS ---------->	UG/L		UG/L		UG/L		UG/L		UG/L		UG/L	
CAS #	Parameter	E015	VAL	E015	VAL	E012	VAL	E012	VAL	E012	VAL	E015	VAL
7440-38-2	Arsenic (As)	23.6		60.4		59.2		32.		10.	U	21.6	
7440-39-3	Barium (Ba)	553.		576.		1670.		1100.		217.		1450.	
7440-43-9	Cadmium (Cd)	2.	U	4.		2.	U	2.8		2.	U	2.	U
7440-70-2	Calcium (Ca)	334000.		187000.		198000.		452000.		135000.		186000.	
7440-47-3	Chromium (Cr)	12.7		102.		28.5		61.7		18.8		41.	
7439-89-6	Iron (Fe)	18300.		127000.		42400.		51000.		21100.		32000.	
7439-92-1	Lead (Pb)	15.9		60.2		30.6		39.1		20.8		33.2	
7439-95-4	Magnesium (Mg)	72900.		82500.		99500.		205000.		44600.		53000.	
7439-97-6	Mercury (Hg)	0.2	U	0.23		0.2	U	0.2	U	0.2	U	0.2	U
7782-49-2	Selenium (Se)	5.		5.		5.	U	6.		5.	U	5.	
7440-22-4	Silver (Ag)	3.	U	3.	U	3.	U	3.	U	3.	U	3.	U
7440-23-5	Sodium (Na)	72300.		266000.		93300.		82500.		36600.		87200.	

*** Validation Complete ***

CEDAR CHEMICAL GROUNDWATER
WEST HELENA, ARKANSAS
PHASE I GROUNDWATER

METAL		SHORT ID --------->	4MW-2		4MW-2 DUP		EMW-1		EMW-2		EMW-3		EMW-3 DUP	
		ORIGINAL ID ----->	CED4GWMW2		CED4GWMW2D		CEDE-GWMW-1		CEDE-GWMW-2		CEDE-GWMW-3		CEDEGWMW3D	
		SAMPLE DATE ----->	09/29/93		09/29/93		09/22/93		09/22/93		09/23/93		09/23/93	
		DATE ANALYZED --->	10/21/93		10/21/93		10/19/93		10/19/93		10/19/93		10/19/93	
		MATRIX ---------->	Water		Water		Water		Water		Water		Water	
		UNITS ---------->	UG/L		UG/L		UG/L		UG/L		UG/L		UG/L	
CAS #	Parameter		E015	VAL	E015	VAL	E012	VAL	E012	VAL	E012	VAL	E012	VAL
7440-38-2	Arsenic (As)		24.6		25.8		29.3		26.5		39.9		43.5	
7440-39-3	Barium (Ba)		1530.		1370.		799.		1120.		319.		332.	
7440-43-9	Cadmium (Cd)		2.3		2.	U	3.6		8.5		180.		212.	
7440-70-2	Calcium (Ca)		382000.		322000.		232000.		109000.		522000.		524000.	
7440-47-3	Chromium (Cr)		120.		107.		63.2		104.		800.		972.	
7439-89-6	Iron (Fe)		122000.		108000.		64200.		121000.		82900.		85200.	
7439-92-1	Lead (Pb)		134.		119.		30.8		89.4		38.4		40.8	
7439-95-4	Magnesium (Mg)		201000.		169000.		133000.		58700.		140000.		141000.	
7439-97-6	Mercury (Hg)		0.2	U	0.2	U	0.2	U	0.2	U	0.2	U	0.2	U
7782-49-2	Selenium (Se)		5.		5.		5.	U	5.	U	5.	U	5.	U
7440-22-4	Silver (Ag)		3.	U	3.	U	3.	U	3.	U	3.	U	3.	U
7440-23-5	Sodium (Na)		27000.		26700.		98300.		33400.		171000.		170000.	

*** Validation Complete ***

CEDAR CHEMICAL GROUNDWATER
WEST HELENA, ARKANSAS
PHASE I GROUNDWATER

METAL	SHORT ID --------->	EMW-4	EMW-6	EMW-7	EMW-6A	EMW-6B	
	ORIGINAL ID ----->	CEDE-GWMW-4	CEDE-GWMW6	CEDE-GWMW7	CEDE-GWMW6A	CEDE-GWMW6B	
	SAMPLE DATE ----->	09/23/93	09/24/93	09/23/93	09/24/93	09/24/93	
	DATE ANALYZED --->	10/19/93	10/19/93	10/19/93	10/19/93	10/19/93	
	MATRIX ---------->	Water	Water	Water	Water	Water	
	UNITS ----------->	UG/L	UG/L	UG/L	UG/L	UG/L	
CAS #	Parameter	E012 VAL	E012 VAL	E012 VAL	E012 VAL	E012 VAL	
7440-38-2	Arsenic (As)	44.4	10.	29.7	47.8	28.	
7440-39-3	Barium (Ba)	2400.	336.	441.	1010.	830.	
7440-43-9	Cadmium (Cd)	4.3	2. U	2. U	2. U	16.3	
7440-70-2	Calcium (Ca)	919000.	128000.	211000.	292000.	301000.	
7440-47-3	Chromium (Cr)	226.	18.6	63.9	72.6	58.6	
7439-89-6	Iron (Fe)	347000.	14900.	38200.	106000.	50100.	
7439-92-1	Lead (Pb)	174.	10.1	25.	66.4	29.3	
7439-95-4	Magnesium (Mg)	472000.	48400.	87600.	121000.	151000.	
7439-97-6	Mercury (Hg)	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	
7782-49-2	Selenium (Se)	5. U	5. U	5. U	5. U	5. U	
7440-22-4	Silver (Ag)	3. U	3. U	3. U	3. U	3. U	
7440-23-5	Sodium (Na)	137000.	40800.	15100.	17400.	226000.	

*** Validation Complete ***

CEDAR CHEMICAL GROUNDWATER
WEST HELENA, ARKANSAS
PHASE I GROUNDWATER

PEST	SHORT ID --------->	1MW-1	1MW-2	1MW-3	1MW-3(10-15')DU	1MW-4	1MW-5
	ORIGINAL ID ----->	CED1-GWMW-1	CED1-GWMW-2	CED1-GWMW-3	CED1-GWMW-3D	CED1-GWMW-4	CED1-GWMW-5
	SAMPLE DATE ----->	09/14/93	09/14/93	09/14/93	09/14/93	09/15/93	09/15/93
	DATE ANALYZED --->	09/18/93	09/18/93	09/18/93	09/18/93	09/18/93	09/18/93
	MATRIX ---------->	Water	Water	Water	Water	Water	Water
	UNITS ---------->	UG/L	UG/L	UG/L	UG/L	UG/L	UG/L

CAS #	Parameter	E009	VAL	E009	VAL	E009	VAL	E009	VAL	E009	VAL	E009	VAL
1024-57-3	Heptachlor Epoxide	0.2	U	0.2	U	0.2	U	0.2	U	0.2	U	0.2	U
1031-07-8	Endosulfan Sulfate	0.66	U	0.66	U	0.66	U	0.66	U	0.66	U	0.66	U
309-00-2	Aldrin	0.04	U	0.04	U	0.04	U	0.04	U	0.04	U	0.04	U
319-84-6	Alpha-BHC	0.03	U	0.03	U	0.03	U	0.03	U	0.03	U	0.03	U
319-85-7	Beta-BHC	0.06	U	0.06	U	0.06	U	0.06	U	0.06	U	0.06	U
319-86-8	Delta-BHC	0.09	U	0.09	U	0.09	U	0.09	U	0.09	U	0.09	U
33213-65-9	Endosulfan II	0.04	U	0.04	U	0.04	U	0.04	U	0.04	U	0.04	U
50-29-3	4,4'-DDT	0.12	U	0.12	U	0.12	U	0.12	U	0.12	U	0.12	U
5103-71-9	alpha-Chlordane	0.14	U	0.14	U	0.14	U	0.14	U	0.14	U	0.14	U
5103-74-2	gamma-Chlordane	0.14	U	0.14	U	0.14	U	0.14	U	0.14	U	0.14	U
53494-70-5	Endrin ketone	0.1	U	0.1	U	0.1	U	0.1	U	0.1	U	0.1	U
58-89-9	gamma-BHC (Lindane)	0.04	U	0.04	U	0.04	U	0.04	U	0.04	U	0.04	U
60-57-1	Dieldrin	0.02	U	0.02	U	0.02	U	0.02	U	0.02	U	0.02	U
72-20-8	Endrin	0.06	U	0.06	U	0.06	U	0.06	U	0.06	U	0.06	U
72-43-5	Methoxychlor	1.8	U	1.8	U	1.8	U	1.8	U	1.8	U	1.8	U
72-54-8	4,4'-DDD	0.11	U	0.11	U	0.11	U	0.11	U	0.11	U	0.11	U
72-55-9	4,4'-DDE	0.04	U	0.04	U	0.04	U	0.04	U	0.04	U	0.04	U
76-44-8	Heptachlor	0.03	U	0.03	U	0.03	U	0.03	U	0.03	U	0.03	U
8001-35-2	Toxaphene	2.4	U	2.4	U	2.4	U	2.4	U	2.4	U	2.4	U
959-98-8	Endosulfan I	0.14	U	0.14	U	0.14	U	0.14	U	0.14	U	0.14	U

*** Validation Complete ***

CEDAR CHEMICAL GROUNDWATER
WEST HELENA, ARKANSAS
PHASE I GROUNDWATER

PEST	SHORT ID --------->	1MW-6		2MW-1		2MW-2		2MW-3		2MW-4		2MW-5	
	ORIGINAL ID ----->	CED1GWMW6		CED2GWMW1		CED2GWMW2		CED2-GWMW-3		CED2-GWMW-4		CED2-GWMW-5	
	SAMPLE DATE ----->	09/29/93		09/30/93		09/30/93		09/28/93		09/28/93		09/28/93	
	DATE ANALYZED --->	10/09/93		10/09/93		10/09/93		10/08/93		10/08/93		10/08/93	
	MATRIX ---------->	Water		Water		Water		Water		Water		Water	
	UNITS ---------->	UG/L		UG/L		UG/L		UG/L		UG/L		UG/L	
CAS #	Parameter	E015	VAL	E015	VAL	E015	VAL	E012	VAL	E012	VAL	E012	VAL
1024-57-3	Heptachlor Epoxide	0.2	U	0.22	U	0.21	U	0.2	U	0.2	U	0.2	U
1031-07-8	Endosulfan Sulfate	0.66	U	0.72	U	0.7	U	0.66	U	0.66	U	0.66	U
309-00-2	Aldrin	0.04	U	0.04	U	0.04	U	0.04	U	0.04	U	0.04	U
319-84-6	Alpha-BHC	0.03	U	0.03	U	0.03	U	0.03	U	0.03	U	0.03	U
319-85-7	Beta-BHC	0.06	U	0.07	U	0.06	U	0.06	U	0.06	U	0.06	U
319-86-8	Delta-BHC	0.09	U	0.1	U	0.1	U	0.09	U	0.09	U	0.09	U
33213-65-9	Endosulfan II	0.04	U	0.04	U	0.04	U	0.04	U	0.04	U	0.04	U
50-29-3	4,4'-DDT	0.12	U	0.13	U	0.13	U	0.12	U	0.12	U	0.12	U
5103-71-9	alpha-Chlordane	0.14	U	0.15	U	0.15	U	0.14	U	0.14	U	0.14	U
5103-74-2	gamma-Chlordane	0.14	U	0.15	U	0.15	U	0.14	U	0.14	U	0.14	U
53494-70-5	Endrin ketone	0.1	U	0.11	U	0.11	U	0.1	U	0.1	U	0.1	U
58-89-9	gamma-BHC (Lindane)	0.04	U	0.04	U	0.04	U	0.04	U	0.04	U	0.04	U
60-57-1	Dieldrin	0.02	U	0.02	U	0.02	U	0.02	U	0.02	U	0.02	U
72-20-8	Endrin	0.06	U	0.07	U	0.06	U	0.06	U	0.06	U	0.06	U
72-43-5	Methoxychlor	1.8	U	3.4		1.9	U	1.8	U	1.8	U	1.8	U
72-54-8	4,4'-DDD	0.11	U	0.12	U	0.12	U	0.11	U	0.11	U	0.11	U
72-55-9	4,4'-DDE	0.04	U	0.04	U	0.04	U	0.04	U	0.04	U	0.04	U
76-44-8	Heptachlor	0.03	U	0.03	U	0.03	U	0.03	U	0.03	U	0.03	U
8001-35-2	Toxaphene	2.4	U	2.6	U	2.6	U	2.4	U	2.4	U	2.4	U
959-98-8	Endosulfan I	0.14	U	0.15	U	0.15	U	0.14	U	0.14	U	0.14	U

*** Validation Complete ***

CEDAR CHEMICAL GROUNDWATER
WEST HELENA, ARKANSAS
PHASE I GROUNDWATER

PEST	SHORT ID --------->	4MW-1		4MW-2		4MW-2 DUP		EMW-1		EMW-2		EMW-3	
	ORIGINAL ID ----->	CED4GWMW1		CED4GWMW2		CED4GWMW2D		CEDE-GWMW-1		CEDE-GWMW-2		CEDE-GWMW-3	
	SAMPLE DATE ----->	09/29/93		09/29/93		09/29/93		09/22/93		09/22/93		09/23/93	
	DATE ANALYZED --->	10/09/93		10/09/93		10/09/93		10/07/93		10/07/93		10/08/93	
	MATRIX ---------->	Water		Water		Water		Water		Water		Water	
	UNITS ---------->	UG/L		UG/L		UG/L		UG/L		UG/L		UG/L	
CAS #	Parameter	E015	VAL	E015	VAL	E015	VAL	E012	VAL	E012	VAL	E012	VAL
1024-57-3	Heptachlor Epoxide	0.2	U	0.2	U	0.2	U	0.2	U	0.2	U	0.2	U
1031-07-8	Endosulfan Sulfate	0.66	U	0.66	U	0.66	U	0.66	U	0.66	U	0.66	U
309-00-2	Aldrin	0.04	U	0.04	U	0.04	U	0.04	U	0.04	U	0.04	U
319-84-6	Alpha-BHC	0.03	U	0.03	U	0.03	U	0.05		0.03	U	0.07	
319-85-7	Beta-BHC	0.06	U	0.06	U	0.06	U	0.06	U	0.06	U	0.06	U
319-86-8	Delta-BHC	0.09	U	0.09	U	0.09	U	0.09	U	0.09	U	0.09	U
33213-65-9	Endosulfan II	0.04	U	0.04	U	0.04	U	0.04	U	0.04	U	0.04	U
50-29-3	4,4'-DDT	0.12	U	0.12	U	0.12	U	0.49		0.12	U	0.12	U
5103-71-9	alpha-Chlordane	0.14	U	0.14	U	0.14	U	0.14	U	0.14	U	0.14	U
5103-74-2	gamma-Chlordane	0.14	U	0.14	U	0.14	U	0.14	U	0.14	U	0.14	U
53494-70-5	Endrin ketone	0.1	U	0.1	U	0.1	U	0.1	U	0.1	U	0.1	U
58-89-9	gamma-BHC (Lindane)	0.04	U	0.04	U	0.04	U	0.04	U	0.04	U	0.04	U
60-57-1	Dieldrin	0.02	U	0.02	U	0.02	U	0.02	U	0.02	U	0.03	
72-20-8	Endrin	0.06	U	0.06	U	0.06	U	0.06	U	0.06	U	0.06	U
72-43-5	Methoxychlor	1.8	U	1.8	U	1.8	U	1.8	U	1.8	U	1.8	U
72-54-8	4,4'-DDD	0.11	U	0.11	U	0.11	U	0.11	U	0.11	U	0.11	U
72-55-9	4,4'-DDE	0.04	U	0.04	U	0.04	U	0.04	U	0.04	U	0.04	U
76-44-8	Heptachlor	0.03	U	0.03	U	0.03	U	0.03	U	0.03	U	0.03	U
8001-35-2	Toxaphene	2.4	U	2.4	U	2.4	U	2.4	U	2.4	U	2.4	U
959-98-8	Endosulfan I	0.14	U	0.14	U	0.14	U	0.14	U	0.14	U	0.14	U

*** Validation Complete ***

CEDAR CHEMICAL GROUNDWATER
WEST HELENA, ARKANSAS
PHASE I GROUNDWATER

PEST	SHORT ID --------->	EMW-3 DUP		EMW-4		EMW-6		EMW-7		EMW-6A		EMW-6B	
	ORIGINAL ID ----->	CEDEGWMW3		CEDE-GWMW-4		CEDE-GWMW6		CEDE-GWMW7		CEDE-GWMW6A		CEDE-GWMW6B	
	SAMPLE DATE ----->	09/23/93		09/23/93		09/24/93		09/23/93		09/24/93		09/24/93	
	DATE ANALYZED --->	10/08/93		10/07/93		10/08/93		10/08/93		10/08/93		10/09/93	
	MATRIX ---------->	Water		Water		Water		Water		Water		Water	
	UNITS ---------->	UG/L		UG/L		UG/L		UG/L		UG/L		UG/L	
CAS #	Parameter	E012	VAL	E012	VAL	E012	VAL	E012	VAL	E012	VAL	E012	VAL
1024-57-3	Heptachlor Epoxide	0.2	U	0.2	U	0.2	U	0.2	U	0.2	U	0.2	U
1031-07-8	Endosulfan Sulfate	0.66	U	0.66	U	0.66	U	0.66	U	0.66	U	0.66	U
309-00-2	Aldrin	0.04	U	0.04	U	0.04	U	0.04	U	0.04	U	0.04	U
319-84-6	Alpha-BHC	0.06		0.03	U	0.03	U	0.03	U	0.03	U	0.03	U
319-85-7	Beta-BHC	0.08		0.06	U	0.06	U	0.06	U	0.06	U	0.06	U
319-86-8	Delta-BHC	0.09	U	0.09	U	0.09	U	0.09	U	0.09	U	0.09	U
33213-65-9	Endosulfan II	0.04	U	0.04	U	0.04	U	0.04	U	0.04	U	0.04	U
50-29-3	4,4'-DDT	0.12	U	0.56		0.12	U	0.12	U	0.12	U	0.12	U
5103-71-9	alpha-Chlordane	0.14	U	0.14	U	0.14	U	0.14	U	0.14	U	0.14	U
5103-74-2	gamma-Chlordane	0.14	U	0.14	U	0.14	U	0.14	U	0.14	U	0.14	U
53494-70-5	Endrin ketone	0.1	U	0.1	U	0.1	U	0.1	U	0.1	U	0.1	U
58-89-9	gamma-BHC (Lindane)	0.04	U	0.04	U	0.04	U	0.04	U	0.04	U	0.04	U
60-57-1	Dieldrin	0.02		0.02	U	0.02	U	0.02	U	0.02	U	0.02	U
72-20-8	Endrin	0.06	U	0.06	U	0.06	U	0.06	U	0.06	U	0.06	U
72-43-5	Methoxychlor	1.8		1.8	U	1.8	U	1.8	U	1.8	U	1.8	U
72-54-8	4,4'-DDD	0.11	U	0.11	U	0.11	U	0.11	U	0.11	U	0.11	U
72-55-9	4,4'-DDE	0.04	U	0.04	U	0.04	U	0.04	U	0.04	U	0.04	U
76-44-8	Heptachlor	0.03	U	0.03	U	0.03	U	0.03	U	0.03	U	0.03	U
8001-35-2	Toxaphene	2.4	U	2.4	U	2.4	U	2.4	U	2.4	U	2.4	U
959-98-8	Endosulfan I	0.14	U	0.14	U	0.14	U	0.14	U	0.14	U	0.14	U

*** Validation Complete ***

CEDAR CHEMICAL GROUNDWATER
WEST HELENA, ARKANSAS
PHASE I GROUNDWATER

SVOA		SHORT ID --------->	1MW-1		1MW-2		1MW-3		1MW-3 DUP		1MW-4		1MW-5	
		ORIGINAL ID ----->	CED1-GWMW-1		CED1-GWMW-2		CED1-GWMW-3		CED1-GWMW-3D		CED1-GWMW-4		CED1-GWMW-5	
		SAMPLE DATE ----->	09/14/93		09/14/93		09/14/93		09/14/93		09/15/93		09/15/93	
		DATE ANALYZED --->	10/07/93		10/07/93		10/07/93		10/08/93		10/10/93		10/10/93	
		MATRIX ---------->	Water		Water		Water		Water		Water		Water	
		UNITS ----------->	UG/L		UG/L		UG/L		UG/L		UG/L		UG/L	
CAS #	Parameter		E009	VAL	E009	VAL	E009	VAL	E009	VAL	E009	VAL	E009	VAL
100-01-6	4-Nitroaniline		50.	U	50.	U	50.	U	50.	U	50.	U	50.	U
100-02-7	4-Nitrophenol		50.	U	50.	U	50.	U	50.	U	50.	U	50.	U
100-51-6	Benzyl alcohol		10.	U	10.	U	10.	U	10.	U	10.	U	10.	U
101-55-3	4-Bromophenyl-phenylether		10.	U	10.	U	10.	U	10.	U	10.	U	10.	U
105-67-9	2,4-Dimethylphenol		10.	U	10.	U	10.	U	10.	U	10.	U	10.	U
106-44-5	4-Methylphenol (p-Cresol)		10.	U	10.	U	10.	U	10.	U	10.	U	10.	U
106-46-7	1,4-Dichlorobenzene		10.	U	10.	U	4.		4.		10.	U	10.	U
106-47-8	4-Chloroaniline		10.	U	10.	U	76.		160.		1.		10.	U
108-60-1	bis(2-chloroisopropyl) ether		10.	U	10.	U	10.	U	10.	U	10.	U	10.	U
108-95-2	Phenol		10.	U	10.	U	10.	U	10.	U	10.	U	10.	U
111-44-4	bis(2-Chloroethyl)ether		10.	U	10.	U	10.	U	10.	U	10.	U	10.	U
111-91-1	bis(2-Chloroethoxy)methane		10.	U	10.	U	10.	U	10.	U	10.	U	10.	U
117-81-7	bis(2-Ethylhexyl)phthalate (BEHP)		10.	U	10.	U	10.	U	10.	U	10.	U	10.	U
117-84-0	Di-n-octylphthalate		10.	U	10.	U	10.	U	10.	U	10.	U	10.	U
118-74-1	Hexachlorobenzene		10.	U	10.	U	10.	U	10.	U	10.	U	10.	U
120-12-7	Anthracene		10.	U	10.	U	10.	U	10.	U	10.	U	10.	U
120-82-1	1,2,4-Trichlorobenzene		10.	U	10.	U	10.	U	10.	U	10.	U	10.	U
120-83-2	2,4-Dichlorophenol		10.	U	10.	U	10.	U	10.	U	10.	U	10.	U
121-14-2	2,4-Dinitrotoluene		10.	U	10.	U	10.	U	10.	U	10.	U	10.	U
129-00-0	Pyrene		10.	U	10.	U	10.	U	10.	U	10.	U	10.	U
131-11-3	Dimethylphthalate		10.	U	10.	U	10.	U	10.	U	10.	U	10.	U
132-64-9	Dibenzofuran		10.	U	10.	U	10.	U	10.	U	10.	U	10.	U
191-24-2	Benzo(g,h,i)perylene		10.	U	10.	U	10.	U	10.	U	10.	U	10.	U
193-39-5	Indeno(1,2,3-cd)pyrene		10.	U	10.	U	10.	U	10.	U	10.	U	10.	U
205-99-2	Benzo(b)fluoranthene		10.	U	10.	U	10.	U	10.	U	10.	U	10.	U
206-44-0	Fluoranthene		10.	U	10.	U	10.	U	10.	U	10.	U	10.	U
207-08-9	Benzo(k)fluoranthene		10.	U	10.	U	10.	U	10.	U	10.	U	10.	U
208-96-8	Acenaphthylene		10.	U	10.	U	10.	U	10.	U	10.	U	10.	U
218-01-9	Chrysene		10.	U	10.	U	10.	U	10.	U	10.	U	10.	U
50-32-8	Benzo(a)pyrene		10.	U	10.	U	10.	U	10.	U	10.	U	10.	U
51-28-5	2,4-Dinitrophenol		50.	U	50.	U	50.	U	50.	U	50.	U	50.	U
534-52-1	4,6-Dinitro-2-methylphenol		50.	U	50.	U	50.	U	50.	U	50.	U	50.	U
53-70-3	Dibenz(a,h)anthracene		10.	U	10.	U	10.	U	10.	U	10.	U	10.	U
541-73-1	1,3-Dichlorobenzene		10.	U	10.	U	4.		3.		10.	U	10.	U
56-55-3	Benzo(a)anthracene		10.	U	10.	U	10.	U	10.	U	10.	U	10.	U
59-50-7	4-Chloro-3-methylphenol		10.	U	10.	U	10.	U	10.	U	10.	U	10.	U
606-20-2	2,6-Dinitrotoluene		10.	U	10.	U	10.	U	10.	U	10.	U	320.	
621-64-7	N-Nitroso-di-n-propylamine		10.	U	10.	U	10.	U	10.	U	10.	U	10.	U
65-85-0	Benzoic acid		50.	U	50.	U	50.	U	50.	U	50.	U	50.	U

*** Validation Complete ***

CEDAR CHEMICAL GROUNDWATER
WEST HELENA, ARKANSAS
PHASE I GROUNDWATER

SVOA																	
	SHORT ID --------->	1MW-1		1MW-2		1MW-3		1MW-3 DUP		1MW-4		1MW-5	
	ORIGINAL ID ----->	CED1-GWMW-1		CED1-GWMW-2		CED1-GWMW-3		CED1-GWMW-3D		CED1-GWMW-4		CED1-GWMW-5	
	SAMPLE DATE ----->	09/14/93		09/14/93		09/14/93		09/14/93		09/15/93		09/15/93	
	DATE ANALYZED --->	10/07/93		10/07/93		10/07/93		10/08/93		10/10/93		10/10/93	
	MATRIX ---------->	Water		Water		Water		Water		Water		Water	
	UNITS ----------->	UG/L		UG/L		UG/L		UG/L		UG/L		UG/L	
CAS #	Parameter	ED09	VAL	ED09	VAL	ED09	VAL	ED09	VAL	ED09	VAL	ED09	VAL
67-72-1	Hexachloroethane	10.	U	10.	U	10.	U	10.	U	10.	U	10.	U
7005-72-3	4-Chlorophenyl-phenylether	10.	U	10.	U	10.	U	10.	U	10.	U	10.	U
709-98-8	Propanil	10.	U	10.	U	10.	U	10.		10.	U	10.	U
77-47-4	Hexachlorocyclopentadiene	10.	U	10.	U	10.	U	10.	U	10.	U	10.	U
78-59-1	Isophorone	10.	U	10.	U	10.	U	10.	U	10.	U	10.	U
83-32-9	Acenaphthene	10.	U	10.	U	10.	U	10.	U	10.	U	10.	U
84-66-2	Diethylphthalate	10.	U	10.	U	10.	U	10.	U	10.	U	10.	U
84-74-2	Di-n-butylphthalate	10.	U	10.	U	2.		1.		10.	U	2.	
85-01-8	Phenanthrene	10.	U	10.	U	10.	U	10.	U	10.	U	10.	U
85-68-7	Butylbenzylphthalate	10.	U	10.	U	10.	U	10.	U	10.	U	10.	U
86-30-6	N-Nitrosodiphenylamine	10.	U	10.	U	10.	U	10.	U	10.	U	10.	U
86-73-7	Fluorene	10.	U	10.	U	10.	U	10.	U	10.	U	10.	U
87-68-3	Hexachlorobutadiene	10.	U	10.	U	10.	U	10.	U	10.	U	10.	U
87-86-5	Pentachlorophenol	50.	U	50.	U	50.	U	50.	U	50.	U	50.	U
88-06-2	2,4,6-Trichlorophenol	10.	U	10.	U	10.	U	10.	U	10.	U	10.	U
88-74-4	2-Nitroaniline	50.	U	50.	U	50.	U	50.	U	50.	U	50.	U
88-75-5	2-Nitrophenol	10.	U	10.	U	10.	U	10.	U	10.	U	10.	U
88-85-7	Dinoseb	50.	U	50.	U	50.	U	50.	U	50.	U	50.	U
91-20-3	Naphthalene	10.	U	10.	U	10.	U	10.	U	10.	U	10.	U
91-57-6	2-Methylnaphthalene	10.	U	10.	U	10.	U	10.	U	10.	U	10.	U
91-58-7	2-Chloronaphthalene	10.	U	10.	U	10.	U	10.	U	10.	U	10.	U
91-94-1	3,3'-Dichlorobenzidine	20.	U	20.	U	20.	U	20.	U	20.	U	20.	U
95-48-7	2-Methylphenol (o-Cresol)	10.	U	10.	U	10.	U	10.	U	10.	U	10.	U
95-50-1	1,2-Dichlorobenzene	10.	U	10.	U	31.		30.		10.	U	10.	U
95-57-8	2-Chlorophenol	10.	U	10.	U	10.	U	10.	U	10.	U	10.	U
95-76-1	3,4-Dichloroaniline	10.	U	10.	U	55.		60.		12.		13.	
95-95-4	2,4,5-Trichlorophenol	50.	U	50.	U	50.	U	50.	U	50.	U	50.	U
98-95-3	Nitrobenzene	10.	U	10.	U	10.	U	10.	U	10.	U	10.	U
99-09-2	3-Nitroaniline	50.	U	50.	U	50.	U	50.	U	50.	U	50.	U

*** Validation Complete ***

CEDAR CHEMICAL GROUNDWATER
WEST HELENA, ARKANSAS
PHASE I GROUNDWATER

SVOA	SHORT ID --------->	1MW-6		2MW-2		2MW-3		2MW-4		2MW-5		4MW-1	
	ORIGINAL ID ----->	CED1GWMW6		CED2GWMW2		CED2-GWMW-3		CED2-GWMW-4		CED2-GWMW-5		CED4GWMW1	
	SAMPLE DATE ----->	09/29/93		09/29/93		09/28/93		09/28/93		09/28/93		09/29/93	
	DATE ANALYZED --->	10/26/93		10/26/93		10/20/93		10/20/93		10/21/93		10/26/93	
	MATRIX ---------->	Water		Water		Water		Water		Water		Water	
	UNITS ----------->	UG/L		UG/L		UG/L		UG/L		UG/L		UG/L	
CAS #	Parameter	E015	VAL	E015	VAL	E012	VAL	E012	VAL	E012	VAL	E015	VAL
100-01-6	4-Nitroaniline	50.	U	50.	U	50.	U	50.	U	50.	U	50.	U
100-02-7	4-Nitrophenol	50.	U	50.	U	250.		50.	U	50.	U	50.	U
100-51-6	Benzyl alcohol	10.	U	10.	U	10.	U	10.	U	10.	U	10.	U
101-55-3	4-Bromophenyl-phenylether	10.	U	10.	U	10.	U	10.	U	10.	U	10.	U
105-67-9	2,4-Dimethylphenol	10.	U	10.	U	10.	U	10.	U	10.	U	10.	U
106-44-5	4-Methylphenol (p-Cresol)	10.	U	10.	U	8.		10.	U	10.	U	23.	
106-46-7	1,4-Dichlorobenzene	10.	U	10.	U	10.	U	10.	U	10.	U	10.	U
106-47-8	4-Chloroaniline	10.	U	10.	U	10.	U	590		3.		23.	
108-60-1	bis(2-chloroisopropyl) ether	10.	U	10.	U	10.	U	10.	U	10.	U	10.	U
108-95-2	Phenol	10.	U	10.	U	950.		10.	U	10.	U	10.	U
111-44-4	bis(2-Chloroethyl)ether	10.	U	10.	U	10.	U	13.		10.	U	10.	U
111-91-1	bis(2-Chloroethoxy)methane	10.	U	10.	U	10.	U	10.	U	10.	U	10.	U
117-81-7	bis(2-Ethylhexyl)phthalate (BEHP)	10.	U	10.	U	10.	U	10.	U	10.	U	10.	U
117-84-0	Di-n-octylphthalate	10.	U	10.	U	10.	U	10.	U	10.	U	10.	U
118-74-1	Hexachlorobenzene	10.	U	10.	U	10.	U	10.	U	10.	U	10.	U
120-12-7	Anthracene	10.	U	10.	U	10.	U	10.	U	10.	U	10.	U
120-82-1	1,2,4-Trichlorobenzene	10.	U	10.	U	10.	U	10.	U	10.	U	10.	U
120-83-2	2,4-Dichlorophenol	10.	U	10.	U	50.	U	10.	U	10.	U	10.	U
121-14-2	2,4-Dinitrotoluene	10.	U	10.	U	10.	U	10.	U	10.	U	10.	U
129-00-0	Pyrene	10.	U	10.	U	10.	U	10.	U	10.	U	10.	U
131-11-3	Dimethylphthalate	10.	U	10.	U	10.	U	10.	U	10.	U	10.	U
132-64-9	Dibenzofuran	10.	U	10.	U	10.	U	10.	U	10.	U	10.	U
191-24-2	Benzo(g,h,i)perylene	10.	U	10.	U	10.	U	10.	U	10.	U	10.	U
193-39-5	Indeno(1,2,3-cd)pyrene	10.	U	10.	U	10.	U	10.	U	10.	U	10.	U
205-99-2	Benzo(b)fluoranthene	10.	U	10.	U	10.	U	10.	U	10.	U	10.	U
206-44-0	Fluoranthene	10.	U	10.	U	10.	U	10.	U	10.	U	10.	U
207-08-9	Benzo(k)fluoranthene	10.	U	10.	U	10.	U	10.	U	10.	U	10.	U
208-96-8	Acenaphthylene	10.	U	10.	U	10.	U	10.	U	10.	U	10.	U
218-01-9	Chrysene	10.	U	10.	U	10.	U	10.	U	10.	U	10.	U
50-32-8	Benzo(a)pyrene	10.	U	10.	U	10.	U	10.	U	10.	U	10.	U
51-28-5	2,4-Dinitrophenol	50.	U	50.	U	250.	U	50.	U	50.	U	50.	U
534-52-1	4,6-Dinitro-2-methylphenol	50.	U	50.	U	250.	U	50.	U	50.	U	50.	U
53-70-3	Dibenz(a,h)anthracene	10.	U	10.	U	10.	U	10.	U	10.	U	10.	U
541-73-1	1,3-Dichlorobenzene	10.	U	10.	U	10.	U	10.	U	10.	U	10.	U
56-55-3	Benzo(a)anthracene	10.	U	10.	U	10.	U	10.	U	10.	U	10.	U
59-50-7	4-Chloro-3-methylphenol	10.	U	10.	U	50.	U	10.	U	10.	U	10.	U
606-20-2	2,6-Dinitrotoluene	10.	U	10.	U	10.	U	10.	U	10.	U	10.	U
621-64-7	N-Nitroso-di-n-propylamine	10.	U	10.	U	10.	U	10.	U	10.	U	10.	U
65-85-0	Benzoic acid	11.		50.	U	50.	U	50.	U	50.	U	57.	

*** Validation Complete ***

CEDAR CHEMICAL GROUNDWATER
WEST HELENA, ARKANSAS
PHASE I GROUNDWATER

SVOA	SHORT ID --------->	1MW-6		2MW-2		2MW-3		2MW-4		2MW-5		4MW-1	
	ORIGINAL ID ----->	CED1GWMW6		CED2GWMW2		CED2-GWMW-3		CED2-GWMW-4		CED2-GWMW-5		CED4GWMW1	
	SAMPLE DATE ----->	09/29/93		09/29/93		09/28/93		09/28/93		09/28/93		09/29/93	
	DATE ANALYZED --->	10/26/93		10/26/93		10/20/93		10/20/93		10/21/93		10/26/93	
	MATRIX ---------->	Water		Water		Water		Water		Water		Water	
	UNITS ---------->	UG/L		UG/L		UG/L		UG/L		UG/L		UG/L	
CAS #	Parameter	E015	VAL	E015	VAL	E012	VAL	E012	VAL	E012	VAL	E015	VAL
67-72-1	Hexachloroethane	10.	U	10.	U	10.	U	10.	U	10.	U	10.	U
7005-72-3	4-Chlorophenyl-phenylether	10.	U	10.	U	10.	U	10.	U	10.	U	10.	U
709-98-8	Propanil	10.	U	10.	U	6.		10.	U	1.		45.	
77-47-4	Hexachlorocyclopentadiene	10.	U	10.	U	10.	U	10.	U	10.	U	10.	U
78-59-1	Isophorone	10.	U	10.	U	10.	U	10.	U	10.	U	17.	
83-32-9	Acenaphthene	10.	U	10.	U	10.	U	10.	U	10.	U	10.	U
84-66-2	Diethylphthalate	10.	U	10.	U	10.	U	10.	U	1.		1.	
84-74-2	Di-n-butylphthalate	10.	U	10.	U	10.	U	10.	U	10.	U	10.	U
85-01-8	Phenanthrene	10.	U	10.	U	10.	U	10.	U	10.	U	10.	U
85-68-7	Butylbenzylphthalate	10.	U	10.	U	10.	U	10.	U	10.	U	10.	U
86-30-6	N-Nitrosodiphenylamine	10.	U	10.	U	10.	U	10.	U	10.	U	10.	U
86-73-7	Fluorene	10.	U	10.	U	10.	U	10.	U	10.	U	10.	U
87-68-3	Hexachlorobutadiene	10.	U	10.	U	10.	U	10.	U	10.	U	10.	U
87-86-5	Pentachlorophenol	50.	U	50.	U	250.	U	50.	U	50.	U	50.	U
88-06-2	2,4,6-Trichlorophenol	10.	U	10.	U	50.	U	10.	U	10.	U	10.	U
88-74-4	2-Nitroaniline	50.	U	50.	U	50.	U	50.	U	50.	U	50.	U
88-75-5	2-Nitrophenol	10.	U	10.	U	50.	U	10.	U	10.	U	10.	U
88-85-7	Dinoseb	50.	U	50.	U	50.	U	50.	U	39.		50.	U
91-20-3	Naphthalene	10.	U	10.	U	1.		10.	U	10.	U	2.	
91-57-6	2-Methylnaphthalene	10.	U	10.	U	10.	U	10.	U	10.	U	10.	U
91-58-7	2-Chloronaphthalene	10.	U	10.	U	10.	U	10.	U	10.	U	10.	U
91-94-1	3,3'-Dichlorobenzidine	20.	U	20.	U	20.	U	20.	U	20.	U	20.	U
95-48-7	2-Methylphenol (o-Cresol)	10.	U	10.	U	3.		10.	U	10.	U	15.	
95-50-1	1,2-Dichlorobenzene	10.	U	58.		11.		28.		7.		960.	
95-57-8	2-Chlorophenol	10.	U	10.	U	50.	U	10.	U	10.	U	10.	U
95-76-1	3,4-Dichloroaniline	10.	U	220.		10.	U	16.	U	10.	U	66.	
95-95-4	2,4,5-Trichlorophenol	50.	U	50.	U	250.	U	50.	U	50.	U	50.	U
98-95-3	Nitrobenzene	10.	U	10.	U	10.	U	10.	U	10.	U	10.	U
99-09-2	3-Nitroaniline	50.	U	50.	U	50.	U	50.	U	50.	U	50.	U

*** Validation Complete ***

CEDAR CHEMICAL GROUNDWATER
WEST HELENA, ARKANSAS
PHASE I GROUNDWATER

SVOA	SHORT ID --------->	4MW-2		4MW-2 DUP		EMW-1		EMW-2		EMW-3		EMW-4	
	ORIGINAL ID ----->	CED4GWMW2		CED4GWMW2D		CEDE-GWMW-1		CEDE-GWMW-2		CEDE-GWMW-3		CEDE-GWMW-4	
	SAMPLE DATE ----->	09/29/93		09/29/93		09/22/93		09/22/93		09/23/93		09/23/93	
	DATE ANALYZED --->	10/26/93		10/26/93		10/19/93		10/19/93		10/19/93		10/19/93	
	MATRIX ---------->	Water		Water		Water		Water		Water		Water	
	UNITS ----------->	UG/L		UG/L		UG/L		UG/L		UG/L		UG/L	
CAS #	Parameter	E015	VAL	E015	VAL	E012	VAL	E012	VAL	E012	VAL	E012	VAL
100-01-6	4-Nitroaniline	50.	U	50.	U	50.	U	50.	U	50.	U	50.	U
100-02-7	4-Nitrophenol	50.	U	100.	U	50.	U	50.	U	250.	U	50.	U
100-51-6	Benzyl alcohol	10.	U	10.	U	10.	U	10.	U	10.	U	10.	U
101-55-3	4-Bromophenyl-phenylether	10.	U	10.	U	10.	U	10.	U	10.	U	10.	U
105-67-9	2,4-Dimethylphenol	10.	U	20.	U	10.	U	10.	U	2.		10.	U
106-44-5	4-Methylphenol (p-Cresol)	10.	U	20.	U	10.	U	1.		50.	U	10.	U
106-46-7	1,4-Dichlorobenzene	10.	U	2.		10.	U	10.	U	10.	U	10.	U
106-47-8	4-Chloroaniline	5.		5.		10.	U	10.	U	40.		130.	
108-60-1	bis(2-chloroisopropyl) ether	10.	U	10.	U	10.	U	10.	U	10.	U	10.	U
108-95-2	Phenol	10.	U	20.	U	10.	U	10.	U	50.	U	1.	
111-44-4	bis(2-Chloroethyl)ether	10.	U	10.	U	10.	U	10.	U	10.	U	5.	
111-91-1	bis(2-Chloroethoxy)methane	10.	U	10.	U	10.	U	10.	U	10.	U	10.	U
117-81-7	bis(2-Ethylhexyl)phthalate (BEHP)	12.	U	37.	U	22.	U	28.	U	27.	U	58.	U
117-84-0	Di-n-octylphthalate	10.	U	10.	U	10.	U	10.	U	10.	U	10.	U
118-74-1	Hexachlorobenzene	10.	U	10.	U	10.	U	10.	U	10.	U	10.	U
120-12-7	Anthracene	10.	U	10.	U	10.	U	10.	U	10.	U	10.	U
120-82-1	1,2,4-Trichlorobenzene	10.	U	10.	U	10.	U	10.	U	2.		10.	U
120-83-2	2,4-Dichlorophenol	10.	U	20.	U	10.	U	10.	U	2.		10.	U
121-14-2	2,4-Dinitrotoluene	10.	U	10.	U	10.	U	10.	U	10.	U	10.	U
129-00-0	Pyrene	10.	U	10.	U	10.	U	10.	U	10.	U	10.	U
131-11-3	Dimethylphthalate	10.	U	10.	U	10.		10.	U	10.	U	10.	U
132-64-9	Dibenzofuran	10.	U	10.	U	10.	U	10.	U	10.	U	10.	U
191-24-2	Benzo(g,h,i)perylene	10.	U	10.	U	10.	U	10.	U	10.	U	10.	U
193-39-5	Indeno(1,2,3-cd)pyrene	10.	U	10.	U	10.	U	10.	U	10.	U	10.	U
205-99-2	Benzo(b)fluoranthene	10.	U	10.	U	10.	U	10.	U	10.	U	10.	U
206-44-0	Fluoranthene	10.	U	10.	U	10.	U	10.	U	10.	U	10.	U
207-08-9	Benzo(k)fluoranthene	10.	U	10.	U	10.	U	10.	U	10.	U	10.	U
208-96-8	Acenaphthylene	10.	U	10.	U	10.	U	10.	U	10.	U	10.	U
218-01-9	Chrysene	10.	U	10.	U	10.	U	10.	U	10.	U	10.	U
50-32-8	Benzo(a)pyrene	10.	U	10.	U	10.	U	10.	U	10.	U	10.	U
51-28-5	2,4-Dinitrophenol	110.		109.		50.	U	50.	U	250.	U	50.	U
534-52-1	4,6-Dinitro-2-methylphenol	50.	U	100.	U	50.	U	50.	U	250.	U	50.	U
53-70-3	Dibenz(a,h)anthracene	10.	U	10.	U	10.	U	10.	U	10.	U	10.	U
541-73-1	1,3-Dichlorobenzene	10.	U	10.	U	10.	U	10.	U	10.	U	10.	U
56-55-3	Benzo(a)anthracene	10.	U	10.	U	10.	U	10.	U	10.	U	10.	U
59-50-7	4-Chloro-3-methylphenol	10.	U	20.	U	10.	U	10.	U	50.	U	10.	U
606-20-2	2,6-Dinitrotoluene	10.	U	10.	U	10.	U	10.	U	10.	U	10.	U
621-64-7	N-Nitroso-di-n-propylamine	10.	U	10.	U	10.	U	10.	U	10.	U	10.	U
65-85-0	Benzoic acid	50.	U	50.	U	50.	U	50.	U	50.	U	50.	U

*** Validation Complete ***

CEDAR CHEMICAL GROUNDWATER
WEST HELENA, ARKANSAS
PHASE I GROUNDWATER

SVOA	SHORT ID --------->	4MW-2		4MW-2 DUP		EMW-1		EMW-2		EMW-3		EMW-4	
	ORIGINAL ID ----->	CED4GWMW2		CED4GWMW2D		CEDE-GWMW-1		CEDE-GWMW-2		CEDE-GWMW-3		CEDE-GWMW-4	
	SAMPLE DATE ----->	09/29/93		09/29/93		09/22/93		09/22/93		09/23/93		09/23/93	
	DATE ANALYZED --->	10/26/93		10/26/93		10/19/93		10/19/93		10/19/93		10/19/93	
	MATRIX ---------->	Water		Water		Water		Water		Water		Water	
	UNITS ---------->	UG/L		UG/L		UG/L		UG/L		UG/L		UG/L	
CAS #	Parameter	E015	VAL	E015	VAL	E012	VAL	E012	VAL	E012	VAL	E012	VAL
67-72-1	Hexachloroethane	10.	U	10.	U	10.	U	10.	U	10.	U	10.	U
7005-72-3	4-Chlorophenyl-phenylether	10.	U	10.	U	10.	U	10.	U	10.	U	10.	U
709-98-8	Propanil	10.	U	10.	U	10.	U	10.	U	31.	U	10.	U
77-47-4	Hexachlorocyclopentadiene	10.	U	10.	U	10.	U	10.	U	10.	U	10.	U
78-59-1	Isophorone	2.		2.		10.	U	10.	U	6.		10.	U
83-32-9	Acenaphthene	10.	U	10.	U	10.	U	10.	U	10.	U	10.	U
84-66-2	Diethylphthalate	10.	U	10.	U	10.	U	10.	U	2.		10.	U
84-74-2	Di-n-butylphthalate	10.	U	10.	U	10.	U	10.	U	10.	U	10.	U
85-01-8	Phenanthrene	10.	U	10.	U	10.	U	10.	U	10.	U	10.	U
85-68-7	Butylbenzylphthalate	10.	U	10.	U	10.	U	10.	U	10.	U	10.	U
86-30-6	N-Nitrosodiphenylamine	10.	U	10.	U	10.	U	10.	U	10.	U	10.	U
86-73-7	Fluorene	10.	U	10.	U	10.	U	10.	U	10.	U	10.	U
87-68-3	Hexachlorobutadiene	10.	U	10.	U	10.	U	10.	U	10.	U	10.	U
87-86-5	Pentachlorophenol	50.	U	100.	U	50.	U	50.	U	250.	U	50.	U
88-06-2	2,4,6-Trichlorophenol	10.	U	20.	U	10.	U	10.	U	10.	U	10.	U
88-74-4	2-Nitroaniline	50.	U	50.	U	50.	U	50.	U	50.	U	50.	U
88-75-5	2-Nitrophenol	10.	U	20.	U	10.	U	10.	U	50.	U	10.	U
88-85-7	Dinoseb	41000.		47000.		42.		50.	U	140.		50.	U
91-20-3	Naphthalene	10.	U	10.	U	10.	U	10.	U	4.		10.	U
91-57-6	2-Methylnaphthalene	10.	U	10.	U	10.	U	10.	U	1.		10.	U
91-58-7	2-Chloronaphthalene	10.	U	10.	U	10.	U	10.	U	10.	U	10.	U
91-94-1	3,3'-Dichlorobenzidine	20.	U	20.	U	20.	U	20.	U	20.	U	20.	U
95-48-7	2-Methylphenol (o-Cresol)	10.	U	20.	U	2.		10.	U	50.	U	10.	U
95-50-1	1,2-Dichlorobenzene	33.		35.		10.	U	1.		310.		7.	
95-57-8	2-Chlorophenol	10.	U	20.	U	10.	U	10.	U	50.	U	10.	U
95-76-1	3,4-Dichloroaniline	22.		26.		19.	U	10.	U	670.		63.	U
95-95-4	2,4,5-Trichlorophenol	50.	U	100.	U	50.	U	50.	U	250.	U	50.	U
98-95-3	Nitrobenzene	10.	U	10.	U	10.	U	10.	U	10.	U	10.	U
99-09-2	3-Nitroaniline	50.	U	50.	U	50.	U	50.	U	50.	U	50.	U

*** Validation Complete ***

CEDAR CHEMICAL GROUNDWATER
WEST HELENA, ARKANSAS
PHASE I GROUNDWATER

SVOA	SHORT ID --------->	EMW-6		EMW-7		EMW-6A		EMW-6B			
	ORIGINAL ID ----->	CEDE-GWMW-6		CEDE-GWMW-7		CEDE-GWMW-6A		CEDE-GWMW-6B			
	SAMPLE DATE ----->	09/24/93		09/23/93		09/24/93		09/24/93			
	DATE ANALYZED --->	10/20/93		10/20/93		10/20/93		10/21/93			
	MATRIX ---------->	Water		Water		Water		Water			
	UNITS ---------->	UG/L		UG/L		UG/L		UG/L			
CAS #	Parameter	E012	VAL	E012	VAL	E012	VAL	E012	VAL		
100-01-6	4-Nitroaniline	50.	U	50.	U	50.	U	250.	U		
100-02-7	4-Nitrophenol	50.	U	50.	U	50.	U	250.	U		
100-51-6	Benzyl alcohol	10.	U	10.	U	10.	U	50.	U		
101-55-3	4-Bromophenyl-phenylether	10.	U	10.	U	10.	U	50.	U		
105-67-9	2,4-Dimethylphenol	10.	U	10.	U	10.	U	50.	U		
106-44-5	4-Methylphenol (p-Cresol)	10.	U	10.	U	10.	U	50.	U		
106-46-7	1,4-Dichlorobenzene	10.	U	10.	U	10.	U	50.	U		
106-47-8	4-Chloroaniline	10.	U	65.		10.	U	5900.			
108-60-1	bis(2-chloroisopropyl) ether	10.	U	10.	U	10.	U	50.	U		
108-95-2	Phenol	10.	U	10.	U	10.	U	50.	U		
111-44-4	bis(2-Chloroethyl)ether	10.	U	10.	U	10.	U	50.	U		
111-91-1	bis(2-Chloroethoxy)methane	10.	U	10.	U	10.	U	50.	U		
117-81-7	bis(2-Ethylhexyl)phthalate (BEHP)	10.	U	10.	U	10.	U	50.	U		
117-84-0	Di-n-octylphthalate	10.	U	10.	U	10.	U	50.	U		
118-74-1	Hexachlorobenzene	10.	U	10.	U	10.	U	50.	U		
120-12-7	Anthracene	10.	U	10.	U	10.	U	50.	U		
120-82-1	1,2,4-Trichlorobenzene	10.	U	10.	U	10.	U	50.	U		
120-83-2	2,4-Dichlorophenol	10.	U	10.	U	10.	U	50.	U		
121-14-2	2,4-Dinitrotoluene	10.	U	10.	U	10.	U	50.	U		
129-00-0	Pyrene	10.	U	10.	U	10.	U	50.	U		
131-11-3	Dimethylphthalate	10.	U	10.	U	10.	U	50.	U		
132-64-9	Dibenzofuran	10.	U	10.	U	10.	U	50.	U		
191-24-2	Benzo(g,h,i)perylene	10.	U	10.	U	10.	U	50.	U		
193-39-5	Indeno(1,2,3-cd)pyrene	10.	U	10.	U	10.	U	50.	U		
205-99-2	Benzo(b)fluoranthene	10.	U	10.	U	10.	U	50.	U		
206-44-0	Fluoranthene	10.	U	10.	U	10.	U	50.	U		
207-08-9	Benzo(k)fluoranthene	10.	U	10.	U	10.	U	50.	U		
208-96-8	Acenaphthylene	10.	U	10.	U	10.	U	50.	U		
218-01-9	Chrysene	10.	U	10.	U	10.	U	50.	U		
50-32-8	Benzo(a)pyrene	10.	U	10.	U	10.	U	50.	U		
51-28-5	2,4-Dinitrophenol	50.	U	50.	U	50.	U	250.	U		
534-52-1	4,6-Dinitro-2-methylphenol	50.	U	50.	U	50.	U	250.	U		
53-70-3	Dibenz(a,h)anthracene	10.	U	10.	U	10.	U	50.	U		
541-73-1	1,3-Dichlorobenzene	10.	U	10.	U	10.	U	50.	U		
56-55-3	Benzo(a)anthracene	10.	U	10.	U	10.	U	50.	U		
59-50-7	4-Chloro-3-methylphenol	10.	U	10.	U	10.	U	50.	U		
606-20-2	2,6-Dinitrotoluene	10.	U	13.		10.	U	50.	U		
621-64-7	N-Nitroso-di-n-propylamine	10.	U	10.	U	10.	U	50.	U		
65-85-0	Benzoic acid	50.	U	50.	U	50.	U	250.	U		

*** Validation Complete ***

CEDAR CHEMICAL GROUNDWATER
WEST HELENA, ARKANSAS
PHASE I GROUNDWATER

SVOA	SHORT ID --------->	EMW-6		EMW-7		EMW-6A		EMW-6B			
	ORIGINAL ID ----->	CEDE-GWMW-6		CEDE-GWMW-7		CEDE-GWMW-6A		CEDE-GWMW-6B			
	SAMPLE DATE ----->	09/24/93		09/23/93		09/24/93		09/24/93			
	DATE ANALYZED --->	10/20/93		10/20/93		10/20/93		10/21/93			
	MATRIX ---------->	Water		Water		Water		Water			
	UNITS ---------->	UG/L		UG/L		UG/L		UG/L			
CAS #	Parameter	E012	VAL	E012	VAL	E012	VAL	E012	VAL		
67-72-1	Hexachloroethane	10.	U	10.	U	10.	U	50.	U		
7005-72-3	4-Chlorophenyl-phenylether	10.	U	10.	U	10.	U	50.	U		
709-98-8	Propanil	10.	U	10.	U	10.	U	18.			
77-47-4	Hexachlorocyclopentadiene	10.	U	10.	U	10.	U	50.	U		
78-59-1	Isophorone	10.	U	10.	U	10.	U	50.	U		
83-32-9	Acenaphthene	10.	U	10.	U	10.	U	50.	U		
84-66-2	Diethylphthalate	10.	U	10.	U	10.	U	50.	U		
84-74-2	Di-n-butylphthalate	10.	U	10.	U	10.	U	50.	U		
85-01-8	Phenanthrene	10.	U	10.	U	10.	U	50.	U		
85-68-7	Butylbenzylphthalate	10.	U	10.	U	10.	U	50.	U		
86-30-6	N-Nitrosodiphenylamine	10.	U	10.	U	10.	U	50.	U		
86-73-7	Fluorene	10.	U	10.	U	10.	U	50.	U		
87-68-3	Hexachlorobutadiene	10.	U	10.	U	10.	U	50.	U		
87-86-5	Pentachlorophenol	50.	U	50.	U	50.	U	250.	U		
88-06-2	2,4,6-Trichlorophenol	10.	U	10.	U	10.	U	50.	U		
88-74-4	2-Nitroaniline	50.	U	50.	U	50.	U	250.	U		
88-75-5	2-Nitrophenol	10.	U	10.	U	10.	U	50.	U		
88-85-7	Dinoseb	50.	U	50.	U	50.	U	250.	U		
91-20-3	Naphthalene	10.	U	10.	U	10.	U	15.			
91-57-6	2-Methylnaphthalene	10.	U	10.	U	10.	U	6.			
91-58-7	2-Chloronaphthalene	10.	U	10.	U	10.	U	50.	U		
91-94-1	3,3'-Dichlorobenzidine	20.	U	20.	U	20.	U	100.	U		
95-48-7	2-Methylphenol (o-Cresol)	10.	U	10.	U	10.	U	50.	U		
95-50-1	1,2-Dichlorobenzene	10.	U	10.	U	10.	U	130.			
95-57-8	2-Chlorophenol	10.	U	1.		10.	U	50.	U		
95-76-1	3,4-Dichloroaniline	10.	U	10.	U	10.	U	58000.			
95-95-4	2,4,5-Trichlorophenol	50.	U	50.	U	50.	U	250.	U		
98-95-3	Nitrobenzene	10.	U	10.	U	10.	U	50.	U		
99-09-2	3-Nitroaniline	50.	U	50.	U	50.	U	250.	U		

*** Validation Complete ***

CEDAR CHEMICAL GROUNDWATER
WEST HELENA, ARKANSAS
PHASE I GROUNDWATER

VOA	SHORT ID --------->	1MW-1	1MW-2	1MW-3	1MW-3(10-15')DU	1MW-4	1MW-5
	ORIGINAL ID ----->	CED1-GWMW-1	CED1-GWMW-2	CED1-GWMW-3	CED1-GWMW-3D	CED1-GWMW-4	CED1-GWMW-5
	SAMPLE DATE ----->	09/14/93	09/14/93	09/14/93	09/14/93	09/15/93	09/15/93
	DATE ANALYZED --->	09/17/93	09/17/93	09/17/93	09/17/93	09/17/93	09/17/93
	MATRIX ---------->	Water	Water	Water	Water	Water	Water
	UNITS ---------->	UG/L	UG/L	UG/L	UG/L	UG/L	UG/L

CAS #	Parameter	ED09	VAL	ED09	VAL	ED09	VAL	ED09	VAL	ED09	VAL	ED09	VAL
100-41-4	Ethylbenzene	5.	U	5.	U	100.	U	100.	U	75.	U	5.	U
100-42-5	Styrene	5.	U	5.	U	100.	U	100.	U	75.	U	5.	U
10061-01-5	cis-1,3-Dichloropropene	5.	U	5.	U	100.	U	100.	U	75.	U	5.	U
10061-02-6	trans-1,3-Dichloropropene	5.	U	5.	U	100.	U	100.	U	75.	U	5.	U
107-06-2	1,2-Dichloroethane	19.		5.	U	2700.		2500.		1800.		5.	U
108-05-4	Vinyl acetate	5.	U	5.	U	100.	U	100.	U	75.	U	5.	U
108-10-1	4-Methyl-2-Pentanone (MIBK)	50.	U	50.	U	1000.	U	1000.	U	750.	U	50.	U
108-88-3	Toluene	5.	U	5.	U	100.	U	100.	U	75.	U	5.	U
108-90-7	Chlorobenzene	5.	U	5.	U	100.	U	100.	U	75.	U	5.	U
124-48-1	Dibromochloromethane	5.	U	5.	U	100.	U	100.	U	75.	U	5.	U
127-18-4	Tetrachloroethene	5.	U	5.	U	100.	U	100.	U	75.	U	5.	U
1330-20-7	Xylene (total)	5.	U	5.	U	100.	U	100.	U	75.	U	5.	U
540-59-0	1,2-Dichloroethene (total)	5.	U	5.	U	100.	U	100.	U	75.	U	5.	U
56-23-5	Carbon tetrachloride	5.	U	5.	U	100.	U	100.	U	75.	U	5.	U
591-78-6	2-Hexanone	50.	U	50.	U	1000.	U	1000.	U	750.	U	50.	U
67-64-1	Acetone	10.	U	10.	U	200.	U	200.	U	150.	U	10.	U
67-66-3	Chloroform	2.		5.	U	100.	U	100.	U	75.	U	2.	
71-43-2	Benzene	5.	U	5.	U	100.	U	100.	U	75.	U	5.	U
71-55-6	1,1,1-Trichloroethane	5.	U	5.	U	100.	U	100.	U	75.	U	5.	U
74-83-9	Bromomethane	10.	U	10.	U	200.	U	200.	U	150.	U	10.	U
74-87-3	Chloromethane	10.	U	10.	U	200.	U	200.	U	150.	U	10.	U
75-00-3	Chloroethane	10.	U	10.	U	200.	U	200.	U	150.	U	10.	U
75-01-4	Vinyl chloride	5.	U	5.	U	100.	U	100.	U	75.	U	5.	U
75-09-2	Methylene chloride	5.	U	5.	U	100.	U	100.	U	75.	U	5.	U
75-15-0	Carbon disulfide	5.	U	5.	U	100.	U	100.	U	75.	U	5.	U
75-25-2	Bromoform	5.	U	5.	U	100.	U	100.	U	75.	U	5.	U
75-27-4	Bromodichloromethane	5.	U	5.	U	100.	U	100.	U	75.	U	5.	U
75-34-3	1,1-Dichloroethane	5.	U	5.	U	100.	U	100.	U	75.	U	5.	U
75-35-4	1,1-Dichloroethene	5.	U	5.	U	100.	U	100.	U	75.	U	5.	U
78-87-5	1,2-Dichloropropane	5.	U	5.	U	100.	U	100.	U	75.	U	5.	U
78-93-3	2-Butanone (MEK)	10.	U	10.	U	200.	U	200.	U	150.	U	10.	U
79-00-5	1,1,2-Trichloroethane	5.	U	5.	U	100.	U	100.	U	75.	U	5.	U
79-01-6	Trichloroethene	5.	U	5.	U	100.	U	100.	U	28.		5.	U
79-34-5	1,1,2,2-Tetrachloroethane	5.	U	5.	U	100.	U	100.	U	75.	U	5.	U

*** Validation Complete ***

CEDAR CHEMICAL GROUNDWATER
WEST HELENA, ARKANSAS
PHASE I GROUNDWATER

VOA	SHORT ID --------->	1MW-6		2MW-1		2MW-2		2MW-3		2MW-4		2MW-5	
	ORIGINAL ID ----->	CED1GWMW6		CED2GWMW1		CED2GWMW2		CED2-GWMW-3		CED2-GWMW-4		CED2-GWMW-5	
	SAMPLE DATE ----->	09/29/93		09/30/93		09/30/93		09/28/93		09/28/93		09/28/93	
	DATE ANALYZED --->	10/10/93		10/11/93		10/11/93		10/10/93		10/10/93		10/10/93	
	MATRIX ---------->	Water		Water		Water		Water		Water		Water	
	UNITS ---------->	UG/L		UG/L		UG/L		UG/L		UG/L		UG/L	
CAS #	Parameter	E015	VAL	E015	VAL	E015	VAL	E012	VAL	E012	VAL	E012	VAL
100-41-4	Ethylbenzene	25.	U	2500.	U	5.	U	15.	U	25.	U	5.	U
100-42-5	Styrene	25.	U	2500.	U	5.	U	15.	U	25.	U	5.	U
10061-01-5	cis-1,3-Dichloropropene	25.	U	2500.	U	5.	U	15.	U	25.	U	5.	U
10061-02-6	trans-1,3-Dichloropropene	25.	U	2500.	U	5.	U	15.	U	25.	U	5.	U
107-06-2	1,2-Dichloroethane	640.		29000.		5.	U	120.		500.		5.	U
108-05-4	Vinyl acetate	25.	U	2500.	U	5.	U	15.	U	25.	U	5.	U
108-10-1	4-Methyl-2-Pentanone (MIBK)	250.	U	2200.		50.	U	520.		250.	U	50.	U
108-88-3	Toluene	25.	U	940.		5.	U	160.		25.	U	5.	U
108-90-7	Chlorobenzene	25.	U	2500.	U	5.	U	15.	U	470.		5.	U
124-48-1	Dibromochloromethane	25.	U	2500.	U	5.	U	15.	U	25.	U	5.	U
127-18-4	Tetrachloroethene	25.	U	2500.	U	5.	U	15.	U	25.	U	5.	U
1330-20-7	Xylene (total)	25.	U	1100.		5.	U	4.		25.	U	5.	U
540-59-0	1,2-Dichloroethene (total)	25.	U	2500.	U	5.	U	15.	U	25.	U	5.	U
56-23-5	Carbon tetrachloride	25.	U	2500.	U	5.	U	15.	U	25.	U	5.	U
591-78-6	2-Hexanone	250.	U	25000.	U	50.	U	150.	U	250.	U	50.	U
67-64-1	Acetone	50.	U	4800.		10.	U	430.		50.	U	10.	U
67-66-3	Chloroform	25.	U	700.		5.	U	340.		25.	U	3.	
71-43-2	Benzene	25.	U	2500.	U	5.	U	15.	U	7.		5.	U
71-55-6	1,1,1-Trichloroethane	25.	U	2500.	U	5.	U	15.	U	25.	U	5.	U
74-83-9	Bromomethane	50.	U	5000.	U	10.	U	30.	U	50.	U	10.	U
74-87-3	Chloromethane	50.	U	5000.	U	10.	U	30.	U	50.	U	10.	U
75-00-3	Chloroethane	50.	U	5000.	U	10.	U	30.	U	50.	U	10.	U
75-01-4	Vinyl chloride	25.	U	2500.	U	5.	U	15.	U	25.	U	5.	U
75-09-2	Methylene chloride	25.	U	600000.		5.	U	460.		720.		5.	U
75-15-0	Carbon disulfide	25.	U	2500.	U	5.	U	15.	U	25.	U	5.	U
75-25-2	Bromoform	25.	U	2500.	U	5.	U	15.	U	25.	U	5.	U
75-27-4	Bromodichloromethane	25.	U	2500.	U	5.	U	15.	U	25.	U	5.	U
75-34-3	1,1-Dichloroethane	25.	U	2500.	U	5.	U	15.	U	25.	U	5.	U
75-35-4	1,1-Dichloroethene	25.	U	2500.	U	5.	U	15.	U	25.	U	5.	U
78-87-5	1,2-Dichloropropane	25.	U	2500.	U	5.	U	15.	U	25.	U	5.	U
78-93-3	2-Butanone (MEK)	50.	U	5000.	U	10.	U	30.	U	50.	U	10.	U
79-00-5	1,1,2-Trichloroethane	25.	U	2500.	U	5.	U	15.	U	25.	U	5.	U
79-01-6	Trichloroethene	25.	U	2500.	U	5.	U	15.	U	25.	U	5.	U
79-34-5	1,1,2,2-Tetrachloroethane	25.	U	2500.	U	5.	U	15.	U	25.	U	5.	U

*** Validation Complete ***

CEDAR CHEMICAL GROUNDWATER
WEST HELENA, ARKANSAS
PHASE I GROUNDWATER

VOA	SHORT ID --------->	4MW-1	4MW-2	4MW-2 DUP	EMW-1	EMW-2	EMW-3
	ORIGINAL ID ----->	CED4GWMW1	CED4GWMW2	CED4GWMW2D	CEDE-GWMW-1	CEDE-GWMW-2	CEDE-GWMW-3
	SAMPLE DATE ----->	09/29/93	09/29/93	09/29/93	09/22/93	09/22/93	09/23/93
	DATE ANALYZED --->	10/11/93	10/10/93	10/10/93	09/30/93	09/30/93	09/30/93
	MATRIX ---------->	Water	Water	Water	Water	Water	Water
	UNITS ---------->	UG/L	UG/L	UG/L	UG/L	UG/L	UG/L

CAS #	Parameter	E015	VAL	E015	VAL	E015	VAL	E012	VAL	E012	VAL	E012	VAL
100-41-4	Ethylbenzene	5000.	U	50.	U	50.	U	5.	U	5.	U	54.	
100-42-5	Styrene	5000.	U	50.	U	50.	U	5.	U	5.	U	50.	U
10061-01-5	cis-1,3-Dichloropropene	5000.	U	50.	U	50.	U	5.	U	5.	U	50.	U
10061-02-6	trans-1,3-Dichloropropene	5000.	U	50.	U	50.	U	5.	U	5.	U	50.	U
107-06-2	1,2-Dichloroethane	5800.		210.		240.		36.		5.	U	6100.	
108-05-4	Vinyl acetate	5000.	U	50.	U	50.	U	5.	U	5.	U	50.	U
108-10-1	4-Methyl-2-Pentanone (MIBK)	50000.	U	500.	U	500.	U	50.	U	50.	U	11.	
108-88-3	Toluene	110000.		80.		52.		5.	U	5.	U	32.	
108-90-7	Chlorobenzene	5000.	U	31.		30.		5.	U	5.	U	26.	
124-48-1	Dibromochloromethane	5000.	U	50.	U	50.	U	5.	U	5.	U	50.	U
127-18-4	Tetrachloroethene	5000.	U	50.	U	50.	U	5.	U	5.	U	50.	U
1330-20-7	Xylene (total)	1400.		38.		44.		5.	U	5.	U	88.	
540-59-0	1,2-Dichloroethene (total)	5000.	U	50.	U	50.	U	5.	U	5.	U	50.	U
56-23-5	Carbon tetrachloride	5000.	U	50.	U	50.	U	5.	U	5.	U	50.	U
591-78-6	2-Hexanone	50000.	U	500.	U	500.	U	50.	U	50.	U	500.	U
67-64-1	Acetone	10000.	U	100.	U	100.	U	10.	U	10.	U	100.	U
67-66-3	Chloroform	5000.	U	1400.		1900.		1.		5.	U	55.	
71-43-2	Benzene	5000.	U	46.		43.		5.	U	5.	U	50.	U
71-55-6	1,1,1-Trichloroethane	5000.	U	50.	U	50.	U	5.	U	5.	U	50.	U
74-83-9	Bromomethane	10000.	U	100.	U	100.	U	10.	U	10.	U	100.	U
74-87-3	Chloromethane	10000.	U	100.	U	100.	U	10.	U	10.	U	100.	U
75-00-3	Chloroethane	10000.	U	100.	U	100.	U	10.	U	10.	U	100.	U
75-01-4	Vinyl chloride	5000.	U	50.	U	50.	U	5.	U	5.	U	50.	U
75-09-2	Methylene chloride	5000.	U	1300.	U	1500.	U	5.	U	5.	U	390.	
75-15-0	Carbon disulfide	5000.	U	50.	U	50.	U	5.	U	5.	U	50.	U
75-25-2	Bromoform	5000.	U	50.	U	50.	U	5.	U	5.	U	50.	U
75-27-4	Bromodichloromethane	5000.	U	50.	U	50.	U	5.	U	5.	U	50.	U
75-34-3	1,1-Dichloroethane	5000.	U	50.	U	50.	U	5.	U	5.	U	50.	U
75-35-4	1,1-Dichloroethene	5000.	U	50.	U	50.	U	5.	U	5.	U	50.	U
78-87-5	1,2-Dichloropropane	5000.	U	50.	U	50.	U	5.	U	5.	U	50.	U
78-93-3	2-Butanone (MEK)	10000.	U	100.	U	100.	U	10.	U	10.	U	100.	U
79-00-5	1,1,2-Trichloroethane	5000.	U	50.	U	50.	U	5.	U	5.	U	50.	U
79-01-6	Trichloroethene	5000.	U	50.	U	50.	U	5.	U	5.	U	50.	U
79-34-5	1,1,2,2-Tetrachloroethane	5000.	U	50.	U	50.	U	5.	U	5.	U	50.	U

*** Validation Complete ***

CEDAR CHEMICAL GROUNDWATER
WEST HELENA, ARKANSAS
PHASE I GROUNDWATER

VOA	SHORT ID	EMW-3 DUP		EMW-4		EMW-6		EMW-7		EMW-6A		EMW-6B	
	ORIGINAL ID	CEDE-GWMW-3D		CEDE-GWMW-4		CEDE-GWMW6		CEDE-GWMW7		CEDE-GWMW6A		CEDE-GWMW6B	
	SAMPLE DATE	09/23/93		09/23/93		09/24/93		09/23/93		09/24/93		09/24/93	
	DATE ANALYZED	09/30/93		09/30/93		10/06/93		10/05/93		10/06/93		10/06/93	
	MATRIX	Water		Water		Water		Water		Water		Water	
	UNITS	UG/L		UG/L		UG/L		UG/L		UG/L		UG/L	
CAS #	Parameter	ED12	VAL	ED12	VAL	ED12	VAL	ED12	VAL	ED12	VAL	ED12	VAL
100-41-4	Ethylbenzene	65.		40.	U	5.	U	2500.	U	5.	U	50.	U
100-42-5	Styrene	250.	U	40.	U	5.	U	2500.	U	5.	U	50.	U
10061-01-5	cis-1,3-Dichloropropene	250.	U	40.	U	5.	U	2500.	U	5.	U	50.	U
10061-02-6	trans-1,3-Dichloropropene	250.	U	40.	U	5.	U	2500.	U	5.	U	50.	U
107-06-2	1,2-Dichloroethane	6700.		1200.		190.		64000.		18.		1900.	
108-05-4	Vinyl acetate	250.	U	40.	U	5.	U	2500.	U	5.	U	50.	U
108-10-1	4-Methyl-2-Pentanone (MIBK)	2500.	U	400.	U	50.	U	25000.	U	50.	U	500.	U
108-88-3	Toluene	250.	U	40.	U	5.	U	2500.	U	5.	U	50.	U
108-90-7	Chlorobenzene	250.	U	16.		5.	U	2500.	U	5.	U	30.	
124-48-1	Dibromochloromethane	250.	U	40.	U	5.	U	2500.	U	5.	U	50.	U
127-18-4	Tetrachloroethene	250.	U	40.	U	5.	U	2500.	U	5.	U	50.	U
1330-20-7	Xylene (total)	100.		40.	U	5.	U	2500.	U	5.	U	50.	U
540-59-0	1,2-Dichloroethene (total)	250.	U	40.	U	5.	U	2500.	U	5.	U	50.	U
56-23-5	Carbon tetrachloride	250.	U	40.	U	5.	U	2500.	U	5.	U	50.	U
591-78-6	2-Hexanone	2500.	U	400.	U	50.	U	25000.	U	50.	U	500.	U
67-64-1	Acetone	500.	U	80.	U	10.	U	5000.	U	10.	U	100.	U
67-66-3	Chloroform	65.		40.	U	5.	U	2500.	U	5.	U	50.	U
71-43-2	Benzene	250.	U	40.	U	5.	U	2500.	U	5.	U	17.	
71-55-6	1,1,1-Trichloroethane	250.	U	40.	U	5.	U	2500.	U	5.	U	50.	U
74-83-9	Bromomethane	500.	U	80.	U	10.	U	5000.	U	10.	U	100.	U
74-87-3	Chloromethane	500.	U	80.	U	10.	U	5000.	U	10.	U	100.	U
75-00-3	Chloroethane	500.	U	80.	U	10.	U	5000.	U	10.	U	100.	U
75-01-4	Vinyl chloride	250.	U	40.	U	5.	U	2500.	U	5.	U	50.	U
75-09-2	Methylene chloride	410.		40.	U	5.	U	2500.	U	5.	U	50.	U
75-15-0	Carbon disulfide	250.	U	40.	U	5.	U	2500.	U	5.	U	50.	U
75-25-2	Bromoform	250.	U	40.	U	5.	U	2500.	U	5.	U	50.	U
75-27-4	Bromodichloromethane	250.	U	40.	U	5.	U	2500.	U	5.	U	50.	U
75-34-3	1,1-Dichloroethane	250.	U	40.	U	5.	U	2500.	U	5.	U	50.	U
75-35-4	1,1-Dichloroethene	250.	U	40.	U	5.	U	2500.	U	5.	U	50.	U
78-87-5	1,2-Dichloropropane	250.	U	40.	U	5.	U	2500.	U	5.	U	50.	U
78-93-3	2-Butanone (MEK)	500.	U	80.	U	10.	U	5000.	U	10.	U	100.	U
79-00-5	1,1,2-Trichloroethane	250.	U	40.	U	5.	U	2500.	U	5.	U	50.	U
79-01-6	Trichloroethene	250.	U	40.	U	5.	U	2500.	U	5.	U	50.	U
79-34-5	1,1,2,2-Tetrachloroethane	250.	U	40.	U	5.	U	2500.	U	5.	U	50.	U

*** Validation Complete ***

CEDAR CHEMICAL GROUNDWATER
WEST HELENA, ARKANSAS
PHASE I GROUNDWATER

WQPL		SHORT ID --------->	1MW-1	1MW-2	1MW-3	1MW-3(10-15')DU	1MW-4	1MW-5
		ORIGINAL ID ----->	CED1-GWMW-1	CED1-GWMW-2	CED1-GWMW-3	CED1-GWMW-3D	CED1-GWMW-4	CED1-GWMW-5
		SAMPLE DATE ----->	09/14/93	09/14/93	09/14/93	09/14/93	09/15/93	09/15/93
		DATE ANALYZED --->	09/24/93	09/24/93	09/24/93	09/24/93	09/24/93	09/24/93
		MATRIX ---------->	Water	Water	Water	Water	Water	Water
		UNITS ---------->	MG/L	MG/L	MG/L	MG/L	MG/L	MG/L
CAS #	Parameter		E009 VAL	E009 VAL	E009 VAL	E009 VAL	E009 VAL	E009 VAL
10-13-9	BICARBONATE		400.	380.	820.	820.	780.	890.
14797-55-8	Nitrate (as N)		5.3	0.9	0.02 U	0.02 U	0.02	0.02 U
14808-79-8	Sulfate		69.	49.	420.	380.	210.	620.
16887-00-6	Chloride		450.	36.	1300.	1200.	1400.	1600.
7664-41-7	Ammonia (as N)		0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U
F	Fluoride		0.3	0.9	0.6	0.6	0.5	0.6
CN	Cyanide		0.01 U	0.01 U	0.01 U	0.01 U	0.01 U	0.01 U

*** Validation Complete ***

CEDAR CHEMICAL GROUNDWATER
WEST HELENA, ARKANSAS
PHASE I GROUNDWATER

WQPL		SHORT ID --------->	1MW-6		2MW-3		2MW-4		2MW-5		4MW-1		4MW-2	
		ORIGINAL ID ----->	CED1GWMW6		CED2-GWMW-3		CED2-GWMW-4		CED2-GWMW-5		CED4GWMW1		CED4GWMW2	
		SAMPLE DATE ----->	09/29/93		09/28/93		09/28/93		09/28/93		09/29/93		09/29/93	
		DATE ANALYZED --->	10/04/93		10/12/93		10/12/93		10/12/93		10/04/93		10/04/93	
		MATRIX ---------->	Water		Water		Water		Water		Water		Water	
		UNITS ---------->	MG/L		MG/L		MG/L		MG/L		MG/L		MG/L	
CAS #	Parameter		E015	VAL	E012	VAL	E012	VAL	E012	VAL	E015	VAL	E015	VAL
10-13-9	BICARBONATE		180.		410.		500.		430.		630.		530.	
14797-55-8	Nitrate (as N)		0.2	U	0.2	U	0.2	U	2.2		0.2	U	1.2	
14808-79-8	Sulfate		30.		29.		16.		79.		23.		140.	
16887-00-6	Chloride		630.		570.		1100.		34.		72.		200.	
7664-41-7	Ammonia (as N)		1.8		0.1	U	0.1	U	0.1	U	0.1	U	0.1	U
F	Fluoride		0.3		0.3		0.1		0.2		0.3		0.2	
CN	Cyanide		0.01	U	0.01	U	0.01	U	0.01	U	0.01	U	0.01	U

*** Validation Complete ***

CEDAR CHEMICAL GROUNDWATER
WEST HELENA, ARKANSAS
PHASE I GROUNDWATER

WQPL		SHORT ID --------->	4MW-2 DUP		EMW-1		EMW-2		EMW-3		EMW-3 DUP		EMW-4	
		ORIGINAL ID ----->	CED4GWMW2D		CEDE-GWMW-1		CEDE-GWMW-2		CEDE-GWMW-3		CEDE-GWMW-3D		CEDE-GWMW-4	
		SAMPLE DATE ----->	09/29/93		09/22/93		09/22/93		09/23/93		09/23/93		09/23/93	
		DATE ANALYZED --->	10/04/93		09/28/93		09/28/93		09/28/93		09/28/93		09/28/93	
		MATRIX ---------->	Water		Water		Water		Water		Water		Water	
		UNITS ----------->	MG/L		MG/L		MG/L		MG/L		MG/L		MG/L	
CAS #	Parameter		E015	VAL	E012	VAL	E012	VAL	E012	VAL	E012	VAL	E012	VAL
10-13-9	BICARBONATE		530.		480.		250.		290.		300.		650.	
14797-55-8	Nitrate (as N)		1.		0.2	U	0.2	U	0.2	U	0.2	U	0.2	U
14808-79-8	Sulfate		120.		120.		41.		320.		350.		93.	
16887-00-6	Chloride		200.		260.		15.		1400.		1400.		650.	
7664-41-7	Ammonia (as N)		0.1	U	0.1	U	0.3		0.7		0.8		0.2	
F	Fluoride		0.2		0.3		0.3		0.2		0.2		0.3	
CN	Cyanide		0.01	U	0.01	U	0.01	U	0.01	U	0.01	U	0.01	U

*** Validation Complete ***

CEDAR CHEMICAL CORPORATION
WEST HELENA, ARKANSAS
SITE 8 PHASE I SURFACE SOIL DATA

PEST	SHORT ID --------->	8HA-1 (0-1')		8HA-2 (0-1')		8HA-3 (0-1')		8HA-4 (0-1')			
	ORIGINAL ID ----->	CED1HA6		CED1HA7		CED1HA8		CED1HA9			
	SAMPLE DATE ----->	09/08/93		09/08/93		09/08/93		09/08/93			
	DATE ANALYZED --->	09/16/93		09/16/93		09/16/93		09/17/93			
	MATRIX ---------->	Soil		Soil		Soil		Soil			
	UNITS ----------->	UG/KG		UG/KG		UG/KG		UG/KG			
CAS #	Parameter	E003	VAL	E003	VAL	E003	VAL	E006	VAL		
1024-57-3	Heptachlor Epoxide	70.	U	69.	U	68.	U	70.	U		
1031-07-8	Endosulfan Sulfate	56.	U	55.	U	54.	U	56.	U		
309-00-2	Aldrin	3.4	U	3.3	U	3.3	U	3.4	U		
319-84-6	Alpha-BHC	2.5	U	2.5	U	2.5	U	2.5	U		
319-85-7	Beta-BHC	5.1	U	5.	U	4.9	U	5.1	U		
319-86-8	Delta-BHC	7.6	U	7.5	U	7.4	U	7.6	U		
33213-65-9	Endosulfan II	3.4	U	3.3	U	3.3	U	3.5	U		
50-29-3	4,4'-DDT	10.	U	10.	U	9.9	U	10.	U		
5103-71-9	alpha-Chlordane	12.	U	12.	U	12.	U	12.	U		
5103-74-2	gamma-Chlordane	12.	U	12.	U	12.	U	12.	U		
53494-70-5	Endrin ketone	20.	U	20.	U	20.	U	20.	U		
58-89-9	gamma-BHC (Lindane)	3.4	U	3.3	U	3.3	U	3.4	U		
60-57-1	Dieldrin	1.7	U	4.		1.6	U	1.7	U		
72-20-8	Endrin	5.1	U	5.	U	4.9	U	5.1	U		
72-43-5	Methoxychlor	150.	U	150.	U	150.	U	150.	U		
72-54-8	4,4'-DDD	9.3	U	9.1	U	9.	U	9.3	U		
72-55-9	4,4'-DDE	3.4	U	3.3	U	3.3	U	3.4	U		
76-44-8	Heptachlor	2.5	U	2.5	U	2.5	U	2.5	U		
8001-35-2	Toxaphene	200.	U	200.	U	200.	U	200.	U		
959-98-8	Endosulfan I	12.	U	12.	U	12.	U	12.	U		

*** Validation Complete ***

CEDAR CHEMICAL CORPORATION
WEST HELENA, ARKANSAS
SITE 8 PHASE I SURFACE SOIL DATA

RCRA METAL		SHORT ID --------->	8HA-1 (0-1')		8HA-2 (0-1')		8HA-3 (0-1')		8HA-4 (0-1')			
		ORIGINAL ID ----->	CED1HA6		CED1HA7		CED1HA8		CED1HA9			
		SAMPLE DATE ----->	09/08/93		09/08/93		09/08/93		09/08/93			
		DATE ANALYZED --->	10/01/93		10/01/93		10/01/93		10/01/93			
		MATRIX ---------->	Soil		Soil		Soil		Soil			
		UNITS ----------->	MG/KG		MG/KG		MG/KG		MG/KG			
CAS #	Parameter		E003	VAL	E003	VAL	E003	VAL	E006	VAL		
7440-38-2	Arsenic (As)		6.1		4.2		5.2		6.3			
7440-39-3	Barium (Ba)		248.		142.		77.6		157.			
7440-43-9	Cadmium (Cd)		0.37	U	0.37	U	0.36	U	0.38	U		
7440-47-3	Chromium (Cr)		22.9		18.7		21.7		16.5			
7439-92-1	Lead (Pb)		12.1		9.4		11.8		12.5			
7439-97-6	Mercury (Hg)		0.12	U	0.12	U	0.1	U	0.13	U		
7782-49-2	Selenium (Se)		0.62	U	0.62	U	0.81		0.64	U		
7440-22-4	Silver (Ag)		0.37	U	0.37	U	0.36	U	0.38	U		

*** Validation Complete ***

CEDAR CHEMICAL CORPORATION
WEST HELENA, ARKANSAS
SITE 8 PHASE I SURFACE SOIL DATA

SVOA	SHORT ID --------->	8HA-1 (0-1')		8HA-2 (0-1')		8HA-3 (0-1')		8HA-4 (0-1')			
	ORIGINAL ID ----->	CED1HA6		CED1HA7		CED1HA8		CED1HA9			
	SAMPLE DATE ----->	09/08/93		09/08/93		09/08/93		09/08/93			
	DATE ANALYZED --->	10/05/93		10/14/93		10/13/93		10/14/93			
	MATRIX ---------->	Soil		Soil		Soil		Soil			
	UNITS ---------->	UG/KG		UG/KG		UG/KG		UG/KG			
CAS #	Parameter	E003	VAL	E003	VAL	E003	VAL	E006	VAL		
100-01-6	4-Nitroaniline	1600.	U	1600.	U	1600.	U	4200.	U		
100-02-7	4-Nitrophenol	4200.	U	4100.	U	4100.	U	4200.	U		
100-51-6	Benzyl alcohol	1600.	U	1600.	U	1600.	U	850.	U		
101-55-3	4-Bromophenyl-phenylether	840.	U	820.	U	810.	U	850.	U		
105-67-9	2,4-Dimethylphenol	840.	U	820.	U	810.	U	850.	U		
106-44-5	4-Methylphenol (p-Cresol)	840.	U	820.	U	810.	U	850.	U		
106-46-7	1,4-Dichlorobenzene	840.	U	820.	U	810.	U	850.	U		
106-47-8	4-Chloroaniline	1600.	U	1600.	U	1600.	U	850.	U		
108-60-1	bis(2-chloroisopropyl) ether	840.	U	820.	U	810.	U	850.	U		
108-95-2	Phenol	840.	U	820.	U	810.	U	850.	U		
111-44-4	bis(2-Chloroethyl)ether	840.	U	820.	U	810.	U	850.	U		
111-91-1	bis(2-Chloroethoxy)methane	840.	U	820.	U	810.	U	850.	U		
117-81-7	bis(2-Ethylhexyl)phthalate (BEHP)	840.	U	820.	U	810.	U	850.	U		
117-84-0	Di-n-octylphthalate	840.	U	820.	U	810.	U	850.	U		
118-74-1	Hexachlorobenzene	840.	U	820.	U	810.	U	850.	U		
120-12-7	Anthracene	840.	U	820.	U	810.	U	850.	U		
120-82-1	1,2,4-Trichlorobenzene	840.	U	820.	U	810.	U	850.	U		
120-83-2	2,4-Dichlorophenol	840.	U	820.	U	810.	U	850.	U		
121-14-2	2,4-Dinitrotoluene	840.	U	820.	U	810.	U	850.	U		
129-00-0	Pyrene	840.	U	820.	U	810.	U	850.	U		
131-11-3	Dimethylphthalate	840.	U	820.	U	810.	U	850.	U		
132-64-9	Dibenzofuran	840.	U	820.	U	810.	U	850.	U		
191-24-2	Benzo(g,h,i)perylene	NR		NR		NR		850.	U		
193-39-5	Indeno(1,2,3-cd)pyrene	840.	U	820.	U	810.	U	850.	U		
205-99-2	Benzo(b)fluoranthene	840.	U	820.	U	810.	U	850.	U		
206-44-0	Fluoranthene	840.	U	820.	U	810.	U	850.	U		
207-08-9	Benzo(k)fluoranthene	840.	U	820.	U	810.	U	850.	U		
208-96-8	Acenaphthylene	840.	U	820.	U	810.	U	850.	U		
218-01-9	Chrysene	840.	U	820.	U	810.	U	850.	U		
50-32-8	Benzo(a)pyrene	840.	U	820.	U	810.	U	850.	U		
51-28-5	2,4-Dinitrophenol	840.	U	820.	U	810.	U	4200.	U		
534-52-1	4,6-Dinitro-2-methylphenol	4200.	U	4100.	U	4100.	U	4200.	U		
53-70-3	Dibenz(a,h)anthracene	NR		NR		NR		850.	U		
541-73-1	1,3-Dichlorobenzene	840.	U	820.	U	810.	U	850.	U		
56-55-3	Benzo(a)anthracene	840.	U	820.	U	810.	U	850.	U		
59-50-7	4-Chloro-3-methylphenol	1600.	U	1600.	U	1600.	U	850.	U		
606-20-2	2,6-Dinitrotoluene	840.	U	820.	U	810.	U	850.	U		
621-64-7	N-Nitroso-di-n-propylamine	840.	U	820.	U	810.	U	850.	U		
65-85-0	Benzoic acid	4200.	U	4100.	U	4100.	U	4200.	U		

*** Validation Complete ***

CEDAR CHEMICAL CORPORATION
WEST HELENA, ARKANSAS
SITE 8 PHASE I SURFACE SOIL DATA

SVOA	SHORT ID --------->	8HA-1 (0-1')		8HA-2 (0-1')		8HA-3 (0-1')		8HA-4 (0-1')			
	ORIGINAL ID ----->	CED1HA6		CED1HA7		CED1HA8		CED1HA9			
	SAMPLE DATE ----->	09/08/93		09/08/93		09/08/93		09/08/93			
	DATE ANALYZED --->	10/05/93		10/14/93		10/13/93		10/14/93			
	MATRIX ---------->	Soil		Soil		Soil		Soil			
	UNITS ----------->	UG/KG		UG/KG		UG/KG		UG/KG			
CAS #	Parameter	E003	VAL	E003	VAL	E003	VAL	E006	VAL		
67-72-1	Hexachloroethane	840.	U	820.	U	810.	U	850.	U		
7005-72-3	4-Chlorophenyl-phenylether	840.	U	820.	U	810.	U	850.	U		
709-98-8	Propanil	840.	U	820.	U	810.	U	850.	U		
77-47-4	Hexachlorocyclopentadiene	840.	U	820.	U	810.	U	850.	U		
78-59-1	Isophorone	840.	U	820.	U	810.	U	850.	U		
83-32-9	Acenaphthene	840.	U	820.	U	810.	U	850.	U		
84-66-2	Diethylphthalate	840.	U	820.	U	810.	U	850.	U		
84-74-2	Di-n-butylphthalate	840.	U	820.	U	810.	U	850.	U		
85-01-8	Phenanthrene	840.	U	820.	U	810.	U	850.	U		
85-68-7	Butylbenzylphthalate	840.	U	820.	U	810.	U	850.	U		
86-30-6	N-Nitrosodiphenylamine	840.	U	820.	U	810.	U	850.	U		
86-73-7	Fluorene	840.	U	820.	U	810.	U	850.	U		
87-68-3	Hexachlorobutadiene	840.	U	820.	U	810.	U	850.	U		
87-86-5	Pentachlorophenol	4200.	U	4100.	U	4100.	U	4200.	U		
88-06-2	2,4,6-Trichlorophenol	840.	U	820.	U	810.	U	850.	U		
88-74-4	2-Nitroaniline	4200.	U	4100.	U	4100.	U	4200.	U		
88-75-5	2-Nitrophenol	840.	U	820.	U	810.	U	850.	U		
88-85-7	Dinoseb	840.	U	820.	U	810.	U	4200.	U		
91-20-3	Naphthalene	840.	U	820.	U	810.	U	850.	U		
91-57-6	2-Methylnaphthalene	840.	U	820.	U	810.	U	850.	U		
91-58-7	2-Chloronaphthalene	840.	U	820.	U	810.	U	850.	U		
91-94-1	3,3'-Dichlorobenzidine	1600.	U	1600.	U	1600.	U	1700.	U		
95-48-7	2-Methylphenol (o-Cresol)	840.	U	820.	U	810.	U	850.	U		
95-50-1	1,2-Dichlorobenzene	840.	U	820.	U	810.	U	850.	U		
95-57-8	2-Chlorophenol	840.	U	820.	U	810.	U	850.	U		
95-76-1	3,4-Dichloroaniline	840.	U	820.	U	810.	U	850.	U		
95-95-4	2,4,5-Trichlorophenol	840.	U	820.	U	810.	U	4200.	U		
98-95-3	Nitrobenzene	840.	U	820.	U	810.	U	850.	U		
99-09-2	3-Nitroaniline	4200.	U	4100.	U	4100.	U	4200.	U		

*** Validation Complete ***

CEDAR CHEMICAL CORPORATION
WEST HELENA, ARKANSAS
SITE 8 PHASE I SURFACE SOIL DATA

VOA	SHORT ID --------->	8HA-1 (0-1')		8HA-2 (0-1')		8HA-3 (0-1')		8HA-4 (0-1')			
	ORIGINAL ID ----->	CED1HA6		CED1HA7		CED1HA8		CED1HA9			
	SAMPLE DATE ----->	09/08/93		09/08/93		09/08/93		09/08/93			
	DATE ANALYZED --->	09/16/93		09/16/93		09/16/93		09/14/93			
	MATRIX ---------->	Soil		Soil		Soil		Soil			
	UNITS ----------->	UG/KG		UG/KG		UG/KG		UG/KG			
CAS #	Parameter	E003	VAL	E003	VAL	E003	VAL	E006	VAL		
100-41-4	Ethylbenzene	6.	U	6.	U	6.	U	6.	U		
100-42-5	Styrene	6.	U	6.	U	6.	U	6.	U		
10061-01-5	cis-1,3-Dichloropropene	6.	U	6.	U	6.	U	6.	U		
10061-02-6	trans-1,3-Dichloropropene	6.	U	6.	U	6.	U	6.	U		
107-06-2	1,2-Dichloroethane	6.	U	6.	U	6.	U	6.	U		
108-05-4	Vinyl acetate	6.	U	6.	U	6.	U	6.	U		
108-10-1	4-Methyl-2-Pentanone (MIBK)	61.	U	62.	U	62.	U	64.	U		
108-88-3	Toluene	6.	U	6.	U	6.	U	6.	U		
108-90-7	Chlorobenzene	6.	U	6.	U	6.	U	6.	U		
124-48-1	Dibromochloromethane	6.	U	6.	U	6.	U	6.	U		
127-18-4	Tetrachloroethene	6.	U	6.	U	6.	U	6.	U		
1330-20-7	Xylene (total)	6.	U	6.	U	6.	U	6.	U		
540-59-0	1,2-Dichloroethene (total)	6.	U	6.	U	6.	U	6.	U		
56-23-5	Carbon tetrachloride	6.	U	6.	U	6.	U	6.	U		
591-78-6	2-Hexanone	61.	U	62.	U	62.	U	64.	U		
67-64-1	Acetone	12.	U	12.	U	12.	U	13.	U		
67-66-3	Chloroform	6.	U	6.	U	6.	U	6.	U		
71-43-2	Benzene	6.	U	6.	U	6.	U	6.	U		
71-55-6	1,1,1-Trichloroethane	6.	U	6.	U	6.	U	6.	U		
74-83-9	Bromomethane	12.	U	12.	U	12.	U	13.	U		
74-87-3	Chloromethane	12.	U	12.	U	12.	U	13.	U		
75-00-3	Chloroethane	12.	U	12.	U	12.	U	13.	U		
75-01-4	Vinyl chloride	6.	U	6.	U	6.	U	6.	U		
75-09-2	Methylene chloride	6.	U	6.	U	6.	U	6.	U		
75-15-0	Carbon disulfide	6.	U	6.	U	6.	U	6.	U		
75-25-2	Bromoform	6.	U	6.	U	6.	U	6.	U		
75-27-4	Bromodichloromethane	6.	U	6.	U	6.	U	6.	U		
75-34-3	1,1-Dichloroethane	6.	U	6.	U	6.	U	6.	U		
75-35-4	1,1-Dichloroethene	6.	U	6.	U	6.	U	6.	U		
78-87-5	1,2-Dichloropropane	6.	U	6.	U	6.	U	6.	U		
78-93-3	2-Butanone (MEK)	12.	U	12.	U	12.	U	13.	U		
79-00-5	1,1,2-Trichloroethane	6.	U	6.	U	6.	U	6.	U		
79-01-6	Trichloroethene	6.	U	6.	U	6.	U	6.	U		
79-34-5	1,1,2,2-Tetrachloroethane	6.	U	6.	U	6.	U	6.	U		

*** Validation Complete ***

CEDAR CHEMICAL CORPORATION
WEST HELENA, ARKANSAS
SITE 9 PHASE I SURFACE SOIL DATA

PEST									
	SHORT ID --------->	9SB-3 (0-5')		9SB-15 (0-5')					
	ORIGINAL ID ------>	CED9SB3-1		CED9SB151					
	SAMPLE DATE ------>	09/07/93		09/09/93					
	DATE ANALYZED ---->	09/17/93		09/18/93					
	MATRIX ----------->	Soil		Soil					
	UNITS ------------>	UG/KG		UG/KG					
CAS #	Parameter	E006	VAL	E007	VAL				
1024-57-3	Heptachlor Epoxide	700.	U	59.	U				
1031-07-8	Endosulfan Sulfate	560.	U	47.	U				
309-00-2	Aldrin	34.	U	2.9	U				
319-84-6	Alpha-BHC	25.	U	2.1	U				
319-85-7	Beta-BHC	51.	U	4.3	U				
319-86-8	Delta-BHC	76.	U	6.4	U				
33213-65-9	Endosulfan II	34.	U	2.9	U				
50-29-3	4,4'-DDT	100.	U	15.					
5103-71-9	alpha-Chlordane	120.	U	10.	U				
5103-74-2	gamma-Chlordane	120.	U	10.	U				
53494-70-5	Endrin ketone	200.	U	17.	U				
58-89-9	gamma-BHC (Lindane)	34.	U	2.9	U				
60-57-1	Dieldrin	17.	U	1.4	U				
72-20-8	Endrin	51.	U	4.3	U				
72-43-5	Methoxychlor	1500.	U	130.	U				
72-54-8	4,4'-DDD	93.	U	24.					
72-55-9	4,4'-DDE	34.	U	12.					
76-44-8	Heptachlor	150.		2.1	U				
8001-35-2	Toxaphene	2000.	U	170.	U				
959-98-8	Endosulfan I	120.	U	10.	U				

*** Validation Complete ***

CEDAR CHEMICAL CORPORATION
WEST HELENA, ARKANSAS
SITE 9 PHASE I SURFACE SOIL DATA

RCRA METAL								
SHORT ID --------->	9SB-3 (0-5')		9SB-15 (0-5')					
ORIGINAL ID ----->	CED9SB3-1		CED9SB151					
SAMPLE DATE ----->	09/07/93		09/09/93					
DATE ANALYZED --->	10/01/93		10/01/93					
MATRIX ---------->	Soil		Soil					
UNITS ----------->	MG/KG		MG/KG					
CAS #	Parameter	E006	VAL	E007	VAL			
7440-38-2	Arsenic (As)	3.5		3.4				
7440-39-3	Barium (Ba)	99.8		94.1				
7440-43-9	Cadmium (Cd)	0.38	U	0.32	U			
7440-47-3	Chromium (Cr)	14.7		11.3				
7439-92-1	Lead (Pb)	9.		8.1				
7439-97-6	Mercury (Hg)	0.12	U	0.1	U			
7782-49-2	Selenium (Se)	0.63	U	0.54	U			
7440-22-4	Silver (Ag)	0.38	U	0.32	U			

*** Validation Complete ***

CEDAR CHEMICAL CORPORATION
WEST HELENA, ARKANSAS
SITE 9 PHASE I SURFACE SOIL DATA

SVOA	SHORT ID --------->	9SB-1 (0-5')		9SB-3 (0-5')		9SB-4 (0-5')		9SB-5 (0-5')		9SB-6 (0-5')		9SB-7 (0-5')	
	ORIGINAL ID ----->	CED9SB11		CED9SB31		CED9SB41		CED9SB51		CED9SB61		CED9SB71	
	SAMPLE DATE ----->	09/07/93		09/07/93		09/08/93		09/08/93		09/08/93		09/08/93	
	DATE ANALYZED --->	10/11/93		10/15/93		10/15/93		10/15/93		10/17/93		10/15/93	
	MATRIX ---------->	Soil		Soil		Soil		Soil		Soil		Soil	
	UNITS ---------->	UG/KG		UG/KG		UG/KG		UG/KG		UG/KG		UG/KG	
CAS #	Parameter	E006	VAL	E006	VAL	E006	VAL	E006	VAL	E006	VAL	E006	VAL
100-01-6	4-Nitroaniline	20000.	U	210000.	U	80000000.	U	43000000.	U	420000.	U	8700000.	U
100-02-7	4-Nitrophenol	20000.	U	210000.	U	80000000.	U	43000000.	U	420000.	U	8700000.	U
100-51-6	Benzyl alcohol	4000.	U	42000.	U	16000000.	U	8700000.	U	84000.	U	1700000.	U
101-55-3	4-Bromophenyl-phenylether	4000.	U	42000.	U	16000000.	U	8700000.	U	84000.	U	1700000.	U
105-67-9	2,4-Dimethylphenol	4000.	U	42000.	U	16000000.	U	8700000.	U	84000.	U	1700000.	U
106-44-5	4-Methylphenol (p-Cresol)	4000.	U	42000.	U	16000000.	U	8700000.	U	84000.	U	1700000.	U
106-46-7	1,4-Dichlorobenzene	4000.	U	42000.	U	16000000.	U	8700000.	U	84000.	U	1700000.	U
106-47-8	4-Chloroaniline	4000.	U	42000.	U	16000000.	U	8700000.	U	84000.	U	1700000.	U
108-60-1	bis(2-chloroisopropyl) ether	4000.	U	42000.	U	16000000.	U	8700000.	U	84000.	U	1700000.	U
108-95-2	Phenol	4000.	U	42000.	U	16000000.	U	8700000.	U	84000.	U	1700000.	U
111-44-4	bis(2-Chloroethyl)ether	4000.	U	42000.	U	16000000.	U	8700000.	U	84000.	U	1700000.	U
111-91-1	bis(2-Chloroethoxy)methane	4000.	U	42000.	U	16000000.	U	8700000.	U	84000.	U	1700000.	U
117-81-7	bis(2-Ethylhexyl)phthalate (BEHP)	4000.	U	42000.	U	16000000.	U	8700000.	U	84000.	U	1700000.	U
117-84-0	Di-n-octylphthalate	4000.	U	42000.	U	16000000.	U	8700000.	U	84000.	U	1700000.	U
118-74-1	Hexachlorobenzene	4000.	U	42000.	U	16000000.	U	8700000.	U	84000.	U	1700000.	U
120-12-7	Anthracene	4000.	U	42000.	U	16000000.	U	8700000.	U	84000.	U	1700000.	U
120-82-1	1,2,4-Trichlorobenzene	4000.	U	42000.	U	16000000.	U	8700000.	U	84000.	U	1700000.	U
120-83-2	2,4-Dichlorophenol	4000.	U	42000.	U	16000000.	U	8700000.	U	84000.	U	1700000.	U
121-14-2	2,4-Dinitrotoluene	4000.	U	42000.	U	16000000.	U	8700000.	U	84000.	U	1700000.	U
129-00-0	Pyrene	4000.	U	42000.	U	16000000.	U	8700000.	U	84000.	U	1700000.	U
131-11-3	Dimethylphthalate	4000.	U	42000.	U	16000000.	U	8700000.	U	84000.	U	1700000.	U
132-64-9	Dibenzofuran	4000.	U	42000.	U	16000000.	U	8700000.	U	84000.	U	1700000.	U
191-24-2	Benzo(g,h,i)perylene	4000.	U	42000.	U	16000000.	U	8700000.	U	84000.	U	1700000.	U
193-39-5	Indeno(1,2,3-cd)pyrene	4000.	U	42000.	U	16000000.	U	8700000.	U	84000.	U	1700000.	U
205-99-2	Benzo(b)fluoranthene	4000.	U	42000.	U	16000000.	U	8700000.	U	84000.	U	1700000.	U
206-44-0	Fluoranthene	4000.	U	42000.	U	16000000.	U	8700000.	U	84000.	U	1700000.	U
207-08-9	Benzo(k)fluoranthene	4000.	U	42000.	U	16000000.	U	8700000.	U	84000.	U	1700000.	U
208-96-8	Acenaphthylene	4000.	U	42000.	U	16000000.	U	8700000.	U	84000.	U	1700000.	U
218-01-9	Chrysene	4000.	U	42000.	U	16000000.	U	8700000.	U	84000.	U	1700000.	U
50-32-8	Benzo(a)pyrene	4000.	U	42000.	U	16000000.	U	8700000.	U	84000.	U	1700000.	U
51-28-5	2,4-Dinitrophenol	20000.	U	210000.	U	80000000.	U	43000000.	U	420000.	U	8700000.	U
534-52-1	4,6-Dinitro-2-methylphenol	20000.	U	210000.	U	80000000.	U	43000000.	U	420000.	U	8700000.	U
53-70-3	Dibenz(a,h)anthracene	4000.	U	42000.	U	16000000.	U	8700000.	U	84000.	U	1700000.	U
541-73-1	1,3-Dichlorobenzene	4000.	U	42000.	U	16000000.	U	8700000.	U	84000.	U	1700000.	U
56-55-3	Benzo(a)anthracene	4000.	U	42000.	U	16000000.	U	8700000.	U	84000.	U	1700000.	U
59-50-7	4-Chloro-3-methylphenol	4000.	U	42000.	U	16000000.	U	8700000.	U	84000.	U	1700000.	U
606-20-2	2,6-Dinitrotoluene	4000.	U	42000.	U	16000000.	U	8700000.	U	84000.	U	1700000.	U
621-64-7	N-Nitroso-di-n-propylamine	4000.	U	42000.	U	16000000.	U	8700000.	U	84000.	U	1700000.	U
65-85-0	Benzoic acid	20000.	U	210000.	U	80000000.	U	43000000.	U	420000.	U	8700000.	U

*** Validation Complete ***

CEDAR CHEMICAL CORPORATION
WEST HELENA, ARKANSAS
SITE 9 PHASE I SURFACE SOIL DATA

SVOA		SHORT ID --------->	9SB-1 (0-5')		9SB-3 (0-5')		9SB-4 (0-5')		9SB-5 (0-5')		9SB-6 (0-5')		9SB-7 (0-5')	
		ORIGINAL ID ----->	CED9SB11		CED9SB31		CED9SB41		CED9SB51		CED9SB61		CED9SB71	
		SAMPLE DATE ----->	09/07/93		09/07/93		09/08/93		09/08/93		09/08/93		09/08/93	
		DATE ANALYZED --->	10/11/93		10/15/93		10/15/93		10/15/93		10/17/93		10/15/93	
		MATRIX ---------->	Soil		Soil		Soil		Soil		Soil		Soil	
		UNITS ---------->	UG/KG		UG/KG		UG/KG		UG/KG		UG/KG		UG/KG	
CAS #	Parameter		E006	VAL	E006	VAL	E006	VAL	E006	VAL	E006	VAL	E006	VAL
67-72-1	Hexachloroethane		4000.	U	42000.	U	16000000.	U	8700000.	U	84000.	U	1700000.	U
7005-72-3	4-Chlorophenyl-phenylether		4000.	U	42000.	U	16000000.	U	8700000.	U	84000.	U	1700000.	U
709-98-8	Propanil		4000.	U	11000.		4000000.		8700000.	U	56000.		770000.	
77-47-4	Hexachlorocyclopentadiene		4000.	U	42000.	U	16000000.	U	8700000.	U	84000.	U	1700000.	U
78-59-1	Isophorone		4000.	U	42000.	U	16000000.	U	8700000.	U	84000.	U	1700000.	U
83-32-9	Acenaphthene		4000.	U	42000.	U	16000000.	U	8700000.	U	84000.	U	1700000.	U
84-66-2	Diethylphthalate		4000.	U	42000.	U	16000000.	U	8700000.	U	84000.	U	1700000.	U
84-74-2	Di-n-butylphthalate		4000.	U	42000.	U	16000000.	U	8700000.	U	84000.	U	1700000.	U
85-01-8	Phenanthrene		4000.	U	42000.	U	16000000.	U	8700000.	U	84000.	U	1700000.	U
85-68-7	Butylbenzylphthalate		4000.	U	42000.	U	16000000.	U	8700000.	U	84000.	U	1700000.	U
86-30-6	N-Nitrosodiphenylamine		4000.	U	42000.	U	16000000.	U	8700000.	U	84000.	U	1700000.	U
86-73-7	Fluorene		4000.	U	42000.	U	16000000.	U	8700000.	U	84000.	U	1700000.	U
87-68-3	Hexachlorobutadiene		4000.	U	42000.	U	16000000.	U	8700000.	U	84000.	U	1700000.	U
87-86-5	Pentachlorophenol		20000.	U	210000.	U	80000000.	U	43000000.	U	420000.	U	8700000.	U
88-06-2	2,4,6-Trichlorophenol		4000.	U	42000.	U	16000000.	U	8700000.	U	84000.	U	1700000.	U
88-74-4	2-Nitroaniline		20000.	U	210000.	U	80000000.	U	43000000.	U	420000.	U	8700000.	U
88-75-5	2-Nitrophenol		4000.	U	42000.	U	16000000.	U	8700000.	U	84000.	U	1700000.	U
88-85-7	Dinoseb		38000.		140000.		24000000.		29000000.		420000.	U	26000000.	
91-20-3	Naphthalene		4000.	U	42000.	U	16000000.	U	8700000.	U	84000.	U	1700000.	U
91-57-6	2-Methylnaphthalene		4000.	U	42000.	U	16000000.	U	8700000.	U	84000.	U	1700000.	U
91-58-7	2-Chloronaphthalene		4000.	U	42000.	U	16000000.	U	8700000.	U	84000.	U	1700000.	U
91-94-1	3,3'-Dichlorobenzidine		8100.	U	84000.	U	32000000.	U	17000000.	U	170000.	U	3500000.	U
95-48-7	2-Methylphenol (o-Cresol)		4000.	U	42000.	U	16000000.	U	8700000.	U	84000.	U	1700000.	U
95-50-1	1,2-Dichlorobenzene		4000.	U	42000.	U	16000000.	U	8700000.	U	84000.	U	1700000.	U
95-57-8	2-Chlorophenol		4000.	U	42000.	U	16000000.	U	8700000.	U	84000.	U	1700000.	U
95-76-1	3,4-Dichloroaniline		4000.	U	76000.		16000000.	U	8700000.	U	19000.		450000.	
95-95-4	2,4,5-Trichlorophenol		20000.	U	210000.	U	80000000.	U	43000000.	U	420000.	U	8700000.	U
98-95-3	Nitrobenzene		4000.	U	42000.	U	16000000.	U	8700000.	U	84000.	U	1700000.	U
99-09-2	3-Nitroaniline		20000.	U	210000.	U	80000000.	U	43000000.	U	420000.	U	8700000.	U

*** Validation Complete ***

CEDAR CHEMICAL CORPORATION
WEST HELENA, ARKANSAS
SITE 9 PHASE I SURFACE SOIL DATA

SVOA	SHORT ID --------->	9SB-8 (0-5')		9SB-9 (0-5')		9SB-10 (0-5')		9SB-11 (0-5')		9SB-12 (0-5')		9SB-13 (0-5')	
	ORIGINAL ID ----->	CED9SB8-1		CED9SB9-1		CED9SB10-1		CED9SB11-1		CED9SB12-1		CED9SB13-1	
	SAMPLE DATE ----->	09/08/93		09/08/93		09/09/93		09/09/93		09/09/93		09/09/93	
	DATE ANALYZED --->	10/13/93		10/12/93		10/12/93		10/12/93		10/13/93		10/13/93	
	MATRIX ---------->	Soil		Soil		Soil		Soil		Soil		Soil	
	UNITS ----------->	UG/KG		UG/KG		UG/KG		UG/KG		UG/KG		UG/KG	
CAS #	Parameter	E007	VAL	E007	VAL	E007	VAL	E007	VAL	E007	VAL	E007	VAL
100-01-6	4-Nitroaniline	21000000.	U	18000000.	U	4100000.	U	4100000.	U	42000000.	U	420000.	U
100-02-7	4-Nitrophenol	21000000.	U	18000000.	U	4100000.	U	4100000.	U	42000000.	U	420000.	U
100-51-6	Benzyl alcohol	4200000.	U	3700000.	U	810000.	U	810000.	U	8400000.	U	83000.	U
101-55-3	4-Bromophenyl-phenylether	4200000.	U	3700000.	U	810000.	U	810000.	U	8400000.	U	83000.	U
105-67-9	2,4-Dimethylphenol	4200000.	U	3700000.	U	810000.	U	810000.	U	8400000.	U	83000.	U
106-44-5	4-Methylphenol (p-Cresol)	4200000.	U	3700000.	U	810000.	U	810000.	U	8400000.	U	83000.	U
106-46-7	1,4-Dichlorobenzene	4200000.	U	3700000.	U	810000.	U	810000.	U	8400000.	U	83000.	U
106-47-8	4-Chloroaniline	4200000.	U	3700000.	U	810000.	U	810000.	U	8400000.	U	83000.	U
108-60-1	bis(2-chloroisopropyl) ether	4200000.	U	3700000.	U	810000.	U	810000.	U	8400000.	U	83000.	U
108-95-2	Phenol	4200000.	U	3700000.	U	810000.	U	810000.	U	8400000.	U	83000.	U
111-44-4	bis(2-Chloroethyl)ether	4200000.	U	3700000.	U	810000.	U	810000.	U	8400000.	U	83000.	U
111-91-1	bis(2-Chloroethoxy)methane	4200000.	U	3700000.	U	810000.	U	810000.	U	8400000.	U	83000.	U
117-81-7	bis(2-Ethylhexyl)phthalate (BEHP)	4200000.	U	3700000.	U	810000.	U	810000.	U	8400000.	U	83000.	U
117-84-0	Di-n-octylphthalate	4200000.	U	3700000.	U	810000.	U	810000.	U	8400000.	U	83000.	U
118-74-1	Hexachlorobenzene	4200000.	U	3700000.	U	810000.	U	810000.	U	8400000.	U	83000.	U
120-12-7	Anthracene	4200000.	U	3700000.	U	810000.	U	810000.	U	8400000.	U	83000.	U
120-82-1	1,2,4-Trichlorobenzene	4200000.	U	3700000.	U	810000.	U	810000.	U	8400000.	U	83000.	U
120-83-2	2,4-Dichlorophenol	4200000.	U	3700000.	U	810000.	U	810000.	U	8400000.	U	83000.	U
121-14-2	2,4-Dinitrotoluene	4200000.	U	3700000.	U	810000.	U	810000.	U	8400000.	U	83000.	U
129-00-0	Pyrene	4200000.	U	3700000.	U	810000.	U	810000.	U	8400000.	U	83000.	U
131-11-3	Dimethylphthalate	4200000.	U	3700000.	U	810000.	U	810000.	U	8400000.	U	83000.	U
132-64-9	Dibenzofuran	4200000.	U	3700000.	U	810000.	U	810000.	U	8400000.	U	83000.	U
191-24-2	Benzo(g,h,i)perylene	4200000.	U	3700000.	U	810000.	U	810000.	U	8400000.	U	83000.	U
193-39-5	Indeno(1,2,3-cd)pyrene	4200000.	U	3700000.	U	810000.	U	810000.	U	8400000.	U	83000.	U
205-99-2	Benzo(b)fluoranthene	4200000.	U	3700000.	U	810000.	U	810000.	U	8400000.	U	83000.	U
206-44-0	Fluoranthene	4200000.	U	3700000.	U	810000.	U	810000.	U	8400000.	U	83000.	U
207-08-9	Benzo(k)fluoranthene	4200000.	U	3700000.	U	810000.	U	810000.	U	8400000.	U	83000.	U
208-96-8	Acenaphthylene	4200000.	U	3700000.	U	810000.	U	810000.	U	8400000.	U	83000.	U
218-01-9	Chrysene	4200000.	U	3700000.	U	810000.	U	810000.	U	8400000.	U	83000.	U
50-32-8	Benzo(a)pyrene	4200000.	U	3700000.	U	810000.	U	810000.	U	8400000.	U	83000.	U
51-28-5	2,4-Dinitrophenol	21000000.	U	18000000.	U	4100000.	U	4100000.	U	42000000.	U	420000.	U
534-52-1	4,6-Dinitro-2-methylphenol	21000000.	U	18000000.	U	4100000.	U	4100000.	U	42000000.	U	420000.	U
53-70-3	Dibenz(a,h)anthracene	4200000.	U	3700000.	U	810000.	U	810000.	U	8400000.	U	83000.	U
541-73-1	1,3-Dichlorobenzene	4200000.	U	3700000.	U	810000.	U	810000.	U	8400000.	U	83000.	U
56-55-3	Benzo(a)anthracene	4200000.	U	3700000.	U	810000.	U	810000.	U	8400000.	U	83000.	U
59-50-7	4-Chloro-3-methylphenol	4200000.	U	3700000.	U	810000.	U	810000.	U	8400000.	U	83000.	U
606-20-2	2,6-Dinitrotoluene	4200000.	U	3700000.	U	810000.	U	810000.	U	8400000.	U	83000.	U
621-64-7	N-Nitroso-di-n-propylamine	4200000.	U	3700000.	U	810000.	U	810000.	U	8400000.	U	83000.	U
65-85-0	Benzoic acid	21000000.	U	18000000.	U	4100000.	U	4100000.	U	42000000.	U	420000.	U

*** Validation Complete ***

CEDAR CHEMICAL CORPORATION
WEST HELENA, ARKANSAS
SITE 9 PHASE I SURFACE SOIL DATA

SVOA	SHORT ID --------->	9SB-8 (0-5')		9SB-9 (0-5')		9SB-10 (0-5')		9SB-11 (0-5')		9SB-12 (0-5')		9SB-13 (0-5')	
	ORIGINAL ID ----->	CED9SB8-1		CED9SB9-1		CED9SB10-1		CED9SB11-1		CED9SB12-1		CED9SB13-1	
	SAMPLE DATE ----->	09/08/93		09/08/93		09/09/93		09/09/93		09/09/93		09/09/93	
	DATE ANALYZED --->	10/13/93		10/12/93		10/12/93		10/12/93		10/13/93		10/13/93	
	MATRIX ---------->	Soil		Soil		Soil		Soil		Soil		Soil	
	UNITS ----------->	UG/KG		UG/KG		UG/KG		UG/KG		UG/KG		UG/KG	
CAS #	Parameter	E007	VAL	E007	VAL	E007	VAL	E007	VAL	E007	VAL	E007	VAL
67-72-1	Hexachloroethane	4200000.	U	3700000.	U	810000.	U	810000.	U	8400000.	U	83000.	U
7005-72-3	4-Chlorophenyl-phenylether	4200000.	U	3700000.	U	810000.	U	810000.	U	8400000.	U	83000.	U
709-98-8	Propanil	4200000.	U	3700000.	U	810000.	U	810000.	U	8400000.	U	83000.	U
77-47-4	Hexachlorocyclopentadiene	4200000.	U	3700000.	U	810000.	U	810000.	U	8400000.	U	83000.	U
78-59-1	Isophorone	4200000.	U	3700000.	U	810000.	U	810000.	U	8400000.	U	83000.	U
83-32-9	Acenaphthene	4200000.	U	3700000.	U	810000.	U	810000.	U	8400000.	U	83000.	U
84-66-2	Diethylphthalate	4200000.	U	3700000.	U	810000.	U	810000.	U	8400000.	U	83000.	U
84-74-2	Di-n-butylphthalate	4200000.	U	3700000.	U	810000.	U	810000.	U	8400000.	U	83000.	U
85-01-8	Phenanthrene	4200000.	U	3700000.	U	810000.	U	810000.	U	8400000.	U	83000.	U
85-68-7	Butylbenzylphthalate	4200000.	U	3700000.	U	810000.	U	810000.	U	8400000.	U	83000.	U
86-30-6	N-Nitrosodiphenylamine	4200000.	U	3700000.	U	810000.	U	810000.	U	8400000.	U	83000.	U
86-73-7	Fluorene	4200000.	U	3700000.	U	810000.	U	810000.	U	8400000.	U	83000.	U
87-68-3	Hexachlorobutadiene	4200000.	U	3700000.	U	810000.	U	810000.	U	8400000.	U	83000.	U
87-86-5	Pentachlorophenol	21000000.	U	18000000.	U	4100000.	U	4100000.	U	42000000.	U	420000.	U
88-06-2	2,4,6-Trichlorophenol	4200000.	U	3700000.	U	810000.	U	810000.	U	8400000.	U	83000.	U
88-74-4	2-Nitroaniline	21000000.	U	18000000.	U	4100000.	U	4100000.	U	42000000.	U	420000.	U
88-75-5	2-Nitrophenol	4200000.	U	3700000.	U	810000.	U	810000.	U	8400000.	U	83000.	U
88-85-7	Dinoseb	15000000.		28000000.		650000.		160000.		13000000.		150000.	
91-20-3	Naphthalene	4200000.	U	3700000.	U	810000.	U	810000.	U	8400000.	U	83000.	U
91-57-6	2-Methylnaphthalene	4200000.	U	3700000.	U	810000.	U	810000.	U	8400000.	U	83000.	U
91-58-7	2-Chloronaphthalene	4200000.	U	3700000.	U	810000.	U	810000.	U	8400000.	U	83000.	U
91-94-1	3,3'-Dichlorobenzidine	8400000.	U	7400000.	U	1600000.	U	1600000.	U	17000000.	U	170000.	U
95-48-7	2-Methylphenol (o-Cresol)	4200000.	U	3700000.	U	810000.	U	810000.	U	8400000.	U	83000.	U
95-50-1	1,2-Dichlorobenzene	4200000.	U	3700000.	U	810000.	U	810000.	U	8400000.	U	83000.	U
95-57-8	2-Chlorophenol	4200000.	U	3700000.	U	810000.	U	810000.	U	8400000.	U	83000.	U
95-76-1	3,4-Dichloroaniline	4200000.	U	3700000.	U	810000.	U	810000.	U	8400000.	U	83000.	U
95-95-4	2,4,5-Trichlorophenol	21000000.	U	18000000.	U	4100000.	U	4100000.	U	42000000.	U	420000.	U
98-95-3	Nitrobenzene	4200000.	U	3700000.	U	810000.	U	810000.	U	8400000.	U	83000.	U
99-09-2	3-Nitroaniline	21000000.	U	18000000.	U	4100000.	U	4100000.	U	42000000.	U	420000.	U

*** Validation Complete ***

CEDAR CHEMICAL CORPORATION
WEST HELENA, ARKANSAS
SITE 9 PHASE I SURFACE SOIL DATA

SVOA	SHORT ID --------->	9SB-14 (0-5')		9SB-15 (0-5')		9SB-16 (0-5')		9SB-19 (0-5')	
	ORIGINAL ID ----->	CED9SB14-1		CED9SB15-1		CED9SB16-1		CED9SB191	
	SAMPLE DATE ----->	09/09/93		09/09/93		09/10/93		09/16/93	
	DATE ANALYZED --->	10/13/93		10/14/93		10/13/93		10/16/93	
	MATRIX ---------->	Soil		Soil		Soil		Soil	
	UNITS ----------->	UG/KG		UG/KG		UG/KG		UG/KG	
CAS #	Parameter	E007	VAL	E007	VAL	E007	VAL	E011	VAL
100-01-6	4-Nitroaniline	42000.	U	3600.	U	43000000.	U	100000.	U
100-02-7	4-Nitrophenol	42000.	U	3600.	U	43000000.	U	100000.	U
100-51-6	Benzyl alcohol	8300.	U	720.	U	85000000.	U	NR	
101-55-3	4-Bromophenyl-phenylether	8300.	U	720.	U	85000000.	U	41000.	U
105-67-9	2,4-Dimethylphenol	8300.	U	720.	U	85000000.	U	41000.	U
106-44-5	4-Methylphenol (p-Cresol)	8300.	U	720.	U	85000000.	U	41000.	U
106-46-7	1,4-Dichlorobenzene	8300.	U	720.	U	85000000.	U	41000.	U
106-47-8	4-Chloroaniline	8300.	U	720.	U	85000000.	U	41000.	U
108-60-1	bis(2-chloroisopropyl) ether	8300.	U	720.	U	85000000.	U	41000.	U
108-95-2	Phenol	8300.	U	720.	U	85000000.	U	41000.	U
111-44-4	bis(2-Chloroethyl)ether	8300.	U	720.	U	85000000.	U	41000.	U
111-91-1	bis(2-Chloroethoxy)methane	8300.	U	720.	U	85000000.	U	41000.	U
117-81-7	bis(2-Ethylhexyl)phthalate (BEHP)	8300.	U	720.	U	85000000.	U	41000.	U
117-84-0	Di-n-octylphthalate	8300.	U	720.	U	85000000.	U	41000.	U
118-74-1	Hexachlorobenzene	8300.	U	720.	U	85000000.	U	41000.	U
120-12-7	Anthracene	8300.	U	720.	U	85000000.	U	41000.	U
120-82-1	1,2,4-Trichlorobenzene	8300.	U	720.	U	85000000.	U	41000.	U
120-83-2	2,4-Dichlorophenol	8300.	U	720.	U	85000000.	U	41000.	U
121-14-2	2,4-Dinitrotoluene	8300.	U	720.	U	85000000.	U	41000.	U
129-00-0	Pyrene	8300.	U	720.	U	85000000.	U	41000.	U
131-11-3	Dimethylphthalate	8300.	U	720.	U	85000000.	U	41000.	U
132-64-9	Dibenzofuran	8300.	U	720.	U	85000000.	U	41000.	U
191-24-2	Benzo(g,h,i)perylene	8300.	U	720.	U	85000000.	U	41000.	U
193-39-5	Indeno(1,2,3-cd)pyrene	8300.	U	720.	U	85000000.	U	41000.	U
205-99-2	Benzo(b)fluoranthene	8300.	U	720.	U	85000000.	U	41000.	U
206-44-0	Fluoranthene	8300.	U	720.	U	85000000.	U	41000.	U
207-08-9	Benzo(k)fluoranthene	8300.	U	720.	U	85000000.	U	41000.	U
208-96-8	Acenaphthylene	8300.	U	720.	U	85000000.	U	41000.	U
218-01-9	Chrysene	8300.	U	720.	U	85000000.	U	41000.	U
50-32-8	Benzo(a)pyrene	8300.	U	720.	U	85000000.	U	41000.	U
51-28-5	2,4-Dinitrophenol	42000.	U	3600.	U	43000000.	U	100000.	U
534-52-1	4,6-Dinitro-2-methylphenol	42000.	U	3600.	U	43000000.	U	100000.	U
53-70-3	Dibenz(a,h)anthracene	8300.	U	720.	U	85000000.	U	41000.	U
541-73-1	1,3-Dichlorobenzene	8300.	U	720.	U	85000000.	U	41000.	U
56-55-3	Benzo(a)anthracene	8300.	U	720.	U	85000000.	U	41000.	U
59-50-7	4-Chloro-3-methylphenol	8300.	U	720.	U	85000000.	U	41000.	U
606-20-2	2,6-Dinitrotoluene	8300.	U	720.	U	85000000.	U	41000.	U
621-64-7	N-Nitroso-di-n-propylamine	8300.	U	720.	U	85000000.	U	41000.	U
65-85-0	Benzoic acid	42000.	U	3600.	U	43000000.	U	NR	

*** Validation Complete ***

CEDAR CHEMICAL CORPORATION
WEST HELENA, ARKANSAS
SITE 9 PHASE I SURFACE SOIL DATA

SVOA	SHORT ID -------->	9SB-14 (0-5')		9SB-15 (0-5')		9SB-16 (0-5')		9SB-19 (0-5')			
	ORIGINAL ID ----->	CED9SB14-1		CED9SB15-1		CED9SB16-1		CED9SB191			
	SAMPLE DATE ----->	09/09/93		09/09/93		09/10/93		09/16/93			
	DATE ANALYZED --->	10/13/93		10/14/93		10/13/93		10/16/93			
	MATRIX ---------->	Soil		Soil		Soil		Soil			
	UNITS ---------->	UG/KG		UG/KG		UG/KG		UG/KG			
CAS #	Parameter	E007	VAL	E007	VAL	E007	VAL	E011	VAL		
67-72-1	Hexachloroethane	8300.	U	720.	U	85000000.	U	41000.	U		
7005-72-3	4-Chlorophenyl-phenylether	8300.	U	720.	U	85000000.	U	41000.	U		
709-98-8	Propanil	860.		720.	U	85000000.	U	100000.	U		
77-47-4	Hexachlorocyclopentadiene	8300.	U	720.	U	85000000.	U	41000.	U		
78-59-1	Isophorone	8300.	U	720.	U	85000000.	U	41000.	U		
83-32-9	Acenaphthene	8300.	U	720.	U	85000000.	U	41000.	U		
84-66-2	Diethylphthalate	8300.	U	720.	U	85000000.	U	41000.	U		
84-74-2	Di-n-butylphthalate	8300.	U	720.	U	85000000.	U	41000.	U		
85-01-8	Phenanthrene	8300.	U	720.	U	85000000.	U	41000.	U		
85-68-7	Butylbenzylphthalate	8300.	U	720.	U	85000000.	U	41000.	U		
86-30-6	N-Nitrosodiphenylamine	8300.	U	720.	U	85000000.	U	41000.	U		
86-73-7	Fluorene	8300.	U	720.	U	85000000.	U	41000.	U		
87-68-3	Hexachlorobutadiene	8300.	U	720.	U	85000000.	U	41000.	U		
87-86-5	Pentachlorophenol	42000.	U	3600.	U	43000000.	U	100000.	U		
88-06-2	2,4,6-Trichlorophenol	8300.	U	720.	U	85000000.	U	41000.	U		
88-74-4	2-Nitroaniline	42000.	U	3600.	U	43000000.	U	100000.	U		
88-75-5	2-Nitrophenol	8300.	U	720.	U	85000000.	U	41000.	U		
88-85-7	Dinoseb	9100.		8600.		15000000.	U	93000.			
91-20-3	Naphthalene	8300.	U	720.	U	85000000.	U	41000.	U		
91-57-6	2-Methylnaphthalene	8300.	U	720.	U	85000000.	U	41000.	U		
91-58-7	2-Chloronaphthalene	8300.	U	720.	U	85000000.	U	41000.	U		
91-94-1	3,3'-Dichlorobenzidine	17000.	U	1400.	U	17000000.	U	41000.	U		
95-48-7	2-Methylphenol (o-Cresol)	8300.	U	720.	U	85000000.	U	41000.	U		
95-50-1	1,2-Dichlorobenzene	8300.	U	720.	U	85000000.	U	41000.	U		
95-57-8	2-Chlorophenol	8300.	U	720.	U	85000000.	U	41000.	U		
95-76-1	3,4-Dichloroaniline	8300.	U	150.		85000000.	U	16000.			
95-95-4	2,4,5-Trichlorophenol	42000.	U	3600.	U	43000000.	U	100000.	U		
98-95-3	Nitrobenzene	8300.	U	720.	U	85000000.	U	41000.	U		
99-09-2	3-Nitroaniline	42000.	U	3600.	U	43000000.	U	NR			

*** Validation Complete ***

CEDAR CHEMICAL CORPORATION
WEST HELENA, ARKANSAS
SITE 9 PHASE I SURFACE SOIL DATA

VOA									
	SHORT ID --------->	9SB-3 (0-5')		9SB-15 (0-5')					
	ORIGINAL ID ----->	CED9SB3-1		CED9SB151					
	SAMPLE DATE ----->	09/07/93		09/09/93					
	DATE ANALYZED --->	09/15/93		09/16/93					
	MATRIX ---------->	Soil		Soil					
	UNITS ----------->	UG/KG		UG/KG					
CAS #	Parameter	E006	VAL	E007	VAL				
100-41-4	Ethylbenzene	6.	U	5.	U				
100-42-5	Styrene	6.	U	5.	U				
10061-01-5	cis-1,3-Dichloropropene	6.	U	5.	U				
10061-02-6	trans-1,3-Dichloropropene	6.	U	5.	U				
107-06-2	1,2-Dichloroethane	6.	U	5.	U				
108-05-4	Vinyl acetate	6.	U	5.	U				
108-10-1	4-Methyl-2-Pentanone (MIBK)	12.		54.	U				
108-88-3	Toluene	6.	U	5.	U				
108-90-7	Chlorobenzene	6.	U	5.	U				
124-48-1	Dibromochloromethane	6.	U	5.	U				
127-18-4	Tetrachloroethene	6.	U	5.	U				
1330-20-7	Xylene (total)	4.		5.	U				
540-59-0	1,2-Dichloroethene (total)	6.	U	5.	U				
56-23-5	Carbon tetrachloride	6.	U	5.	U				
591-78-6	2-Hexanone	65.	U	54.	U				
67-64-1	Acetone	300.		11.	U				
67-66-3	Chloroform	6.	U	5.	U				
71-43-2	Benzene	6.	U	5.	U				
71-55-6	1,1,1-Trichloroethane	6.	U	5.	U				
74-83-9	Bromomethane	13.	U	11.	U				
74-87-3	Chloromethane	13.	U	11.	U				
75-00-3	Chloroethane	13.	U	11.	U				
75-01-4	Vinyl chloride	6.	U	5.	U				
75-09-2	Methylene chloride	6.	U	5.	U				
75-15-0	Carbon disulfide	6.	U	5.	U				
75-25-2	Bromoform	6.	U	5.	U				
75-27-4	Bromodichloromethane	6.	U	5.	U				
75-34-3	1,1-Dichloroethane	6.	U	5.	U				
75-35-4	1,1-Dichloroethene	6.	U	5.	U				
78-87-5	1,2-Dichloropropane	6.	U	5.	U				
78-93-3	2-Butanone (MEK)	22.		11.	U				
79-00-5	1,1,2-Trichloroethane	6.	U	5.	U				
79-01-6	Trichloroethene	6.	U	5.	U				
79-34-5	1,1,2,2-Tetrachloroethane	6.	U	5.	U				

*** Validation Complete ***

CEDAR CHEMICAL CORPORATION
WEST HELENA, ARKANSAS
SITE 9 PHASE I SUBSURFACE SOIL DATA

PEST									
	SHORT ID --------->	9SB-3 (5-10')		9SB-15 (5-10')					
	ORIGINAL ID ----->	CED9SB3-2		CED9SB152					
	SAMPLE DATE ----->	09/07/93		09/09/93					
	DATE ANALYZED --->	09/17/93		09/18/93					
	MATRIX ---------->	Soil		Soil					
	UNITS ----------->	UG/KG		UG/KG					
CAS #	Parameter	E006	VAL	E007	VAL				
1024-57-3	Heptachlor Epoxide	68.	U	70.	U				
1031-07-8	Endosulfan Sulfate	54.	U	56.	U				
309-00-2	Aldrin	3.3	U	3.4	U				
319-84-6	Alpha-BHC	2.5	U	2.5	U				
319-85-7	Beta-BHC	5.	U	5.1	U				
319-86-8	Delta-BHC	7.4	U	7.6	U				
33213-65-9	Endosulfan II	3.3	U	3.4	U				
50-29-3	4,4'-DDT	9.9	U	10.	U				
5103-71-9	alpha-Chlordane	12.	U	12.	U				
5103-74-2	gamma-Chlordane	12.	U	12.	U				
53494-70-5	Endrin ketone	20.	U	20.	U				
58-89-9	gamma-BHC (Lindane)	3.3	U	3.4	U				
60-57-1	Dieldrin	1.6	U	1.7	U				
72-20-8	Endrin	5.	U	5.1	U				
72-43-5	Methoxychlor	150.	U	150.	U				
72-54-8	4,4'-DDD	9.1	U	9.3	U				
72-55-9	4,4'-DDE	3.3	U	3.4	U				
76-44-8	Heptachlor	2.5	U	2.5	U				
8001-35-2	Toxaphene	200.	U	200.	U				
959-98-8	Endosulfan I	12.	U	12.	U				

*** Validation Complete ***

CEDAR CHEMICAL CORPORATION
WEST HELENA, ARKANSAS
SITE 9 PHASE I SUBSURFACE SOIL DATA

RCRA METAL			
	SHORT ID -------->	9SB-3 (5-10')	9SB-15 (5-10')
	ORIGINAL ID ----->	CED9SB3-2	CED9SB152
	SAMPLE DATE ----->	09/07/93	09/09/93
	DATE ANALYZED --->	10/01/93	10/01/93
	MATRIX ---------->	Soil	Soil
	UNITS ----------->	MG/KG	MG/KG

CAS #	Parameter	E006	VAL	E007	VAL
7440-38-2	Arsenic (As)	7.3		7.1	
7440-39-3	Barium (Ba)	150.		133.	
7440-43-9	Cadmium (Cd)	0.37	U	0.38	U
7440-47-3	Chromium (Cr)	13.4		10.8	
7439-92-1	Lead (Pb)	11.2		10.3	
7439-97-6	Mercury (Hg)	0.1	U	0.12	U
7782-49-2	Selenium (Se)	0.62	U	0.64	U
7440-22-4	Silver (Ag)	0.37	U	0.38	U

*** Validation Complete ***

CEDAR CHEMICAL CORPORATION
WEST HELENA, ARKANSAS
SITE 9 PHASE I SUBSURFACE SOIL DATA

SVOA	SHORT ID --------->	9SB-1 (5-10')		9SB-2 (5-10')		9SB-3 (5-10')		9SB-4 (5-10')		9SB-4 (10-15')		9SB-5 (5-10')	
	ORIGINAL ID ----->	CED9SB12		CED9SB22		CED9SB32		CED9SB42		CED9SB43		CED9SB52	
	SAMPLE DATE ----->	09/07/93		09/07/93		09/07/93		09/08/93		09/08/93		09/08/93	
	DATE ANALYZED --->	10/11/93		10/15/93		10/15/93		10/15/93		10/15/93		10/14/93	
	MATRIX ---------->	Soil		Soil		Soil		Soil		Soil		Soil	
	UNITS ----------->	UG/KG		UG/KG		UG/KG		UG/KG		UG/KG		UG/KG	
CAS #	Parameter	E006	VAL	E006	VAL	E006	VAL	E006	VAL	E006	VAL	E006	VAL
100-01-6	4-Nitroaniline	4200.	U	4200.	U	4100.	U	8200000.	U	840000.	U	43000000.	U
100-02-7	4-Nitrophenol	4200.	U	4200.	U	4100.	U	8200000.	U	840000.	U	43000000.	U
100-51-6	Benzyl alcohol	840.	U	840.	U	820.	U	1600000.	U	170000.	U	8600000.	U
101-55-3	4-Bromophenyl-phenylether	840.	U	840.	U	820.	U	1600000.	U	170000.	U	8600000.	U
105-67-9	2,4-Dimethylphenol	840.	U	840.	U	820.	U	1600000.	U	170000.	U	8600000.	U
106-44-5	4-Methylphenol (p-Cresol)	840.	U	840.	U	820.	U	1600000.	U	170000.	U	8600000.	U
106-46-7	1,4-Dichlorobenzene	840.	U	840.	U	820.	U	1600000.	U	170000.	U	8600000.	U
106-47-8	4-Chloroaniline	840.	U	840.	U	820.	U	1600000.	U	170000.	U	8600000.	U
108-60-1	bis(2-chloroisopropyl) ether	840.	U	840.	U	820.	U	1600000.	U	170000.	U	8600000.	U
108-95-2	Phenol	840.	U	840.	U	820.	U	1600000.	U	170000.	U	8600000.	U
111-44-4	bis(2-Chloroethyl)ether	840.	U	840.	U	820.	U	1600000.	U	170000.	U	8600000.	U
111-91-1	bis(2-Chloroethoxy)methane	840.	U	840.	U	820.	U	1600000.	U	170000.	U	8600000.	U
117-81-7	bis(2-Ethylhexyl)phthalate (BEHP)	840.	U	840.	U	820.	U	1600000.	U	170000.	U	8600000.	U
117-84-0	Di-n-octylphthalate	840.	U	840.	U	820.	U	1600000.	U	170000.	U	8600000.	U
118-74-1	Hexachlorobenzene	840.	U	840.	U	820.	U	1600000.	U	170000.	U	8600000.	U
120-12-7	Anthracene	840.	U	840.	U	820.	U	1600000.	U	170000.	U	8600000.	U
120-82-1	1,2,4-Trichlorobenzene	840.	U	840.	U	820.	U	1600000.	U	170000.	U	8600000.	U
120-83-2	2,4-Dichlorophenol	840.	U	840.	U	820.	U	1600000.	U	170000.	U	8600000.	U
121-14-2	2,4-Dinitrotoluene	840.	U	840.	U	820.	U	1600000.	U	170000.	U	8600000.	U
129-00-0	Pyrene	840.	U	840.	U	820.	U	1600000.	U	170000.	U	8600000.	U
131-11-3	Dimethylphthalate	840.	U	840.	U	820.	U	1600000.	U	170000.	U	8600000.	U
132-64-9	Dibenzofuran	840.	U	840.	U	820.	U	1600000.	U	170000.	U	8600000.	U
191-24-2	Benzo(g,h,i)perylene	840.	U	840.	U	820.	U	1600000.	U	170000.	U	8600000.	U
193-39-5	Indeno(1,2,3-cd)pyrene	840.	U	840.	U	820.	U	1600000.	U	170000.	U	8600000.	U
205-99-2	Benzo(b)fluoranthene	840.	U	840.	U	820.	U	1600000.	U	170000.	U	8600000.	U
206-44-0	Fluoranthene	840.	U	840.	U	820.	U	1600000.	U	170000.	U	8600000.	U
207-08-9	Benzo(k)fluoranthene	840.	U	840.	U	820.	U	1600000.	U	170000.	U	8600000.	U
208-96-8	Acenaphthylene	840.	U	840.	U	820.	U	1600000.	U	170000.	U	8600000.	U
218-01-9	Chrysene	840.	U	840.	U	820.	U	1600000.	U	170000.	U	8600000.	U
50-32-8	Benzo(a)pyrene	840.	U	840.	U	820.	U	1600000.	U	170000.	U	8600000.	U
51-28-5	2,4-Dinitrophenol	4200.	U	3400.		4100.	U	8200000.	U	840000.	U	43000000.	U
534-52-1	4,6-Dinitro-2-methylphenol	4200.	U	4200.	U	4100.	U	8200000.	U	840000.	U	43000000.	U
53-70-3	Dibenz(a,h)anthracene	840.	U	840.	U	820.	U	1600000.	U	170000.	U	8600000.	U
541-73-1	1,3-Dichlorobenzene	840.	U	840.	U	820.	U	1600000.	U	170000.	U	8600000.	U
56-55-3	Benzo(a)anthracene	840.	U	840.	U	820.	U	1600000.	U	170000.	U	8600000.	U
59-50-7	4-Chloro-3-methylphenol	840.	U	840.	U	820.	U	1600000.	U	170000.	U	8600000.	U
606-20-2	2,6-Dinitrotoluene	840.	U	840.	U	820.	U	1600000.	U	170000.	U	8600000.	U
621-64-7	N-Nitroso-di-n-propylamine	840.	U	840.	U	820.	U	1600000.	U	170000.	U	8600000.	U
65-85-0	Benzoic acid	4200.	U	4200.	U	4100.	U	8200000.	U	840000.	U	43000000.	U

*** Validation Complete ***

CEDAR CHEMICAL CORPORATION
WEST HELENA, ARKANSAS
SITE 9 PHASE I SUBSURFACE SOIL DATA

SVOA	SHORT ID --------->	9SB-1 (5-10')		9SB-2 (5-10')		9SB-3 (5-10')		9SB-4 (5-10')		9SB-4 (10-15')		9SB-5 (5-10')	
	ORIGINAL ID ----->	CED9SB12		CED9SB22		CED9SB32		CED9SB42		CED9SB43		CED9SB52	
	SAMPLE DATE ----->	09/07/93		09/07/93		09/07/93		09/08/93		09/08/93		09/08/93	
	DATE ANALYZED --->	10/11/93		10/15/93		10/15/93		10/15/93		10/15/93		10/14/93	
	MATRIX ---------->	Soil		Soil		Soil		Soil		Soil		Soil	
	UNITS ---------->	UG/KG		UG/KG		UG/KG		UG/KG		UG/KG		UG/KG	
CAS #	Parameter	E006	VAL	E006	VAL	E006	VAL	E006	VAL	E006	VAL	E006	VAL
67-72-1	Hexachloroethane	840.	U	840.	U	820.	U	1600000.	U	170000.	U	8600000.	U
7005-72-3	4-Chlorophenyl-phenylether	840.	U	840.	U	820.	U	1600000.	U	170000.	U	8600000.	U
709-98-8	Propanil	310.		150.		820.	U	1600000.	U	170000.	U	8600000.	U
77-47-4	Hexachlorocyclopentadiene	840.	U	840.	U	820.	U	1600000.	U	170000.	U	8600000.	U
78-59-1	Isophorone	840.	U	840.	U	820.	U	1600000.	U	170000.	U	8600000.	U
83-32-9	Acenaphthene	840.	U	840.	U	820.	U	1600000.	U	170000.	U	8600000.	U
84-66-2	Diethylphthalate	840.	U	840.	U	820.	U	1600000.	U	170000.	U	8600000.	U
84-74-2	Di-n-butylphthalate	840.	U	840.	U	820.	U	1600000.	U	170000.	U	8600000.	U
85-01-8	Phenanthrene	840.	U	840.	U	820.	U	1600000.	U	170000.	U	8600000.	U
85-68-7	Butylbenzylphthalate	840.	U	840.	U	820.	U	1600000.	U	170000.	U	8600000.	U
86-30-6	N-Nitrosodiphenylamine	840.	U	840.	U	820.	U	1600000.	U	170000.	U	8600000.	U
86-73-7	Fluorene	840.	U	840.	U	820.	U	1600000.	U	170000.	U	8600000.	U
87-68-3	Hexachlorobutadiene	840.	U	840.	U	820.	U	1600000.	U	170000.	U	8600000.	U
87-86-5	Pentachlorophenol	4200.	U	4200.	U	4100.	U	8200000.	U	840000.	U	43000000.	U
88-06-2	2,4,6-Trichlorophenol	840.	U	840.	U	820.	U	1600000.	U	170000.	U	8600000.	U
88-74-4	2-Nitroaniline	4200.	U	4200.	U	4100.	U	8200000.	U	840000.	U	43000000.	U
88-75-5	2-Nitrophenol	840.	U	840.	U	820.	U	1600000.	U	170000.	U	8600000.	U
88-85-7	Dinoseb	9600.		1600.		4100.	U	8500000.		550000.		4100000.	
91-20-3	Naphthalene	840.	U	840.	U	820.	U	1600000.	U	170000.	U	8600000.	U
91-57-6	2-Methylnaphthalene	840.	U	840.	U	820.	U	1600000.	U	170000.	U	8600000.	U
91-58-7	2-Chloronaphthalene	840.	U	840.	U	820.	U	1600000.	U	170000.	U	8600000.	U
91-94-1	3,3'-Dichlorobenzidine	1700.	U	1700.	U	1600.	U	3300000.	U	340000.	U	17000000.	U
95-48-7	2-Methylphenol (o-Cresol)	840.	U	840.	U	820.	U	1600000.	U	170000.	U	8600000.	U
95-50-1	1,2-Dichlorobenzene	840.	U	840.	U	820.	U	1600000.	U	170000.	U	8600000.	U
95-57-8	2-Chlorophenol	840.	U	840.	U	820.	U	1600000.	U	170000.	U	8600000.	U
95-76-1	3,4-Dichloroaniline	840.	U	840.	U	130.		1600000.	U	170000.	U	8600000.	U
95-95-4	2,4,5-Trichlorophenol	4200.	U	4200.	U	4100.	U	8200000.	U	840000.	U	43000000.	U
98-95-3	Nitrobenzene	840.	U	840.	U	820.	U	1600000.	U	170000.	U	8600000.	U
99-09-2	3-Nitroaniline	4200.	U	4200.	U	4100.	U	8200000.	U	840000.	U	43000000.	U

*** Validation Complete ***

CEDAR CHEMICAL CORPORATION
WEST HELENA, ARKANSAS
SITE 9 PHASE I SUBSURFACE SOIL DATA

SVOA																		
	SHORT ID --------->	9SB-5 (10-15')		9SB-6 (5-10')		9SB-7 (5-10')		9SB-7 (10-15')		9SB-8 (5-10')		9SB-9 (5-10')	
	ORIGINAL ID ----->	CED9SB53		CED9SB62		CED9SB7-2		CED9SB7-3		CED9SB8-2		CED9SB9-2	
	SAMPLE DATE ----->	09/08/93		09/08/93		09/08/93		09/08/93		09/08/93		09/08/93	
	DATE ANALYZED --->	10/14/93		10/14/93		10/13/93		10/12/93		10/11/93		10/12/93	
	MATRIX ---------->	Soil		Soil		Soil		Soil		Soil		Soil	
	UNITS ---------->	UG/KG		UG/KG		UG/KG		UG/KG		UG/KG		UG/KG	
CAS #	Parameter	E006	VAL	E006	VAL	E007	VAL	E007	VAL	E007	VAL	E007	VAL
100-01-6	4-Nitroaniline	2100000.	U	420000.	U	4600000.	U	420000.	U	41000.	U	81000.	U
100-02-7	4-Nitrophenol	2100000.	U	420000.	U	4600000.	U	420000.	U	8200.	U	81000.	U
100-51-6	Benzyl alcohol	420000.	U	84000.	U	910000.	U	83000.	U	8200.	U	16000.	U
101-55-3	4-Bromophenyl-phenylether	420000.	U	84000.	U	910000.	U	83000.	U	8200.	U	16000.	U
105-67-9	2,4-Dimethylphenol	420000.	U	84000.	U	910000.	U	83000.	U	8200.	U	16000.	U
106-44-5	4-Methylphenol (p-Cresol)	420000.	U	84000.	U	910000.	U	83000.	U	8200.	U	16000.	U
106-46-7	1,4-Dichlorobenzene	420000.	U	84000.	U	910000.	U	83000.	U	8200.	U	16000.	U
106-47-8	4-Chloroaniline	420000.	U	84000.	U	910000.	U	83000.	U	8200.	U	16000.	U
108-60-1	bis(2-chloroisopropyl) ether	420000.	U	84000.	U	910000.	U	83000.	U	8200.	U	16000.	U
108-95-2	Phenol	420000.	U	84000.	U	910000.	U	83000.	U	8200.	U	16000.	U
111-44-4	bis(2-Chloroethyl)ether	420000.	U	84000.	U	910000.	U	83000.	U	8200.	U	16000.	U
111-91-1	bis(2-Chloroethoxy)methane	420000.	U	84000.	U	910000.	U	83000.	U	8200.	U	16000.	U
117-81-7	bis(2-Ethylhexyl)phthalate (BEHP)	420000.	U	84000.	U	910000.	U	83000.	U	8200.	U	16000.	U
117-84-0	Di-n-octylphthalate	420000.	U	84000.	U	910000.	U	83000.	U	8200.	U	16000.	U
118-74-1	Hexachlorobenzene	420000.	U	84000.	U	910000.	U	83000.	U	8200.	U	16000.	U
120-12-7	Anthracene	420000.	U	84000.	U	910000.	U	83000.	U	8200.	U	16000.	U
120-82-1	1,2,4-Trichlorobenzene	420000.	U	84000.	U	910000.	U	83000.	U	8200.	U	16000.	U
120-83-2	2,4-Dichlorophenol	420000.	U	84000.	U	910000.	U	83000.	U	8200.	U	16000.	U
121-14-2	2,4-Dinitrotoluene	420000.	U	84000.	U	910000.	U	83000.	U	8200.	U	16000.	U
129-00-0	Pyrene	420000.	U	84000.	U	910000.	U	83000.	U	8200.	U	16000.	U
131-11-3	Dimethylphthalate	420000.	U	84000.	U	910000.	U	83000.	U	8200.	U	16000.	U
132-64-9	Dibenzofuran	420000.	U	84000.	U	910000.	U	83000.	U	8200.	U	16000.	U
191-24-2	Benzo(g,h,i)perylene	420000.	U	84000.	U	910000.	U	83000.	U	8200.	U	16000.	U
193-39-5	Indeno(1,2,3-cd)pyrene	420000.	U	84000.	U	910000.	U	83000.	U	8200.	U	16000.	U
205-99-2	Benzo(b)fluoranthene	420000.	U	84000.	U	910000.	U	83000.	U	8200.	U	16000.	U
206-44-0	Fluoranthene	420000.	U	84000.	U	910000.	U	83000.	U	8200.	U	16000.	U
207-08-9	Benzo(k)fluoranthene	420000.	U	84000.	U	910000.	U	83000.	U	8200.	U	16000.	U
208-96-8	Acenaphthylene	420000.	U	84000.	U	910000.	U	83000.	U	8200.	U	16000.	U
218-01-9	Chrysene	420000.	U	84000.	U	910000.	U	83000.	U	8200.	U	16000.	U
50-32-8	Benzo(a)pyrene	420000.	U	84000.	U	910000.	U	83000.	U	8200.	U	16000.	U
51-28-5	2,4-Dinitrophenol	2100000.	U	420000.	U	4600000.	U	420000.	U	41000.	U	81000.	U
534-52-1	4,6-Dinitro-2-methylphenol	2100000.	U	420000.	U	4600000.	U	420000.	U	41000.	U	81000.	U
53-70-3	Dibenz(a,h)anthracene	420000.	U	84000.	U	910000.	U	83000.	U	8200.	U	16000.	U
541-73-1	1,3-Dichlorobenzene	420000.	U	84000.	U	910000.	U	83000.	U	8200.	U	16000.	U
56-55-3	Benzo(a)anthracene	420000.	U	84000.	U	910000.	U	83000.	U	8200.	U	16000.	U
59-50-7	4-Chloro-3-methylphenol	420000.	U	84000.	U	910000.	U	83000.	U	8200.	U	16000.	U
606-20-2	2,6-Dinitrotoluene	420000.	U	84000.	U	910000.	U	83000.	U	8200.	U	16000.	U
621-64-7	N-Nitroso-di-n-propylamine	420000.	U	84000.	U	910000.	U	83000.	U	8200.	U	16000.	U
65-85-0	Benzoic acid	2100000.	U	420000.	U	4600000.	U	420000.	U	41000.	U	81000.	U

*** Validation Complete ***

CEDAR CHEMICAL CORPORATION
WEST HELENA, ARKANSAS
SITE 9 PHASE I SUBSURFACE SOIL DATA

SVOA																			
	SHORT ID --------->	9SB-5 (10-15')		9SB-6 (5-10')		9SB-7 (5-10')		9SB-7 (10-15')		9SB-8 (5-10')		9SB-9 (5-10')	
	ORIGINAL ID ----->	CED9SB53		CED9SB62		CED9SB7-2		CED9SB7-3		CED9SB8-2		CED9SB9-2	
	SAMPLE DATE ----->	09/08/93		09/08/93		09/08/93		09/08/93		09/08/93		09/08/93	
	DATE ANALYZED --->	10/14/93		10/14/93		10/13/93		10/12/93		10/11/93		10/12/93	
	MATRIX ---------->	Soil		Soil		Soil		Soil		Soil		Soil	
	UNITS ---------->	UG/KG		UG/KG		UG/KG		UG/KG		UG/KG		UG/KG	
CAS #	Parameter	E006	VAL	E006	VAL	E007	VAL	E007	VAL	E007	VAL	E007	VAL
67-72-1	Hexachloroethane	420000.	U	84000.	U	910000.	U	83000.	U	8200.	U	16000.	U
7005-72-3	4-Chlorophenyl-phenylether	420000.	U	84000.	U	910000.	U	83000.	U	8200.	U	16000.	U
709-98-8	Propanil	420000.	U	8600.		910000.	U	83000.	U	8200.	U	16000.	U
77-47-4	Hexachlorocyclopentadiene	420000.	U	84000.	U	910000.	U	83000.	U	8200.	U	16000.	U
78-59-1	Isophorone	420000.	U	84000.	U	910000.	U	83000.	U	8200.	U	16000.	U
83-32-9	Acenaphthene	420000.	U	84000.	U	910000.	U	83000.	U	8200.	U	16000.	U
84-66-2	Diethylphthalate	420000.	U	84000.	U	910000.	U	83000.	U	8200.	U	16000.	U
84-74-2	Di-n-butylphthalate	420000.	U	84000.	U	910000.	U	83000.	U	8200.	U	16000.	U
85-01-8	Phenanthrene	420000.	U	84000.	U	910000.	U	83000.	U	8200.	U	16000.	U
85-68-7	Butylbenzylphthalate	420000.	U	84000.	U	910000.	U	83000.	U	8200.	U	16000.	U
86-30-6	N-Nitrosodiphenylamine	420000.	U	84000.	U	910000.	U	83000.	U	8200.	U	16000.	U
86-73-7	Fluorene	420000.	U	84000.	U	910000.	U	83000.	U	8200.	U	16000.	U
87-68-3	Hexachlorobutadiene	420000.	U	84000.	U	910000.	U	83000.	U	8200.	U	16000.	U
87-86-5	Pentachlorophenol	2100000.	U	420000.	U	4600000.	U	420000.	U	41000.	U	81000.	U
88-06-2	2,4,6-Trichlorophenol	420000.	U	84000.	U	910000.	U	83000.	U	8200.	U	16000.	U
88-74-4	2-Nitroaniline	2100000.	U	420000.	U	4600000.	U	420000.	U	41000.	U	81000.	U
88-75-5	2-Nitrophenol	420000.	U	84000.	U	910000.	U	83000.	U	8200.	U	16000.	U
88-85-7	Dinoseb	1700000.		420000.	U	6400000.		360000.		13000.		90000.	
91-20-3	Naphthalene	420000.	U	84000.	U	910000.	U	83000.	U	8200.	U	16000.	U
91-57-6	2-Methylnaphthalene	420000.	U	84000.	U	910000.	U	83000.	U	8200.	U	16000.	U
91-58-7	2-Chloronaphthalene	420000.	U	84000.	U	910000.	U	83000.	U	8200.	U	16000.	U
91-94-1	3,3'-Dichlorobenzidine	840000.	U	170000.	U	1800000.	U	170000.	U	16000.	U	32000.	U
95-48-7	2-Methylphenol (o-Cresol)	420000.	U	84000.	U	910000.	U	83000.	U	8200.	U	16000.	U
95-50-1	1,2-Dichlorobenzene	420000.	U	84000.	U	910000.	U	83000.	U	8200.	U	16000.	U
95-57-8	2-Chlorophenol	420000.	U	84000.	U	910000.	U	83000.	U	8200.	U	16000.	U
95-76-1	3,4-Dichloroaniline	420000.	U	84000.	U	910000.	U	83000.	U	8200.	U	16000.	U
95-95-4	2,4,5-Trichlorophenol	2100000.	U	420000.	U	4600000.	U	420000.	U	41000.	U	81000.	U
98-95-3	Nitrobenzene	420000.	U	84000.	U	910000.	U	83000.	U	8200.	U	16000.	U
99-09-2	3-Nitroaniline	2100000.	U	420000.	U	4600000.	U	420000.	U	41000.	U	81000.	U

*** Validation Complete ***

CEDAR CHEMICAL CORPORATION
WEST HELENA, ARKANSAS
SITE 9 PHASE I SUBSURFACE SOIL DATA

SVOA																					
	SHORT ID --------->	9SB-10 (5-10')		9SB-11 (5-10')		9SB-12 (5-10')		9SB-13 (5-10')		9SB-14 (5-10')		9SB-15 (5-10')	
	ORIGINAL ID ----->	CED9SB10-2		CED9SB11-2		CED9SB12-2		CED9SB13-2		CED9SB14-2		CED9SB15-2	
	SAMPLE DATE ----->	09/09/93		09/09/93		09/09/93		09/09/93		09/09/93		09/09/93	
	DATE ANALYZED --->	10/12/93		10/13/93		10/13/93		10/13/93		10/13/93		10/14/93	
	MATRIX ---------->	Soil		Soil		Soil		Soil		Soil		Soil	
	UNITS ---------->	UG/KG		UG/KG		UG/KG		UG/KG		UG/KG		UG/KG	
CAS #	Parameter	E007	VAL	E007	VAL	E007	VAL	E007	VAL	E007	VAL	E007	VAL
100-01-6	4-Nitroaniline	41000.	U	210000.	U	420000.	U	42000.	U	42000.	U	42000.	U
100-02-7	4-Nitrophenol	41000.	U	210000.	U	420000.	U	42000.	U	42000.	U	42000.	U
100-51-6	Benzyl alcohol	8200.	U	41000.	U	83000.	U	8400.	U	8300.	U	8400.	U
101-55-3	4-Bromophenyl-phenylether	8200.	U	41000.	U	83000.	U	8400.	U	8300.	U	8400.	U
105-67-9	2,4-Dimethylphenol	8200.	U	41000.	U	83000.	U	8400.	U	8300.	U	8400.	U
106-44-5	4-Methylphenol (p-Cresol)	8200.	U	41000.	U	83000.	U	8400.	U	8300.	U	8400.	U
106-46-7	1,4-Dichlorobenzene	8200.	U	41000.	U	83000.	U	8400.	U	8300.	U	8400.	U
106-47-8	4-Chloroaniline	8200.	U	41000.	U	83000.	U	8400.	U	8300.	U	8400.	U
108-60-1	bis(2-chloroisopropyl) ether	8200.	U	41000.	U	83000.	U	8400.	U	8300.	U	8400.	U
108-95-2	Phenol	8200.	U	41000.	U	83000.	U	8400.	U	8300.	U	8400.	U
111-44-4	bis(2-Chloroethyl)ether	8200.	U	41000.	U	83000.	U	8400.	U	8300.	U	8400.	U
111-91-1	bis(2-Chloroethoxy)methane	8200.	U	41000.	U	83000.	U	8400.	U	8300.	U	8400.	U
117-81-7	bis(2-Ethylhexyl)phthalate (BEHP)	8200.	U	41000.	U	83000.	U	8400.	U	8300.	U	8400.	U
117-84-0	Di-n-octylphthalate	8200.	U	41000.	U	83000.	U	8400.	U	8300.	U	8400.	U
118-74-1	Hexachlorobenzene	8200.	U	41000.	U	83000.	U	8400.	U	8300.	U	8400.	U
120-12-7	Anthracene	8200.	U	41000.	U	83000.	U	8400.	U	8300.	U	8400.	U
120-82-1	1,2,4-Trichlorobenzene	8200.	U	41000.	U	83000.	U	8400.	U	8300.	U	8400.	U
120-83-2	2,4-Dichlorophenol	8200.	U	41000.	U	83000.	U	8400.	U	8300.	U	8400.	U
121-14-2	2,4-Dinitrotoluene	8200.	U	41000.	U	83000.	U	8400.	U	8300.	U	8400.	U
129-00-0	Pyrene	8200.	U	41000.	U	83000.	U	8400.	U	8300.	U	8400.	U
131-11-3	Dimethylphthalate	8200.	U	41000.	U	83000.	U	8400.	U	8300.	U	8400.	U
132-64-9	Dibenzofuran	8200.	U	41000.	U	83000.	U	8400.	U	8300.	U	8400.	U
191-24-2	Benzo(g,h,i)perylene	8200.	U	41000.	U	83000.	U	8400.	U	8300.	U	8400.	U
193-39-5	Indeno(1,2,3-cd)pyrene	8200.	U	41000.	U	83000.	U	8400.	U	8300.	U	8400.	U
205-99-2	Benzo(b)fluoranthene	8200.	U	41000.	U	83000.	U	8400.	U	8300.	U	8400.	U
206-44-0	Fluoranthene	8200.	U	41000.	U	83000.	U	8400.	U	8300.	U	8400.	U
207-08-9	Benzo(k)fluoranthene	8200.	U	41000.	U	83000.	U	8400.	U	8300.	U	8400.	U
208-96-8	Acenaphthylene	8200.	U	41000.	U	83000.	U	8400.	U	8300.	U	8400.	U
218-01-9	Chrysene	8200.	U	41000.	U	83000.	U	8400.	U	8300.	U	8400.	U
50-32-8	Benzo(a)pyrene	8200.	U	41000.	U	83000.	U	8400.	U	8300.	U	8400.	U
51-28-5	2,4-Dinitrophenol	41000.	U	210000.	U	420000.	U	42000.	U	42000.	U	42000.	U
534-52-1	4,6-Dinitro-2-methylphenol	41000.	U	210000.	U	420000.	U	42000.	U	42000.	U	42000.	U
53-70-3	Dibenz(a,h)anthracene	8200.	U	41000.	U	83000.	U	8400.	U	8300.	U	8400.	U
541-73-1	1,3-Dichlorobenzene	8200.	U	41000.	U	83000.	U	8400.	U	8300.	U	8400.	U
56-55-3	Benzo(a)anthracene	8200.	U	41000.	U	83000.	U	8400.	U	8300.	U	8400.	U
59-50-7	4-Chloro-3-methylphenol	8200.	U	41000.	U	83000.	U	8400.	U	8300.	U	8400.	U
606-20-2	2,6-Dinitrotoluene	8200.	U	41000.	U	83000.	U	8400.	U	8300.	U	8400.	U
621-64-7	N-Nitroso-di-n-propylamine	8200.	U	41000.	U	83000.	U	8400.	U	8300.	U	8400.	U
65-85-0	Benzoic acid	41000.	U	210000.	U	420000.	U	42000.	U	42000.	U	42000.	U

*** Validation Complete ***

CEDAR CHEMICAL CORPORATION
WEST HELENA, ARKANSAS
SITE 9 PHASE I SUBSURFACE SOIL DATA

SVOA													
	SHORT ID -------->	9SB-10 (5-10')		9SB-11 (5-10')		9SB-12 (5-10')		9SB-13 (5-10')		9SB-14 (5-10')		9SB-15 (5-10')	
	ORIGINAL ID ----->	CED9SB10-2		CED9SB11-2		CED9SB12-2		CED9SB13-2		CED9SB14-2		CED9SB15-2	
	SAMPLE DATE ----->	09/09/93		09/09/93		09/09/93		09/09/93		09/09/93		09/09/93	
	DATE ANALYZED --->	10/12/93		10/13/93		10/13/93		10/13/93		10/13/93		10/14/93	
	MATRIX ---------->	Soil		Soil		Soil		Soil		Soil		Soil	
	UNITS ---------->	UG/KG		UG/KG		UG/KG		UG/KG		UG/KG		UG/KG	
CAS #	Parameter	E007	VAL	E007	VAL	E007	VAL	E007	VAL	E007	VAL	E007	VAL
67-72-1	Hexachloroethane	8200.	U	41000.	U	83000.	U	8400.	U	8300.	U	8400.	U
7005-72-3	4-Chlorophenyl-phenylether	8200.	U	41000.	U	83000.	U	8400.	U	8300.	U	8400.	U
709-98-8	Propanil	8200.	U	41000.		83000.	U	8400.	U	3300.		8400.	U
77-47-4	Hexachlorocyclopentadiene	8200.	U	41000.	U	83000.	U	8400.	U	8300.	U	8400.	U
78-59-1	Isophorone	8200.	U	41000.	U	83000.	U	8400.	U	8300.	U	8400.	U
83-32-9	Acenaphthene	8200.	U	41000.	U	83000.	U	8400.	U	8300.	U	8400.	U
84-66-2	Diethylphthalate	8200.	U	41000.	U	83000.	U	8400.	U	8300.	U	8400.	U
84-74-2	Di-n-butylphthalate	8200.	U	41000.	U	83000.	U	8400.	U	8300.	U	8400.	U
85-01-8	Phenanthrene	8200.	U	41000.	U	83000.	U	8400.	U	8300.	U	8400.	U
85-68-7	Butylbenzylphthalate	8200.	U	41000.	U	83000.	U	8400.	U	8300.	U	8400.	U
86-30-6	N-Nitrosodiphenylamine	8200.	U	41000.	U	83000.	U	8400.	U	8300.	U	8400.	U
86-73-7	Fluorene	8200.	U	41000.	U	83000.	U	8400.	U	8300.	U	8400.	U
87-68-3	Hexachlorobutadiene	8200.	U	41000.	U	83000.	U	8400.	U	8300.	U	8400.	U
87-86-5	Pentachlorophenol	41000.	U	210000.	U	420000.	U	42000.	U	42000.	U	42000.	U
88-06-2	2,4,6-Trichlorophenol	8200.	U	41000.	U	83000.	U	8400.	U	8300.	U	8400.	U
88-74-4	2-Nitroaniline	41000.	U	210000.	U	420000.	U	42000.	U	42000.	U	42000.	U
88-75-5	2-Nitrophenol	8200.	U	41000.	U	83000.	U	8400.	U	8300.	U	8400.	U
88-85-7	Dinoseb	40000.		170000.		320000.		34000.		35000.		22000.	
91-20-3	Naphthalene	8200.	U	41000.	U	83000.	U	8400.	U	8300.	U	8400.	U
91-57-6	2-Methylnaphthalene	8200.	U	41000.	U	83000.	U	8400.	U	8300.	U	8400.	U
91-58-7	2-Chloronaphthalene	8200.	U	41000.	U	83000.	U	8400.	U	8300.	U	8400.	U
91-94-1	3,3'-Dichlorobenzidine	16000.	U	82000.	U	170000.	U	17000.	U	17000.	U	17000.	U
95-48-7	2-Methylphenol (o-Cresol)	8200.	U	41000.	U	83000.	U	8400.	U	8300.	U	8400.	U
95-50-1	1,2-Dichlorobenzene	8200.	U	41000.	U	83000.	U	8400.	U	8300.	U	8400.	U
95-57-8	2-Chlorophenol	8200.	U	41000.	U	83000.	U	8400.	U	8300.	U	8400.	U
95-76-1	3,4-Dichloroaniline	8200.	U	41000.	U	83000.	U	8400.	U	8300.	U	8400.	U
95-95-4	2,4,5-Trichlorophenol	41000.	U	210000.	U	420000.	U	42000.	U	42000.	U	42000.	U
98-95-3	Nitrobenzene	8200.	U	41000.	U	83000.	U	8400.	U	8300.	U	8400.	U
99-09-2	3-Nitroaniline	41000.	U	210000.	U	420000.	U	42000.	U	42000.	U	42000.	U

*** Validation Complete ***

CEDAR CHEMICAL CORPORATION
WEST HELENA, ARKANSAS
SITE 9 PHASE I SUBSURFACE SOIL DATA

SVOA								
	SHORT ID --------->	9SB-16 (5-10')		9SB-19 (5-10')				
	ORIGINAL ID ----->	CED9SB16-2		CED9SB192				
	SAMPLE DATE ----->	09/10/93		09/16/93				
	DATE ANALYZED --->	10/11/93		10/16/93				
	MATRIX ---------->	Soil		Soil				
	UNITS ----------->	UG/KG		UG/KG				
CAS #	Parameter	E007	VAL	E011	VAL			
100-01-6	4-Nitroaniline	42000.	U	10000.	U			
100-02-7	4-Nitrophenol	42000.	U	10000.	U			
100-51-6	Benzyl alcohol	8300.	U	NR				
101-55-3	4-Bromophenyl-phenylether	8300.	U	4100.	U			
105-67-9	2,4-Dimethylphenol	8300.	U	4100.	U			
106-44-5	4-Methylphenol (p-Cresol)	8300.	U	4100.	U			
106-46-7	1,4-Dichlorobenzene	8300.	U	4100.	U			
106-47-8	4-Chloroaniline	8300.	U	4100.	U			
108-60-1	bis(2-chloroisopropyl) ether	8300.	U	4100.	U			
108-95-2	Phenol	8300.	U	4100.	U			
111-44-4	bis(2-Chloroethyl)ether	8300.	U	4100.	U			
111-91-1	bis(2-Chloroethoxy)methane	8300.	U	4100.	U			
117-81-7	bis(2-Ethylhexyl)phthalate (BEHP)	8300.	U	4100.	U			
117-84-0	Di-n-octylphthalate	8300.	U	4100.	U			
118-74-1	Hexachlorobenzene	8300.	U	4100.	U			
120-12-7	Anthracene	8300.	U	4100.	U			
120-82-1	1,2,4-Trichlorobenzene	8300.	U	4100.	U			
120-83-2	2,4-Dichlorophenol	8300.	U	4100.	U			
121-14-2	2,4-Dinitrotoluene	8300.	U	4100.	U			
129-00-0	Pyrene	8300.	U	4100.	U			
131-11-3	Dimethylphthalate	8300.	U	4100.	U			
132-64-9	Dibenzofuran	8300.	U	4100.	U			
191-24-2	Benzo(g,h,i)perylene	8300.	U	4100.	U			
193-39-5	Indeno(1,2,3-cd)pyrene	8300.	U	4100.	U			
205-99-2	Benzo(b)fluoranthene	8300.	U	4100.	U			
206-44-0	Fluoranthene	8300.	U	4100.	U			
207-08-9	Benzo(k)fluoranthene	8300.	U	4100.	U			
208-96-8	Acenaphthylene	8300.	U	4100.	U			
218-01-9	Chrysene	8300.	U	4100.	U			
50-32-8	Benzo(a)pyrene	8300.	U	4100.	U			
51-28-5	2,4-Dinitrophenol	42000.	U	10000.	U			
534-52-1	4,6-Dinitro-2-methylphenol	42000.	U	10000.	U			
53-70-3	Dibenz(a,h)anthracene	8300.	U	4100.	U			
541-73-1	1,3-Dichlorobenzene	8300.	U	4100.	U			
56-55-3	Benzo(a)anthracene	8300.	U	4100.	U			
59-50-7	4-Chloro-3-methylphenol	8300.	U	4100.	U			
606-20-2	2,6-Dinitrotoluene	8300.	U	4100.	U			
621-64-7	N-Nitroso-di-n-propylamine	8300.	U	4100.	U			
65-85-0	Benzoic acid	42000.	U	NR				

*** Validation Complete ***

CEDAR CHEMICAL CORPORATION
WEST HELENA, ARKANSAS
SITE 9 PHASE I SUBSURFACE SOIL DATA

SVOA									
	SHORT ID -------->	9SB-16 (5-10')		9SB-19 (5-10')					
	ORIGINAL ID ----->	CED9SB16-2		CED9SB192					
	SAMPLE DATE ----->	09/10/93		09/16/93					
	DATE ANALYZED --->	10/11/93		10/16/93					
	MATRIX ---------->	Soil		Soil					
	UNITS ----------->	UG/KG		UG/KG					
CAS #	Parameter	E007	VAL	E011	VAL				
67-72-1	Hexachloroethane	8300.	U	4100.	U				
7005-72-3	4-Chlorophenyl-phenylether	8300.	U	4100.	U				
709-98-8	Propanil	8300.	U	1300.					
77-47-4	Hexachlorocyclopentadiene	8300.	U	4100.	U				
78-59-1	Isophorone	8300.	U	4100.	U				
83-32-9	Acenaphthene	8300.	U	4100.	U				
84-66-2	Diethylphthalate	8300.	U	4100.	U				
84-74-2	Di-n-butylphthalate	8300.	U	4100.	U				
85-01-8	Phenanthrene	8300.	U	4100.	U				
85-68-7	Butylbenzylphthalate	8300.	U	4100.	U				
86-30-6	N-Nitrosodiphenylamine	8300.	U	4100.	U				
86-73-7	Fluorene	8300.	U	4100.	U				
87-68-3	Hexachlorobutadiene	8300.	U	4100.	U				
87-86-5	Pentachlorophenol	42000.	U	10000.	U				
88-06-2	2,4,6-Trichlorophenol	8300.	U	4100.	U				
88-74-4	2-Nitroaniline	42000.	U	10000.	U				
88-75-5	2-Nitrophenol	8300.	U	4100.	U				
88-85-7	Dinoseb	9200.		17000.					
91-20-3	Naphthalene	8300.	U	4100.	U				
91-57-6	2-Methylnaphthalene	8300.	U	4100.	U				
91-58-7	2-Chloronaphthalene	8300.	U	4100.	U				
91-94-1	3,3'-Dichlorobenzidine	17000.	U	4100.	U				
95-48-7	2-Methylphenol (o-Cresol)	8300.	U	4100.	U				
95-50-1	1,2-Dichlorobenzene	8300.	U	4100.	U				
95-57-8	2-Chlorophenol	8300.	U	4100.	U				
95-76-1	3,4-Dichloroaniline	8300.	U	1300.					
95-95-4	2,4,5-Trichlorophenol	42000.	U	10000.	U				
98-95-3	Nitrobenzene	8300.	U	4100.	U				
99-09-2	3-Nitroaniline	42000.	U	NR					

*** Validation Complete ***

CEDAR CHEMICAL CORPORATION
WEST HELENA, ARKANSAS
SITE 9 PHASE I SUBSURFACE SOIL DATA

VOA		SHORT ID --------->	9SB-3 (5-10')		9SB-15 (5-10')	
		ORIGINAL ID ----->	CED9SB3-2		CED9SB152	
		SAMPLE DATE ----->	09/07/93		09/09/93	
		DATE ANALYZED --->	09/15/93		09/16/93	
		MATRIX ---------->	Soil		Soil	
		UNITS ----------->	UG/KG		UG/KG	
CAS #	Parameter		E006	VAL	E007	VAL
100-41-4	Ethylbenzene		15.	U	6.	U
100-42-5	Styrene		15.	U	6.	U
10061-01-5	cis-1,3-Dichloropropene		15.	U	6.	U
10061-02-6	trans-1,3-Dichloropropene		15.	U	6.	U
107-06-2	1,2-Dichloroethane		15.	U	6.	U
108-05-4	Vinyl acetate		15.	U	6.	U
108-10-1	4-Methyl-2-Pentanone (MIBK)		19.		65.	U
108-88-3	Toluene		15.	U	6.	U
108-90-7	Chlorobenzene		15.	U	6.	U
124-48-1	Dibromochloromethane		15.	U	6.	U
127-18-4	Tetrachloroethene		15.	U	6.	U
1330-20-7	Xylene (total)		15.	U	6.	U
540-59-0	1,2-Dichloroethene (total)		15.	U	6.	U
56-23-5	Carbon tetrachloride		15.	U	6.	U
591-78-6	2-Hexanone		150.	U	65.	U
67-64-1	Acetone		1200.		13.	U
67-66-3	Chloroform		15.	U	6.	U
71-43-2	Benzene		15.	U	6.	U
71-55-6	1,1,1-Trichloroethane		15.	U	6.	U
74-83-9	Bromomethane		29.	U	13.	U
74-87-3	Chloromethane		29.	U	13.	U
75-00-3	Chloroethane		29.	U	13.	U
75-01-4	Vinyl chloride		15.	U	6.	U
75-09-2	Methylene chloride		15.	U	6.	U
75-15-0	Carbon disulfide		15.	U	6.	U
75-25-2	Bromoform		15.	U	6.	U
75-27-4	Bromodichloromethane		15.	U	6.	U
75-34-3	1,1-Dichloroethane		15.	U	6.	U
75-35-4	1,1-Dichloroethene		15.	U	6.	U
78-87-5	1,2-Dichloropropane		15.	U	6.	U
78-93-3	2-Butanone (MEK)		29.	U	13.	U
79-00-5	1,1,2-Trichloroethane		15.	U	6.	U
79-01-6	Trichloroethene		15.	U	6.	U
79-34-5	1,1,2,2-Tetrachloroethane		15.	U	6.	U

*** Validation Complete ***

CEDAR CHEMICAL CORPORATION
WEST HELENA, ARKANSAS
SITE 9 PHASE II SUBSURFACE SOIL DATA

SVOA													
	SHORT ID --------->	9SB-20 (25-27')		9SB-20 (30-32')		9SB-21 (23-25')		9SB-21 (25-27')		9SB-22 (15-17')		9SB-22 (17-19')	
	ORIGINAL ID ----->	009S002004		009S002005		009S002103		009S002105		009S002202		009S002203	
	SAMPLE DATE ----->	12/07/94		12/07/94		12/07/94		12/07/94		12/09/94		12/09/94	
	DATE EXTRACTED -->	12/12/94		12/12/94		12/12/94		12/12/94		12/13/94		12/13/94	
	DATE ANALYZED --->	12/14/94		12/14/94		12/19/94		12/15/94		12/16/94		12/16/94	
	MATRIX ---------->	Soil		Soil		Soil		Soil		Soil		Soil	
	UNITS ---------->	UG/KG		UG/KG		UG/KG		UG/KG		UG/KG		UG/KG	
CAS #	Parameter	11008	VAL	11008	VAL	11008	VAL	11008	VAL	11008	VAL	11008	VAL
108-95-2	Phenol	660.	U	660.	U	2640.	U	660.	U	660.	U	660.	U
111-44-4	bis(2-Chloroethyl)ether	660.	U	660.	U	2640.	U	660.	U	660.	U	660.	U
95-57-8	2-Chlorophenol	660.	U	660.	U	2640.	U	660.	U	660.	U	660.	U
541-73-1	1,3-Dichlorobenzene	660.	U	660.	U	2640.	U	660.	U	660.	U	660.	U
106-46-7	1,4-Dichlorobenzene	660.	U	660.	U	2640.	U	660.	U	660.	U	660.	U
100-51-6	Benzyl alcohol	1300.	U	1300.	U	5200.	U	1300.	U	1300.	U	1300.	U
95-50-1	1,2-Dichlorobenzene	660.	U	660.	U	2640.	U	660.	U	660.	U	660.	U
95-48-7	2-Methylphenol (o-Cresol)	660.	U	660.	U	2640.	U	660.	U	660.	U	660.	U
108-60-1	bis(2-chloroisopropyl) ether	660.	U	660.	U	2640.	U	660.	U	660.	U	660.	U
106-44-5	4-Methylphenol (p-Cresol)	660.	U	660.	U	2640.	U	660.	U	660.	U	660.	U
621-64-7	N-Nitroso-di-n-propylamine	660.	U	660.	U	2640.	U	660.	U	660.	U	660.	U
67-72-1	Hexachloroethane	660.	U	660.	U	2640.	U	660.	U	660.	U	660.	U
98-95-3	Nitrobenzene	660.	U	660.	U	2640.	U	660.	U	660.	U	660.	U
78-59-1	Isophorone	660.	U	660.	U	2640.	U	660.	U	660.	U	660.	U
88-75-5	2-Nitrophenol	660.	U	660.	U	2640.	U	660.	U	660.	U	660.	U
105-67-9	2,4-Dimethylphenol	660.	U	660.	U	2640.	U	660.	U	660.	U	660.	U
111-91-1	bis(2-Chloroethoxy)methane	660.	U	660.	U	2640.	U	660.	U	660.	U	660.	U
120-83-2	2,4-Dichlorophenol	660.	U	660.	U	2640.	U	660.	U	660.	U	660.	U
120-82-1	1,2,4-Trichlorobenzene	660.	U	660.	U	2640.	U	660.	U	660.	U	660.	U
91-20-3	Naphthalene	660.	U	660.	U	2640.	U	660.	U	660.	U	660.	U
87-68-3	Hexachlorobutadiene	660.	U	660.	U	2640.	U	660.	U	660.	U	660.	U
59-50-7	4-Chloro-3-methylphenol	1300.	U	1300.	U	5200.	U	1300.	U	1300.	U	1300.	U
91-57-6	2-Methylnaphthalene	660.	U	660.	U	2640.	U	660.	U	660.	U	660.	U
77-47-4	Hexachlorocyclopentadiene	660.	U	660.	U	2640.	U	660.	U	660.	U	660.	U
88-06-2	2,4,6-Trichlorophenol	660.	U	660.	U	2640.	U	660.	U	660.	U	660.	U
95-95-4	2,4,5-Trichlorophenol	660.	U	660.	U	2640.	U	660.	U	660.	U	660.	U
91-58-7	2-Chloronaphthalene	660.	U	660.	U	2640.	U	660.	U	660.	U	660.	U
88-74-4	2-Nitroaniline	3300.	U	3300.	U	13200.	U	3300.	U	3300.	U	3300.	U
131-11-3	Dimethylphthalate	660.	U	660.	U	2640.	U	660.	U	660.	U	660.	U
208-96-8	Acenaphthylene	660.	U	660.	U	2640.	U	660.	U	660.	U	660.	U
99-09-2	3-Nitroaniline	3300.	U	3300.	U	13200.	U	3300.	U	3300.	U	3300.	U
83-32-9	Acenaphthene	660.	U	660.	U	2640.	U	660.	U	660.	U	660.	U
51-28-5	2,4-Dinitrophenol	3300.	U	3300.	U	13200.	U	3300.	U	3300.	U	3300.	U
100-02-7	4-Nitrophenol	3300.	U	3300.	U	13200.	U	3300.	U	3300.	U	3300.	U
132-64-9	Dibenzofuran	660.	U	660.	U	2640.	U	660.	U	660.	U	660.	U
121-14-2	2,4-Dinitrotoluene	660.	U	660.	U	2640.	U	660.	U	660.	U	660.	U
606-20-2	2,6-Dinitrotoluene	660.	U	660.	U	2640.	U	660.	U	660.	U	660.	U
84-66-2	Diethylphthalate	660.	U	660.	U	2640.	U	660.	U	660.	U	660.	U

*** Validation Complete ***

CEDAR CHEMICAL CORPORATION
WEST HELENA, ARKANSAS
SITE 9 PHASE II SUBSURFACE SOIL DATA

SVOA	SHORT ID --------->	9SB-20 (25-27')		9SB-20 (30-32')		9SB-21 (23-25')		9SB-21 (25-27')		9SB-22 (15-17')		9SB-22 (17-19')	
	ORIGINAL ID ----->	009S002004		009S002005		009S002103		009S002105		009S002202		009S002203	
	SAMPLE DATE ----->	12/07/94		12/07/94		12/07/94		12/07/94		12/09/94		12/13/94	
	DATE EXTRACTED -->	12/12/94		12/12/94		12/12/94		12/12/94		12/13/94		12/16/94	
	DATE ANALYZED --->	12/14/94		12/14/94		12/19/94		12/15/94		12/16/94		12/16/94	
	MATRIX ---------->	Soil		Soil		Soil		Soil		Soil		Soil	
	UNITS ---------->	UG/KG		UG/KG		UG/KG		UG/KG		UG/KG		UG/KG	
CAS #	Parameter	11008	VAL	11008	VAL	11008	VAL	11008	VAL	11008	VAL	11008	VAL
7005-72-3	4-Chlorophenyl-phenylether	660.	U	660.	U	2640.	U	660.	U	660.	U	660.	U
86-73-7	Fluorene	660.	U	660.	U	2640.	U	660.	U	660.	U	660.	U
100-01-6	4-Nitroaniline	3300.	U	3300.	U	13200.	U	3300.	U	3300.	U	3300.	U
534-52-1	4,6-Dinitro-2-methylphenol	3300.	U	3300.	U	13200.	U	3300.	U	3300.	U	3300.	U
86-30-6	N-Nitrosodiphenylamine	660.	U	660.	U	2640.	U	660.	U	660.	U	660.	U
101-55-3	4-Bromophenyl-phenylether	660.	U	660.	U	2640.	U	660.	U	660.	U	660.	U
118-74-1	Hexachlorobenzene	660.	U	660.	U	2640.	U	660.	U	660.	U	660.	U
87-86-5	Pentachlorophenol	3300.	U	3300.	U	13200.	U	3300.	U	3300.	U	3300.	U
85-01-8	Phenanthrene	660.	U	660.	U	2640.	U	660.	U	660.	U	660.	U
120-12-7	Anthracene	660.	U	660.	U	2640.	U	660.	U	660.	U	660.	U
206-44-0	Fluoranthene	660.	U	660.	U	2640.	U	660.	U	660.	U	660.	U
129-00-0	Pyrene	660.	U	660.	U	2640.	U	660.	U	660.	U	660.	U
85-68-7	Butylbenzylphthalate	660.	U	660.	U	2640.	U	660.	U	660.	U	660.	U
91-94-1	3,3'-Dichlorobenzidine	1300.	U	1300.	U	5200.	U	1300.	U	1300.	U	1300.	U
56-55-3	Benzo(a)anthracene	660.	U	660.	U	2640.	U	660.	U	660.	U	660.	U
117-81-7	bis(2-Ethylhexyl)phthalate (BEHP)	660.	U	660.	U	2640.	U	660.	U	660.	U	660.	U
218-01-9	Chrysene	660.	U	660.	U	2640.	U	660.	U	660.	U	660.	U
117-84-0	Di-n-octylphthalate	660.	U	660.	U	2640.	U	660.	U	660.	U	660.	U
205-99-2	Benzo(b)fluoranthene	660.	U	660.	U	2640.	U	660.	U	660.	U	660.	U
207-08-9	Benzo(k)fluoranthene	660.	U	660.	U	2640.	U	660.	U	660.	U	660.	U
50-32-8	Benzo(a)pyrene	660.	U	660.	U	2640.	U	660.	U	660.	U	660.	U
193-39-5	Indeno(1,2,3-cd)pyrene	660.	U	660.	U	2640.	U	660.	U	660.	U	660.	U
53-70-3	Dibenz(a,h)anthracene	660.	U	660.	U	2640.	U	660.	U	660.	U	660.	U
191-24-2	Benzo(g,h,i)perylene	660.	U	660.	U	2640.	U	660.	U	660.	U	660.	U
88-85-7	Dinoseb	462.	U	462.	U	7400.		690.		880.		4000.	
65-85-0	Benzoic acid	3300.	U	3300.	U	13200.	U	3300.	U	3300.	U	3300.	U
106-47-8	4-Chloroaniline	1300.	U	1300.	U	5200.	U	1300.	U	1300.	U	1300.	U
84-74-2	Di-n-butylphthalate	660.	U	660.	U	2640.	U	660.	U	660.	U	660.	U

*** Validation Complete ***

CEDAR CHEMICAL CORPORATION
WEST HELENA, ARKANSAS
SITE 9 PHASE II SUBSURFACE SOIL DATA

VOA													
	SHORT ID -------->	9SB-20 (25-27')		9SB-20 (30-32')		9SB-21 (23-25')		9SB-21 (25-27')		9SB-22 (15-17')		9SB-22 (17-19')	
	ORIGINAL ID ----->	009S002004		009S002005		009S002103		009S002105		009S002202		009S002203	
	SAMPLE DATE ----->	12/07/94		12/07/94		12/07/94		12/07/94		12/09/94		12/09/94	
	DATE EXTRACTED -->	12/13/94		12/13/94		12/13/94		12/13/94		12/20/94		12/20/94	
	DATE ANALYZED --->	12/12/94		12/14/94		12/12/94		12/12/94		12/20/94		12/20/94	
	MATRIX ---------->	Soil		Soil		Soil		Soil		Soil		Soil	
	UNITS ----------->	UG/KG		UG/KG		UG/KG		UG/KG		UG/KG		UG/KG	
CAS #	Parameter	11008	VAL	11008	VAL	11008	VAL	11008	VAL	11008	VAL	11008	VAL
74-87-3	Chloromethane	40.	U	50.	U	50.	U	50.	U	250.	U	10.	U
74-83-9	Bromomethane	40.	U	50.	U	50.	U	50.	U	250.	U	10.	U
75-01-4	Vinyl chloride	40.	U	50.	U	50.	U	50.	U	250.	U	10.	U
75-00-3	Chloroethane	40.	U	50.	U	50.	U	50.	U	250.	U	10.	U
75-09-2	Methylene chloride	840.		100.	U	170.		100.	U	500.	U	20.	U
67-64-1	Acetone	4300.		12000.		1200.		1400.		44000.		110.	
75-15-0	Carbon disulfide	400.	U	500.	U	500.	U	500.	U	2500.	U	100.	U
75-35-4	1,1-Dichloroethene	20.	U	25.	U	25.	U	25.	U	130.	U	5.	U
75-34-3	1,1-Dichloroethane	20.	U	25.	U	25.	U	25.	U	130.	U	5.	U
156-60-5	trans-1,2-Dichloroethene	20.	U	25.	U	25.	U	25.	U	130.	U	5.	U
67-66-3	Chloroform	20.	U	25.	U	25.	U	25.	U	130.	U	5.	U
107-06-2	1,2-Dichloroethane	730.		120.		25.	U	25.	U	130.	U	5.	U
78-93-3	2-Butanone (MEK)	2100.		500.	U	1700.		2400.		6700.		100.	U
71-55-6	1,1,1-Trichloroethane	20.	U	25.	U	25.	U	25.	U	130.	U	5.	U
56-23-5	Carbon tetrachloride	20.	U	25.	U	25.	U	25.	U	130.	U	5.	U
108-05-4	Vinyl acetate	200.	U	250.	U	250.	U	250.	U	1200.	U	50.	U
75-27-4	Bromodichloromethane	20.	U	25.	U	25.	U	25.	U	130.	U	5.	U
79-34-5	1,1,2,2-Tetrachloroethane	20.	U	25.	U	25.	U	25.	U	130.	U	5.	U
78-87-5	1,2-Dichloropropane	20.	U	25.	U	25.	U	25.	U	130.	U	5.	U
10061-02-6	trans-1,3-Dichloropropene	20.	U	25.	U	25.	U	25.	U	130.	U	5.	U
79-01-6	Trichloroethene	20.	U	25.	U	25.	U	25.	U	130.	U	5.	U
124-48-1	Dibromochloromethane	20.	U	25.	U	25.	U	25.	U	130.	U	5.	U
79-00-5	1,1,2-Trichloroethane	20.	U	25.	U	25.	U	25.	U	130.	U	5.	U
71-43-2	Benzene	20.	U	25.	U	25.	U	25.	U	130.	U	5.	U
10061-01-5	cis-1,3-Dichloropropene	20.	U	25.	U	25.	U	25.	U	130.	U	5.	U
110-75-8	2-Chloroethylvinylether	40.	U	50.	U	50.	U	50.	U	250.	U	10.	U
75-25-2	Bromoform	20.	U	25.	U	25.	U	25.	U	130.	U	5.	U
591-78-6	2-Hexanone	200.	U	250.	U	250.	U	250.	U	1200.	U	50.	U
108-10-1	4-Methyl-2-Pentanone (MIBK)	200.	U	250.	U	250.	U	250.	U	1200.	U	50.	U
127-18-4	Tetrachloroethene	20.	U	25.	U	25.	U	25.	U	130.	U	5.	U
108-88-3	Toluene	960.		25.	U	25.	U	25.	U	130.	U	5.	U
108-90-7	Chlorobenzene	20.	U	25.	U	25.	U	25.	U	130.	U	5.	U
100-41-4	Ethylbenzene	20.	U	25.	U	25.	U	25.	U	130.	U	5.	U
100-42-5	Styrene	20.	U	25.	U	25.	U	25.	U	130.	U	5.	U
1330-20-7	Xylene (total)	20.	U	25.	U	25.	U	25.	U	140.		12.	

*** Validation Complete ***

CEDAR CHEMICAL CORPORATION
WEST HELENA, ARKANSAS
SITE 9 PHASE II SURFACE SOIL DATA

SVOA		SHORT ID --------->	9SB-20 (10-12')		9SB-21 (10-12')		9SB-22 (10-12')				
		ORIGINAL ID ----->	009S002001		009S002101		009S002201				
		SAMPLE DATE ----->	12/07/94		12/07/94		12/09/94				
		DATE EXTRACTED -->	12/12/94		12/12/94		12/13/94				
		DATE ANALYZED --->	12/14/94		12/19/94		12/16/94				
		MATRIX ---------->	Soil		Soil		Soil				
		UNITS ----------->	UG/KG		UG/KG		UG/KG				
CAS #	Parameter		11008	VAL	11008	VAL	11008	VAL			
108-95-2	Phenol		660.	U	2640.	U	3300.	U			
111-44-4	bis(2-Chloroethyl)ether		660.	U	2640.	U	3300.	U			
95-57-8	2-Chlorophenol		660.	U	2640.	U	3300.	U			
541-73-1	1,3-Dichlorobenzene		660.	U	2640.	U	3300.	U			
106-46-7	1,4-Dichlorobenzene		660.	U	2640.	U	3300.	U			
100-51-6	Benzyl alcohol		1300.	U	5200.	U	6500.	U			
95-50-1	1,2-Dichlorobenzene		660.	U	2640.	U	3300.	U			
95-48-7	2-Methylphenol (o-Cresol)		660.	U	2640.	U	3300.	U			
108-60-1	bis(2-chloroisopropyl) ether		660.	U	2640.	U	3300.	U			
106-44-5	4-Methylphenol (p-Cresol)		660.	U	2640.	U	3300.	U			
621-64-7	N-Nitroso-di-n-propylamine		660.	U	2640.	U	3300.	U			
67-72-1	Hexachloroethane		660.	U	2640.	U	3300.	U			
98-95-3	Nitrobenzene		660.	U	2640.	U	3300.	U			
78-59-1	Isophorone		660.	U	2640.	U	3300.	U			
88-75-5	2-Nitrophenol		660.	U	2640.	U	3300.	U			
105-67-9	2,4-Dimethylphenol		660.	U	2640.	U	3300.	U			
111-91-1	bis(2-Chloroethoxy)methane		660.	U	2640.	U	3300.	U			
120-83-2	2,4-Dichlorophenol		660.	U	2640.	U	3300.	U			
120-82-1	1,2,4-Trichlorobenzene		660.	U	2640.	U	3300.	U			
91-20-3	Naphthalene		660.	U	2640.	U	3300.	U			
87-68-3	Hexachlorobutadiene		660.	U	2640.	U	3300.	U			
59-50-7	4-Chloro-3-methylphenol		1300.	U	5200.	U	6500.	U			
91-57-6	2-Methylnaphthalene		660.	U	2640.	U	3300.	U			
77-47-4	Hexachlorocyclopentadiene		660.	U	2640.	U	3300.	U			
88-06-2	2,4,6-Trichlorophenol		660.	U	2640.	U	3300.	U			
95-95-4	2,4,5-Trichlorophenol		660.	U	2640.	U	3300.	U			
91-58-7	2-Chloronaphthalene		660.	U	2640.	U	3300.	U			
88-74-4	2-Nitroaniline		3300.	U	13200.	U	16500.	U			
131-11-3	Dimethylphthalate		660.	U	2640.	U	3300.	U			
208-96-8	Acenaphthylene		660.	U	2640.	U	3300.	U			
99-09-2	3-Nitroaniline		3300.	U	13200.	U	16500.	U			
83-32-9	Acenaphthene		660.	U	2640.	U	3300.	U			
51-28-5	2,4-Dinitrophenol		3300.	U	13200.	U	16500.	U			
100-02-7	4-Nitrophenol		3300.	U	13200.	U	16500.	U			
132-64-9	Dibenzofuran		660.	U	2640.	U	3300.	U			
121-14-2	2,4-Dinitrotoluene		660.	U	2640.	U	3300.	U			
606-20-2	2,6-Dinitrotoluene		660.	U	2640.	U	3300.	U			
84-66-2	Diethylphthalate		660.	U	2640.	U	3300.	U			

*** Validation Complete ***

CEDAR CHEMICAL CORPORATION
WEST HELENA, ARKANSAS
SITE 9 PHASE II SURFACE SOIL DATA

SVOA											
	SHORT ID -------->	9SB-20 (10-12')		9SB-21 (10-12')		9SB-22 (10-12')					
	ORIGINAL ID ----->	009S002001		009S002101		009S002201					
	SAMPLE DATE ----->	12/07/94		12/07/94		12/09/94					
	DATE EXTRACTED -->	12/12/94		12/12/94		12/13/94					
	DATE ANALYZED --->	12/14/94		12/19/94		12/16/94					
	MATRIX ---------->	Soil		Soil		Soil					
	UNITS ---------->	UG/KG		UG/KG		UG/KG					
CAS #	Parameter	11008	VAL	11008	VAL	11008	VAL				
7005-72-3	4-Chlorophenyl-phenylether	660.	U	2640.	U	3300.	U				
86-73-7	Fluorene	660.	U	2640.	U	3300.	U				
100-01-6	4-Nitroaniline	3300.	U	13200.	U	16500.	U				
534-52-1	4,6-Dinitro-2-methylphenol	3300.	U	13200.	U	16500.	U				
86-30-6	N-Nitrosodiphenylamine	660.	U	2640.	U	3300.	U				
101-55-3	4-Bromophenyl-phenylether	660.	U	2640.	U	3300.	U				
118-74-1	Hexachlorobenzene	660.	U	2640.	U	3300.	U				
87-86-5	Pentachlorophenol	3300.	U	13200.	U	16500.	U				
85-01-8	Phenanthrene	660.	U	2640.	U	3300.	U				
120-12-7	Anthracene	660.	U	2640.	U	3300.	U				
206-44-0	Fluoranthene	660.	U	2640.	U	3300.	U				
129-00-0	Pyrene	660.	U	2640.	U	3300.	U				
85-68-7	Butylbenzylphthalate	660.	U	2640.	U	3300.	U				
91-94-1	3,3'-Dichlorobenzidine	1300.	U	5200.	U	6500.	U				
56-55-3	Benzo(a)anthracene	660.	U	2640.	U	3300.	U				
117-81-7	bis(2-Ethylhexyl)phthalate (BEHP)	660.	U	2640.	U	3300.	U				
218-01-9	Chrysene	660.	U	2640.	U	3300.	U				
117-84-0	Di-n-octylphthalate	660.	U	2640.	U	3300.	U				
205-99-2	Benzo(b)fluoranthene	660.	U	2640.	U	3300.	U				
207-08-9	Benzo(k)fluoranthene	660.	U	2640.	U	3300.	U				
50-32-8	Benzo(a)pyrene	660.	U	2640.	U	3300.	U				
193-39-5	Indeno(1,2,3-cd)pyrene	660.	U	2640.	U	3300.	U				
53-70-3	Dibenz(a,h)anthracene	660.	U	2640.	U	3300.	U				
191-24-2	Benzo(g,h,i)perylene	660.	U	2640.	U	3300.	U				
88-85-7	Dinoseb	500.		42000.		270000.					
65-85-0	Benzoic acid	3300.	U	13200.	U	16500.	U				
106-47-8	4-Chloroaniline	1300.	U	5200.	U	6500.	U				
84-74-2	Di-n-butylphthalate	660.	U	2640.	U	3300.	U				

*** Validation Complete ***

CEDAR CHEMICAL CORPORATION
WEST HELENA, ARKANSAS
SITE 9 PHASE II SURFACE SOIL DATA

VOA											
	SHORT ID -------->	9SB-20 (10-12')		9SB-21 (10-12')		9SB-22 (10-12')					
	ORIGINAL ID ----->	009S002001		009S002101		009S002201					
	SAMPLE DATE ----->	12/07/94		12/07/94		12/09/94					
	DATE EXTRACTED -->	12/13/94		12/13/94		12/15/94					
	DATE ANALYZED --->	12/12/94		12/14/94		12/14/94					
	MATRIX ---------->	Soil		Soil		Soil					
	UNITS ----------->	UG/KG		UG/KG		UG/KG					
CAS #	Parameter	11008	VAL	11008	VAL	11008	VAL				
74-87-3	Chloromethane	40.	U	10.	U	10.	U				
74-83-9	Bromomethane	40.	U	10.	U	10.	U				
75-01-4	Vinyl chloride	40.	U	10.	U	10.	U				
75-00-3	Chloroethane	40.	U	10.	U	10.	U				
75-09-2	Methylene chloride	92.		94.		20.	U				
67-64-1	Acetone	2900.		800.		200000.					
75-15-0	Carbon disulfide	400.	U	100.	U	100.	U				
75-35-4	1,1-Dichloroethene	20.	U	5.	U	5.	U				
75-34-3	1,1-Dichloroethane	20.	U	5.	U	5.	U				
156-60-5	trans-1,2-Dichloroethene	20.	U	5.	U	5.	U				
67-66-3	Chloroform	20.	U	5.	U	5.	U				
107-06-2	1,2-Dichloroethane	58.		43.		5.	U				
78-93-3	2-Butanone (MEK)	3000.		1700.		36000.					
71-55-6	1,1,1-Trichloroethane	20.	U	5.	U	5.	U				
56-23-5	Carbon tetrachloride	20.	U	5.	U	5.	U				
108-05-4	Vinyl acetate	200.	U	50.	U	50.	U				
75-27-4	Bromodichloromethane	20.	U	5.	U	5.	U				
79-34-5	1,1,2,2-Tetrachloroethane	20.	U	5.	U	5.	U				
78-87-5	1,2-Dichloropropane	20.	U	5.	U	5.	U				
10061-02-6	trans-1,3-Dichloropropene	20.	U	5.	U	5.	U				
79-01-6	Trichloroethene	20.	U	5.	U	5.	U				
124-48-1	Dibromochloromethane	20.	U	5.	U	5.	U				
79-00-5	1,1,2-Trichloroethane	20.	U	5.	U	5.	U				
71-43-2	Benzene	20.	U	5.	U	5.	U				
10061-01-5	cis-1,3-Dichloropropene	20.	U	5.	U	5.	U				
110-75-8	2-Chloroethylvinylether	40.	U	10.	U	10.	U				
75-25-2	Bromoform	20.	U	5.	U	5.	U				
591-78-6	2-Hexanone	200.	U	50.	U	50.	U				
108-10-1	4-Methyl-2-Pentanone (MIBK)	200.	U	50.	U	63.					
127-18-4	Tetrachloroethene	20.	U	5.	U	5.	U				
108-88-3	Toluene	61.		5.	U	10.					
108-90-7	Chlorobenzene	20.	U	5.	U	5.	U				
100-41-4	Ethylbenzene	20.	U	5.	U	10.					
100-42-5	Styrene	20.	U	5.	U	5.	U				
1330-20-7	Xylene (total)	20.	U	5.	U	130.					

*** Validation Complete ***

CEDAR CHEMICAL CORPORATION
WEST HELENA, ARKANSAS
SITE 9 PHASE II SUBSURFACE SOIL DATA

SVOA													
	SHORT ID -------->	9SB-20 (25-27')		9SB-20 (30-32')		9SB-21 (23-25')		9SB-21 (25-27')		9SB-22 (15-17')		9SB-22 (17-19')	
	ORIGINAL ID ----->	009S002004		009S002005		009S002103		009S002105		009S002202		009S002203	
	SAMPLE DATE ----->	12/07/94		12/07/94		12/07/94		12/07/94		12/09/94		12/09/94	
	DATE EXTRACTED -->	12/12/94		12/12/94		12/12/94		12/12/94		12/13/94		12/13/94	
	DATE ANALYZED --->	12/14/94		12/14/94		12/19/94		12/15/94		12/16/94		12/16/94	
	MATRIX ---------->	Soil		Soil		Soil		Soil		Soil		Soil	
	UNITS ---------->	UG/KG		UG/KG		UG/KG		UG/KG		UG/KG		UG/KG	
CAS #	Parameter	11008	VAL	11008	VAL	11008	VAL	11008	VAL	11008	VAL	11008	VAL
108-95-2	Phenol	660.	U	660.	U	2640.	U	660.	U	660.	U	660.	U
111-44-4	bis(2-Chloroethyl)ether	660.	U	660.	U	2640.	U	660.	U	660.	U	660.	U
95-57-8	2-Chlorophenol	660.	U	660.	U	2640.	U	660.	U	660.	U	660.	U
541-73-1	1,3-Dichlorobenzene	660.	U	660.	U	2640.	U	660.	U	660.	U	660.	U
106-46-7	1,4-Dichlorobenzene	660.	U	660.	U	2640.	U	660.	U	660.	U	660.	U
100-51-6	Benzyl alcohol	1300.	U	1300.	U	5200.	U	1300.	U	1300.	U	1300.	U
95-50-1	1,2-Dichlorobenzene	660.	U	660.	U	2640.	U	660.	U	660.	U	660.	U
95-48-7	2-Methylphenol (o-Cresol)	660.	U	660.	U	2640.	U	660.	U	660.	U	660.	U
108-60-1	bis(2-chloroisopropyl) ether	660.	U	660.	U	2640.	U	660.	U	660.	U	660.	U
106-44-5	4-Methylphenol (p-Cresol)	660.	U	660.	U	2640.	U	660.	U	660.	U	660.	U
621-64-7	N-Nitroso-di-n-propylamine	660.	U	660.	U	2640.	U	660.	U	660.	U	660.	U
67-72-1	Hexachloroethane	660.	U	660.	U	2640.	U	660.	U	660.	U	660.	U
98-95-3	Nitrobenzene	660.	U	660.	U	2640.	U	660.	U	660.	U	660.	U
78-59-1	Isophorone	660.	U	660.	U	2640.	U	660.	U	660.	U	660.	U
88-75-5	2-Nitrophenol	660.	U	660.	U	2640.	U	660.	U	660.	U	660.	U
105-67-9	2,4-Dimethylphenol	660.	U	660.	U	2640.	U	660.	U	660.	U	660.	U
111-91-1	bis(2-Chloroethoxy)methane	660.	U	660.	U	2640.	U	660.	U	660.	U	660.	U
120-83-2	2,4-Dichlorophenol	660.	U	660.	U	2640.	U	660.	U	660.	U	660.	U
120-82-1	1,2,4-Trichlorobenzene	660.	U	660.	U	2640.	U	660.	U	660.	U	660.	U
91-20-3	Naphthalene	660.	U	660.	U	2640.	U	660.	U	660.	U	660.	U
87-68-3	Hexachlorobutadiene	660.	U	660.	U	2640.	U	660.	U	660.	U	660.	U
59-50-7	4-Chloro-3-methylphenol	1300.	U	1300.	U	5200.	U	1300.	U	1300.	U	1300.	U
91-57-6	2-Methylnaphthalene	660.	U	660.	U	2640.	U	660.	U	660.	U	660.	U
77-47-4	Hexachlorocyclopentadiene	660.	U	660.	U	2640.	U	660.	U	660.	U	660.	U
88-06-2	2,4,6-Trichlorophenol	660.	U	660.	U	2640.	U	660.	U	660.	U	660.	U
95-95-4	2,4,5-Trichlorophenol	660.	U	660.	U	2640.	U	660.	U	660.	U	660.	U
91-58-7	2-Chloronaphthalene	660.	U	660.	U	2640.	U	660.	U	660.	U	660.	U
88-74-4	2-Nitroaniline	3300.	U	3300.	U	13200.	U	3300.	U	3300.	U	3300.	U
131-11-3	Dimethylphthalate	660.	U	660.	U	2640.	U	660.	U	660.	U	660.	U
208-96-8	Acenaphthylene	660.	U	660.	U	2640.	U	660.	U	660.	U	660.	U
99-09-2	3-Nitroaniline	3300.	U	3300.	U	13200.	U	3300.	U	3300.	U	3300.	U
83-32-9	Acenaphthene	660.	U	660.	U	2640.	U	660.	U	660.	U	660.	U
51-28-5	2,4-Dinitrophenol	3300.	U	3300.	U	13200.	U	3300.	U	3300.	U	3300.	U
100-02-7	4-Nitrophenol	3300.	U	3300.	U	13200.	U	3300.	U	3300.	U	3300.	U
132-64-9	Dibenzofuran	660.	U	660.	U	2640.	U	660.	U	660.	U	660.	U
121-14-2	2,4-Dinitrotoluene	660.	U	660.	U	2640.	U	660.	U	660.	U	660.	U
606-20-2	2,6-Dinitrotoluene	660.	U	660.	U	2640.	U	660.	U	660.	U	660.	U
84-66-2	Diethylphthalate	660.	U	660.	U	2640.	U	660.	U	660.	U	660.	U

*** Validation Complete ***

CEDAR CHEMICAL CORPORATION
WEST HELENA, ARKANSAS
SITE 9 PHASE II SUBSURFACE SOIL DATA

SVOA	SHORT ID -------->	9SB-20 (25-27')		9SB-20 (30-32')		9SB-21 (23-25')		9SB-21 (25-27')		9SB-22 (15-17')		9SB-22 (17-19')	
	ORIGINAL ID ----->	009S002004		009S002005		009S002103		009S002105		009S002202		009S002203	
	SAMPLE DATE ----->	12/07/94		12/07/94		12/07/94		12/07/94		12/09/94		12/09/94	
	DATE EXTRACTED -->	12/12/94		12/12/94		12/12/94		12/12/94		12/13/94		12/13/94	
	DATE ANALYZED --->	12/14/94		12/14/94		12/19/94		12/15/94		12/16/94		12/16/94	
	MATRIX ---------->	Soil		Soil		Soil		Soil		Soil		Soil	
	UNITS ----------->	UG/KG		UG/KG		UG/KG		UG/KG		UG/KG		UG/KG	
CAS #	Parameter	11008	VAL	11008	VAL	11008	VAL	11008	VAL	11008	VAL	11008	VAL
7005-72-3	4-Chlorophenyl-phenylether	660.	U	660.	U	2640.	U	660.	U	660.	U	660.	U
86-73-7	Fluorene	660.	U	660.	U	2640.	U	660.	U	660.	U	660.	U
100-01-6	4-Nitroaniline	3300.	U	3300.	U	13200.	U	3300.	U	3300.	U	3300.	U
534-52-1	4,6-Dinitro-2-methylphenol	3300.	U	3300.	U	13200.	U	3300.	U	3300.	U	3300.	U
86-30-6	N-Nitrosodiphenylamine	660.	U	660.	U	2640.	U	660.	U	660.	U	660.	U
101-55-3	4-Bromophenyl-phenylether	660.	U	660.	U	2640.	U	660.	U	660.	U	660.	U
118-74-1	Hexachlorobenzene	660.	U	660.	U	2640.	U	660.	U	660.	U	660.	U
87-86-5	Pentachlorophenol	3300.	U	3300.	U	13200.	U	3300.	U	3300.	U	3300.	U
85-01-8	Phenanthrene	660.	U	660.	U	2640.	U	660.	U	660.	U	660.	U
120-12-7	Anthracene	660.	U	660.	U	2640.	U	660.	U	660.	U	660.	U
206-44-0	Fluoranthene	660.	U	660.	U	2640.	U	660.	U	660.	U	660.	U
129-00-0	Pyrene	660.	U	660.	U	2640.	U	660.	U	660.	U	660.	U
85-68-7	Butylbenzylphthalate	660.	U	660.	U	2640.	U	660.	U	660.	U	660.	U
91-94-1	3,3'-Dichlorobenzidine	1300.	U	1300.	U	5200.	U	1300.	U	1300.	U	1300.	U
56-55-3	Benzo(a)anthracene	660.	U	660.	U	2640.	U	660.	U	660.	U	660.	U
117-81-7	bis(2-Ethylhexyl)phthalate (BEHP)	660.	U	660.	U	2640.	U	660.	U	660.	U	660.	U
218-01-9	Chrysene	660.	U	660.	U	2640.	U	660.	U	660.	U	660.	U
117-84-0	Di-n-octylphthalate	660.	U	660.	U	2640.	U	660.	U	660.	U	660.	U
205-99-2	Benzo(b)fluoranthene	660.	U	660.	U	2640.	U	660.	U	660.	U	660.	U
207-08-9	Benzo(k)fluoranthene	660.	U	660.	U	2640.	U	660.	U	660.	U	660.	U
50-32-8	Benzo(a)pyrene	660.	U	660.	U	2640.	U	660.	U	660.	U	660.	U
193-39-5	Indeno(1,2,3-cd)pyrene	660.	U	660.	U	2640.	U	660.	U	660.	U	660.	U
53-70-3	Dibenz(a,h)anthracene	660.	U	660.	U	2640.	U	660.	U	660.	U	660.	U
191-24-2	Benzo(g,h,i)perylene	660.	U	660.	U	2640.	U	660.	U	660.	U	660.	U
88-85-7	Dinoseb	462.	U	462.	U	7400.		690.		880.		4000.	
65-85-0	Benzoic acid	3300.	U	3300.	U	13200.	U	3300.	U	3300.	U	3300.	U
106-47-8	4-Chloroaniline	1300.	U	1300.	U	5200.	U	1300.	U	1300.	U	1300.	U
84-74-2	Di-n-butylphthalate	660.	U	660.	U	2640.	U	660.	U	660.	U	660.	U

*** Validation Complete ***

CEDAR CHEMICAL CORPORATION
WEST HELENA, ARKANSAS
SITE 9 PHASE II SUBSURFACE SOIL DATA

VOA		SHORT ID --------->	9SB-20 (25-27')		9SB-20 (30-32')		9SB-21 (23-25')		9SB-21 (25-27')		9SB-22 (15-17')		9SB-22 (17-19')	
		ORIGINAL ID ----->	009S002004		009S002005		009S002103		009S002105		009S002202		009S002203	
		SAMPLE DATE ----->	12/07/94		12/07/94		12/07/94		12/07/94		12/09/94		12/09/94	
		DATE EXTRACTED -->	12/13/94		12/13/94		12/13/94		12/13/94		12/20/94		12/20/94	
		DATE ANALYZED --->	12/12/94		12/14/94		12/12/94		12/12/94		12/20/94		12/20/94	
		MATRIX ---------->	Soil		Soil		Soil		Soil		Soil		Soil	
		UNITS ----------->	UG/KG		UG/KG		UG/KG		UG/KG		UG/KG		UG/KG	
CAS #	Parameter		11008	VAL	11008	VAL	11008	VAL	11008	VAL	11008	VAL	11008	VAL
74-87-3	Chloromethane		40.	U	50.	U	50.	U	50.	U	250.	U	10.	U
74-83-9	Bromomethane		40.	U	50.	U	50.	U	50.	U	250.	U	10.	U
75-01-4	Vinyl chloride		40.	U	50.	U	50.	U	50.	U	250.	U	10.	U
75-00-3	Chloroethane		40.	U	50.	U	50.	U	50.	U	250.	U	10.	U
75-09-2	Methylene chloride		840.		100.	U	170.		100.	U	500.	U	20.	U
67-64-1	Acetone		4300.		12000.		1200.		1400.		44000.		110.	
75-15-0	Carbon disulfide		400.	U	500.	U	500.	U	500.	U	2500.	U	100.	U
75-35-4	1,1-Dichloroethene		20.	U	25.	U	25.	U	25.	U	130.	U	5.	U
75-34-3	1,1-Dichloroethane		20.	U	25.	U	25.	U	25.	U	130.	U	5.	U
156-60-5	trans-1,2-Dichloroethene		20.	U	25.	U	25.	U	25.	U	130.	U	5.	U
67-66-3	Chloroform		20.	U	25.	U	25.	U	25.	U	130.	U	5.	U
107-06-2	1,2-Dichloroethane		730.		120.		25.	U	25.	U	130.	U	5.	U
78-93-3	2-Butanone (MEK)		2100.		500.	U	1700.		2400.		6700.		100.	U
71-55-6	1,1,1-Trichloroethane		20.	U	25.	U	25.	U	25.	U	130.	U	5.	U
56-23-5	Carbon tetrachloride		20.	U	25.	U	25.	U	25.	U	130.	U	5.	U
108-05-4	Vinyl acetate		200.	U	250.	U	250.	U	250.	U	1200.	U	50.	U
75-27-4	Bromodichloromethane		20.	U	25.	U	25.	U	25.	U	130.	U	5.	U
79-34-5	1,1,2,2-Tetrachloroethane		20.	U	25.	U	25.	U	25.	U	130.	U	5.	U
78-87-5	1,2-Dichloropropane		20.	U	25.	U	25.	U	25.	U	130.	U	5.	U
10061-02-6	trans-1,3-Dichloropropene		20.	U	25.	U	25.	U	25.	U	130.	U	5.	U
79-01-6	Trichloroethene		20.	U	25.	U	25.	U	25.	U	130.	U	5.	U
124-48-1	Dibromochloromethane		20.	U	25.	U	25.	U	25.	U	130.	U	5.	U
79-00-5	1,1,2-Trichloroethane		20.	U	25.	U	25.	U	25.	U	130.	U	5.	U
71-43-2	Benzene		20.	U	25.	U	25.	U	25.	U	130.	U	5.	U
10061-01-5	cis-1,3-Dichloropropene		20.	U	25.	U	25.	U	25.	U	130.	U	5.	U
110-75-8	2-Chloroethylvinylether		40.	U	50.	U	50.	U	50.	U	250.	U	10.	U
75-25-2	Bromoform		20.	U	25.	U	25.	U	25.	U	130.	U	5.	U
591-78-6	2-Hexanone		200.	U	250.	U	250.	U	250.	U	1200.	U	50.	U
108-10-1	4-Methyl-2-Pentanone (MIBK)		200.	U	250.	U	250.	U	250.	U	1200.	U	50.	U
127-18-4	Tetrachloroethene		20.	U	25.	U	25.	U	25.	U	130.	U	5.	U
108-88-3	Toluene		960.		25.	U	25.	U	25.	U	130.	U	5.	U
108-90-7	Chlorobenzene		20.	U	25.	U	25.	U	25.	U	130.	U	5.	U
100-41-4	Ethylbenzene		20.	U	25.	U	25.	U	25.	U	130.	U	5.	U
100-42-5	Styrene		20.	U	25.	U	25.	U	25.	U	130.	U	5.	U
1330-20-7	Xylene (total)		20.	U	25.	U	25.	U	25.	U	140.		12.	

*** Validation Complete ***

CEDAR CHEMICAL CORPORATION
WEST HELENA, ARKANSAS
PHASE III GROUNDWATER DATA

PEST		SHORT ID --------->	OFFMW-1		OFFMW-2		OFFMW-3		OFFMW-3 DUP		OFFMW-4	
		ORIGINAL ID ----->	OFFG000102		OFFG000202		OFFG000302		OFFH000302		OFFG000402	
		SAMPLE DATE ----->	01/09/96		01/09/96		01/09/96		01/09/96		01/09/96	
		DATE EXTRACTED -->	01/12/96		01/12/96		01/12/96		01/12/96		01/12/96	
		DATE ANALYZED --->	01/25/96		01/25/96		01/25/96		01/25/96		01/25/96	
		MATRIX ---------->	Water		Water		Water		Water		Water	
		UNITS ----------->	UG/L		UG/L		UG/L		UG/L		UG/L	
CAS #	Parameter		G114-18	VAL	G114-18	VAL	G114-18	VAL	G114-18	VAL	G114-18	VAL
319-84-6	Alpha-BHC		0.1	U	0.1	U	0.1	U	0.1	U	0.1	U
319-85-7	Beta-BHC		0.1	U	0.1	U	0.1	U	0.1	U	0.1	U
319-86-8	Delta-BHC		0.1	U	0.1	U	0.1	U	0.1	U	0.1	U
58-89-9	gamma-BHC (Lindane)		0.1	U	0.1	U	0.1	U	0.1	U	0.1	U
76-44-8	Heptachlor		0.1	U	0.1	U	0.1	U	0.1	U	0.1	U
309-00-2	Aldrin		0.1	U	0.1	U	0.1	U	0.1	U	0.1	U
1024-57-3	Heptachlor Epoxide		0.1	U	0.1	U	0.1	U	0.1	U	0.1	U
959-98-8	Endosulfan I		0.1	U	0.1	U	0.1	U	0.1	U	0.1	U
60-57-1	Dieldrin		0.1	U	0.1	U	0.1	U	0.1	U	0.1	U
72-55-9	4,4'-DDE		0.1	U	0.1	U	0.1	U	0.1	U	0.1	U
72-20-8	Endrin		0.1	U	0.1	U	0.1	U	0.1	U	0.1	U
72-54-8	4,4'-DDD		0.1	U	0.1	U	0.1	U	0.1	U	0.1	U
33213-65-9	Endosulfan II		0.5	U	0.5	U	0.5	U	0.5	U	0.5	U
50-29-3	4,4'-DDT		0.1	U	0.1	U	0.1	U	0.1	U	0.1	U
72-43-5	Methoxychlor		0.5	U	0.5	U	0.5	U	0.5	U	0.5	U
8001-35-2	Toxaphene		1.	U	1.	U	1.	U	1.	U	1.	U
57-74-9	Chlordane		1.	U	1.	U	1.	U	1.	U	1.	U
7421-93-4	Endrin aldehyde		0.1	U	0.1	U	0.1	U	0.1	U	0.1	U
1031-07-8	Endosulfan Sulfate		0.1	U	0.1	U	0.1	U	0.1	U	0.1	U
53494-70-5	Endrin ketone		0.1	U	0.1	U	0.1	U	0.1	U	0.1	U

*** Validation Complete ***

CEDAR CHEMICAL CORPORATION
WEST HELENA, ARKANSAS
PHASE III GROUNDWATER DATA

RCRA METAL		OFFMW-1		OFFMW-2		OFFMW-3		OFFMW-3 DUP		OFFMW-4		
	ORIGINAL ID ----->	OFFG000102		OFFG000202		OFFG000302		OFFH000302		OFFG000402		
	SAMPLE DATE ----->	01/09/96		01/09/96		01/09/96		01/09/96		01/09/96		
	DATE EXTRACTED -->	01/17/96		01/17/96		01/17/96		01/17/96		01/17/96		
	DATE ANALYZED --->	01/23/96		01/23/96		01/23/96		01/23/96		01/23/96		
	MATRIX ---------->	Water		Water		Water		Water		Water		
	UNITS ----------->	MG/L		MG/L		MG/L		MG/L		MG/L		
CAS #	Parameter	G114-18	VAL	G114-18	VAL	G114-18	VAL	G114-18	VAL	G114-18	VAL	
7440-38-2	Arsenic (As)	0.01	U	0.01	U	0.01	U	0.01	U	0.01	U	
7440-39-3	Barium (Ba)	0.2	U	0.2	U	0.2	U	0.2	U	0.2	U	
7440-43-9	Cadmium (Cd)	0.005	U	0.006		0.005		0.006		0.005		
7440-47-3	Chromium (Cr)	0.05	U	0.05	U	0.05	U	0.05	U	0.05	U	
7439-92-1	Lead (Pb)	0.005	U	0.005	U	0.005	U	0.005	U	0.005	U	
7439-97-6	Mercury (Hg)	0.0002	U	0.0002	U	0.0002	U	0.0002	U	0.0002	U	
7782-49-2	Selenium (Se)	0.01	U	0.01	U	0.01	U	0.01	U	0.01	U	
7440-22-4	Silver (Ag)	0.05	U	0.05	U	0.05	U	0.05	U	0.05	U	

*** Validation Complete ***

CEDAR CHEMICAL CORPORATION
WEST HELENA, ARKANSAS
PHASE III GROUNDWATER DATA

SVOA																					
	SHORT ID --------->	2MW-6		4MW-2		EMW-1		EMW-7		OFFMW-1		OFFMW-1									
	ORIGINAL ID ----->	002G000602		004G000202		00EG000203		00EG000702		OFFG000102		OFFG000103									
	SAMPLE DATE ----->	09/22/95		09/26/95		04/02/96		09/27/95		01/09/96		04/02/96									
	DATE EXTRACTED -->	09/25/95		10/02/95		04/05/96		10/02/95		01/16/96		04/05/96									
	DATE ANALYZED --->	09/29/95		10/03/95		04/17/96		10/12/95		01/17/96		04/17/96									
	MATRIX ---------->	Water		Water		Water		Water		Water		Water									
	UNITS ---------->	UG/L		UG/L		UG/L		UG/L		UG/L		UG/L									
CAS #	Parameter	G114-5	VAL	G114-5	VAL	G114-19	VAL	G114-5	VAL	G114-18	VAL	G114-19	VAL								
83-32-9	Acenaphthene	10.	U	500.	U	10.	U	10.	U	10.	U	10.	U								
208-96-8	Acenaphthylene	10.	U	500.	U	10.	U	10.	U	10.	U	10.	U								
120-12-7	Anthracene	10.	U	500.	U	10.	U	10.	U	10.	U	10.	U								
56-55-3	Benzo(a)anthracene	10.	U	500.	U	10.	U	10.	U	10.	U	10.	U								
50-32-8	Benzo(a)pyrene	10.	U	500.	U	10.	U	10.	U	10.	U	10.	U								
205-99-2	Benzo(b)fluoranthene	10.	U	500.	U	10.	U	10.	U	10.	U	10.	U								
191-24-2	Benzo(g,h,i)perylene	10.	U	500.	U	10.	U	10.	U	10.	U	10.	U								
207-08-9	Benzo(k)fluoranthene	10.	U	500.	U	10.	U	10.	U	10.	U	10.	U								
65-85-0	Benzoic acid	20.	U	1000.	U	20.	U	20.	U	20.	U	20.	U								
100-51-6	Benzyl alcohol	10.	U	500.	U	10.	U	10.	U	10.	U	10.	U								
111-91-1	bis(2-Chloroethoxy)methane	10.	U	500.	U	10.	U	10.	U	10.	U	10.	U								
111-44-4	bis(2-Chloroethyl)ether	10.	U	500.	U	10.	U	10.	U	10.	U	10.	U								
39638-32-9	2,2'-Oxybis(2-chloro)propane	10.	U	500.	U	10.	U	10.	U	10.	U	10.	U								
117-81-7	bis(2-Ethylhexyl)phthalate (BEHP)	10.	U	500.	U	10.	U	10.	U	10.	U	10.	U								
101-55-3	4-Bromophenyl-phenylether	10.	U	500.	U	10.	U	10.	U	10.	U	10.	U								
85-68-7	Butylbenzylphthalate	10.	U	500.	U	10.	U	10.	U	10.	U	10.	U								
106-47-8	4-Chloroaniline	10.	U	500.	U	10.	U	10.	U	10.	U	10.	U								
59-50-7	4-Chloro-3-methylphenol	10.	U	500.	U	10.	U	10.	U	10.	U	10.	U								
91-58-7	2-Chloronaphthalene	10.	U	500.	U	10.	U	10.	U	10.	U	10.	U								
95-57-8	2-Chlorophenol	10.	U	500.	U	10.	U	10.	U	10.	U	10.	U								
7005-72-3	4-Chlorophenyl-phenylether	10.	U	500.	U	10.	U	10.	U	10.	U	10.	U								
218-01-9	Chrysene	10.	U	500.	U	10.	U	10.	U	10.	U	10.	U								
84-74-2	Di-n-butylphthalate	10.	U	500.	U	10.	U	10.	U	10.	U	10.	U								
117-84-0	Di-n-octylphthalate	10.	U	500.	U	10.	U	10.	U	10.	U	10.	U								
53-70-3	Dibenz(a,h)anthracene	10.	U	500.	U	10.	U	10.	U	10.	U	10.	U								
132-64-9	Dibenzofuran	10.	U	500.	U	10.	U	10.	U	10.	U	10.	U								
95-76-1	3,4-Dichloroaniline	44.		500.	U	10.	U	10.	U	10.	U	10.	U								
95-50-1	1,2-Dichlorobenzene	11.		500.	U	10.	U	10.	U	10.	U	10.	U								
541-73-1	1,3-Dichlorobenzene	10.	U	500.	U	10.	U	10.	U	10.	U	10.	U								
106-46-7	1,4-Dichlorobenzene	10.	U	500.	U	10.	U	10.	U	10.	U	10.	U								
91-94-1	3,3'-Dichlorobenzidine	20.	U	1000.	U	20.	U	20.	U	20.	U	20.	U								
120-83-2	2,4-Dichlorophenol	10.	U	500.	U	10.	U	10.	U	10.	U	10.	U								
84-66-2	Diethylphthalate	10.	U	500.	U	10.	U	10.	U	10.	U	10.	U								
105-67-9	2,4-Dimethylphenol	10.	U	500.	U	10.	U	10.	U	10.	U	10.	U								
131-11-3	Dimethylphthalate	10.	U	500.	U	10.	U	10.	U	10.	U	10.	U								
534-52-1	4,6-Dinitro-2-methylphenol	50.	U	2500.	U	50.	U	50.	U	50.	U	50.	U								
51-28-5	2,4-Dinitrophenol	50.	U	2500.	U	50.	U	50.	U	50.	U	50.	U								
121-14-2	2,4-Dinitrotoluene	10.	U	500.	U	10.	U	10.	U	10.	U	10.	U								

*** Validation Complete ***

CEDAR CHEMICAL CORPORATION
WEST HELENA, ARKANSAS
PHASE III GROUNDWATER DATA

SVOA																	
	SHORT ID --------->	2MW-6		4MW-2		EMW-1		EMW-7		OFFMW-1		OFFMW-1	
	ORIGINAL ID ----->	002G000602		004G000202		00EG000203		00EG000702		OFFG000102		OFFG000103	
	SAMPLE DATE ----->	09/22/95		09/26/95		04/02/96		09/27/95		01/09/96		04/02/96	
	DATE EXTRACTED -->	09/25/95		10/02/95		04/05/96		10/02/95		01/16/96		04/05/96	
	DATE ANALYZED --->	09/29/95		10/03/95		04/17/96		10/12/95		01/17/96		04/17/96	
	MATRIX ---------->	Water		Water		Water		Water		Water		Water	
	UNITS ---------->	UG/L		UG/L		UG/L		UG/L		UG/L		UG/L	
CAS #	Parameter	G114-5	VAL	G114-5	VAL	G114-19	VAL	G114-5	VAL	G114-18	VAL	G114-19	VAL
606-20-2	2,6-Dinitrotoluene	10.	U	500.	U	10.	U	10.	U	10.	U	10.	U
88-85-7	Dinoseb	10.	U	54000.		86.		33.		10.	U	7.	U
206-44-0	Fluoranthene	10.	U	500.	U	10.	U	10.	U	10.	U	10.	U
86-73-7	Fluorene	10.	U	500.	U	10.	U	10.	U	10.	U	10.	U
118-74-1	Hexachlorobenzene	10.	U	500.	U	10.	U	10.	U	10.	U	10.	U
87-68-3	Hexachlorobutadiene	10.	U	500.	U	10.	U	10.	U	10.	U	10.	U
77-47-4	Hexachlorocyclopentadiene	20.	U	1000.	U	20.	U	20.	U	20.	U	20.	U
67-72-1	Hexachloroethane	10.	U	500.	U	10.	U	10.	U	10.	U	10.	U
193-39-5	Indeno(1,2,3-cd)pyrene	10.	U	500.	U	10.	U	10.	U	10.	U	10.	U
78-59-1	Isophorone	10.	U	500.	U	10.	U	10.	U	10.	U	10.	U
91-57-6	2-Methylnaphthalene	10.	U	500.	U	10.	U	10.	U	10.	U	10.	U
95-48-7	2-Methylphenol (o-Cresol)	10.	U	500.	U	10.	U	10.	U	10.	U	10.	U
106-44-5	4-Methylphenol (p-Cresol)	10.	U	500.	U	10.	U	10.	U	10.	U	10.	U
621-64-7	N-Nitroso-di-n-propylamine	10.	U	500.	U	10.	U	10.	U	10.	U	10.	U
86-30-6	N-Nitrosodiphenylamine	10.	U	500.	U	10.	U	10.	U	10.	U	10.	U
91-20-3	Naphthalene	10.	U	500.	U	10.	U	10.	U	10.	U	10.	U
88-74-4	2-Nitroaniline	10.	U	500.	U	10.	U	10.	U	10.	U	10.	U
99-09-2	3-Nitroaniline	10.	U	500.	U	10.	U	10.	U	10.	U	10.	U
100-01-6	4-Nitroaniline	10.	U	500.	U	10.	U	10.	U	10.	U	10.	U
98-95-3	Nitrobenzene	10.	U	500.	U	10.	U	10.	U	10.	U	10.	U
88-75-5	2-Nitrophenol	10.	U	500.	U	10.	U	10.	U	10.	U	10.	U
100-02-7	4-Nitrophenol	50.	U	2500.	U	50.	U	50.	U	50.	U	50.	U
87-86-5	Pentachlorophenol	50.	U	2500.	U	50.	U	50.	U	50.	U	50.	U
85-01-8	Phenanthrene	10.	U	500.	U	10.	U	10.	U	10.	U	10.	U
108-95-2	Phenol	10.	U	500.	U	10.	U	10.	U	10.	U	10.	U
709-98-8	Propanil	10.	U	500.	U	10.	U	10.	U	10.	U	10.	U
129-00-0	Pyrene	10.	U	500.	U	10.	U	10.	U	10.	U	10.	U
120-82-1	1,2,4-Trichlorobenzene	10.	U	500.	U	10.	U	10.	U	10.	U	10.	U
95-95-4	2,4,5-Trichlorophenol	10.	U	500.	U	10.	U	10.	U	10.	U	10.	U
88-06-2	2,4,6-Trichlorophenol	10.	U	500.	U	10.	U	10.	U	10.	U	10.	U

*** Validation Complete ***

CEDAR CHEMICAL CORPORATION
WEST HELENA, ARKANSAS
PHASE III GROUNDWATER DATA

SVOA	SHORT ID --------->	OFFMW-2	OFFMW-2	OFFMW-2 DUP	OFFMW-3	OFFMW-3 DUP	OFFMW-3
	ORIGINAL ID ----->	OFFG000202	OFFG000203	OFFH000203	OFFG000302	OFFH000302	OFFG000303
	SAMPLE DATE ----->	01/09/96	04/02/96	04/02/96	01/09/96	01/09/96	04/02/96
	DATE EXTRACTED -->	01/16/96	04/05/96	04/05/96	01/16/96	01/16/96	04/05/96
	DATE ANALYZED --->	01/17/96	04/17/96	04/17/96	01/17/96	01/17/96	04/17/96
	MATRIX ---------->	Water	Water	Water	Water	Water	Water
	UNITS ---------->	UG/L	UG/L	UG/L	UG/L	UG/L	UG/L

CAS #	Parameter	G114-18	VAL	G114-19	VAL	G114-19	VAL	G114-18	VAL	G114-18	VAL	G114-19	VAL
83-32-9	Acenaphthene	10.	U	10.	U	10.	U	10.	U	10.	U	10.	U
208-96-8	Acenaphthylene	10.	U	10.	U	10.	U	10.	U	10.	U	10.	U
120-12-7	Anthracene	10.	U	10.	U	10.	U	10.	U	10.	U	10.	U
56-55-3	Benzo(a)anthracene	10.	U	10.	U	10.	U	10.	U	10.	U	10.	U
50-32-8	Benzo(a)pyrene	10.	U	10.	U	10.	U	10.	U	10.	U	10.	U
205-99-2	Benzo(b)fluoranthene	10.	U	10.	U	10.	U	10.	U	10.	U	10.	U
191-24-2	Benzo(g,h,i)perylene	10.	U	10.	U	10.	U	10.	U	10.	U	10.	U
207-08-9	Benzo(k)fluoranthene	10.	U	10.	U	10.	U	10.	U	10.	U	10.	U
65-85-0	Benzoic acid	20.	U	20.	U	20.	U	20.	U	20.	U	20.	U
100-51-6	Benzyl alcohol	10.	U	10.	U	10.	U	10.	U	10.	U	10.	U
111-91-1	bis(2-Chloroethoxy)methane	10.	U	10.	U	10.	U	10.	U	10.	U	10.	U
111-44-4	bis(2-Chloroethyl)ether	10.	U	10.	U	10.	U	10.	U	10.	U	10.	U
39638-32-9	2,2'-Oxybis(2-chloro)propane	10.	U	10.	U	10.	U	10.	U	10.	U	10.	U
117-81-7	bis(2-Ethylhexyl)phthalate (BEHP)	10.	U	10.	U	10.	U	10.	U	10.	U	10.	U
101-55-3	4-Bromophenyl-phenylether	10.	U	10.	U	10.	U	10.	U	10.	U	10.	U
85-68-7	Butylbenzylphthalate	10.	U	10.	U	10.	U	10.	U	10.	U	10.	U
106-47-8	4-Chloroaniline	10.	U	10.	U	10.	U	10.	U	10.	U	10.	U
59-50-7	4-Chloro-3-methylphenol	10.	U	10.	U	10.	U	10.	U	10.	U	10.	U
91-58-7	2-Chloronaphthalene	10.	U	10.	U	10.	U	10.	U	10.	U	10.	U
95-57-8	2-Chlorophenol	10.	U	10.	U	10.	U	10.	U	10.	U	10.	U
7005-72-3	4-Chlorophenyl-phenylether	10.	U	10.	U	10.	U	10.	U	10.	U	10.	U
218-01-9	Chrysene	10.	U	10.	U	10.	U	10.	U	10.	U	10.	U
84-74-2	Di-n-butylphthalate	10.	U	10.	U	10.	U	10.	U	10.	U	10.	U
117-84-0	Di-n-octylphthalate	10.	U	10.	U	10.	U	10.	U	10.	U	10.	U
53-70-3	Dibenz(a,h)anthracene	10.	U	10.	U	10.	U	10.	U	10.	U	10.	U
132-64-9	Dibenzofuran	10.	U	10.	U	10.	U	10.	U	10.	U	10.	U
95-76-1	3,4-Dichloroaniline	10.	U	10.	U	10.	U	10.	U	10.	U	10.	U
95-50-1	1,2-Dichlorobenzene	10.	U	10.	U	10.	U	10.	U	10.	U	10.	U
541-73-1	1,3-Dichlorobenzene	10.	U	10.	U	10.	U	10.	U	10.	U	10.	U
106-46-7	1,4-Dichlorobenzene	10.	U	10.	U	10.	U	10.	U	10.	U	10.	U
91-94-1	3,3'-Dichlorobenzidine	20.	U	20.	U	20.	U	20.	U	20.	U	20.	U
120-83-2	2,4-Dichlorophenol	10.	U	10.	U	10.	U	10.	U	10.	U	10.	U
84-66-2	Diethylphthalate	10.	U	10.	U	10.	U	10.	U	10.	U	10.	U
105-67-9	2,4-Dimethylphenol	10.	U	10.	U	10.	U	10.	U	10.	U	10.	U
131-11-3	Dimethylphthalate	10.	U	10.	U	10.	U	10.	U	10.	U	10.	U
534-52-1	4,6-Dinitro-2-methylphenol	50.	U	50.	U	50.	U	50.	U	50.	U	50.	U
51-28-5	2,4-Dinitrophenol	50.	U	50.	U	50.	U	50.	U	50.	U	50.	U
121-14-2	2,4-Dinitrotoluene	10.	U	10.	U	10.	U	10.	U	10.	U	10.	U

*** Validation Complete ***

CEDAR CHEMICAL CORPORATION
WEST HELENA, ARKANSAS
PHASE III GROUNDWATER DATA

SVOA	SHORT ID --------->	OFFMW-2		OFFMW-2		OFFMW-2 DUP		OFFMW-3		OFFMW-3 DUP		OFFMW-3	
	ORIGINAL ID ----->	OFFG000202		OFFG000203		OFFH000203		OFFG000302		OFFH000302		OFFG000303	
	SAMPLE DATE ----->	01/09/96		04/02/96		04/02/96		01/09/96		01/09/96		04/02/96	
	DATE EXTRACTED -->	01/16/96		04/05/96		04/05/96		01/16/96		01/16/96		04/05/96	
	DATE ANALYZED --->	01/17/96		04/17/96		04/17/96		01/17/96		01/17/96		04/17/96	
	MATRIX ---------->	Water		Water		Water		Water		Water		Water	
	UNITS ---------->	UG/L		UG/L		UG/L		UG/L		UG/L		UG/L	
CAS #	Parameter	G114-18	VAL	G114-19	VAL	G114-19	VAL	G114-18	VAL	G114-18	VAL	G114-19	VAL
606-20-2	2,6-Dinitrotoluene	10.	U	10.	U	10.	U	10.	U	10.	U	10.	U
88-85-7	Dinoseb	10.	U	7.	U	7.	U	10.	U	10.	U	7.	U
206-44-0	Fluoranthene	10.	U	10.	U	10.	U	10.	U	10.	U	10.	U
86-73-7	Fluorene	10.	U	10.	U	10.	U	10.	U	10.	U	10.	U
118-74-1	Hexachlorobenzene	10.	U	10.	U	10.	U	10.	U	10.	U	10.	U
87-68-3	Hexachlorobutadiene	10.	U	10.	U	10.	U	10.	U	10.	U	10.	U
77-47-4	Hexachlorocyclopentadiene	20.	U	20.	U	20.	U	20.	U	20.	U	20.	U
67-72-1	Hexachloroethane	10.	U	10.	U	10.	U	10.	U	10.	U	10.	U
193-39-5	Indeno(1,2,3-cd)pyrene	10.	U	10.	U	10.	U	10.	U	10.	U	10.	U
78-59-1	Isophorone	10.	U	10.	U	10.	U	10.	U	10.	U	10.	U
91-57-6	2-Methylnaphthalene	10.	U	10.	U	10.	U	10.	U	10.	U	10.	U
95-48-7	2-Methylphenol (o-Cresol)	10.	U	10.	U	10.	U	10.	U	10.	U	10.	U
106-44-5	4-Methylphenol (p-Cresol)	10.	U	10.	U	10.	U	10.	U	10.	U	10.	U
621-64-7	N-Nitroso-di-n-propylamine	10.	U	10.	U	10.	U	10.	U	10.	U	10.	U
86-30-6	N-Nitrosodiphenylamine	10.	U	10.	U	10.	U	10.	U	10.	U	10.	U
91-20-3	Naphthalene	10.	U	10.	U	10.	U	10.	U	10.	U	10.	U
88-74-4	2-Nitroaniline	10.	U	10.	U	10.	U	10.	U	10.	U	10.	U
99-09-2	3-Nitroaniline	10.	U	10.	U	10.	U	10.	U	10.	U	10.	U
100-01-6	4-Nitroaniline	10.	U	10.	U	10.	U	10.	U	10.	U	10.	U
98-95-3	Nitrobenzene	10.	U	10.	U	10.	U	10.	U	10.	U	10.	U
88-75-5	2-Nitrophenol	10.	U	10.	U	10.	U	10.	U	10.	U	10.	U
100-02-7	4-Nitrophenol	50.	U	50.	U	50.	U	50.	U	50.	U	50.	U
87-86-5	Pentachlorophenol	50.	U	50.	U	50.	U	50.	U	50.	U	50.	U
85-01-8	Phenanthrene	10.	U	10.	U	10.	U	10.	U	10.	U	10.	U
108-95-2	Phenol	10.	U	10.	U	10.	U	10.	U	10.	U	10.	U
709-98-8	Propanil	10.	U	10.	U	10.	U	10.	U	10.	U	10.	U
129-00-0	Pyrene	10.	U	10.	U	10.	U	10.	U	10.	U	10.	U
120-82-1	1,2,4-Trichlorobenzene	10.	U	10.	U	10.	U	10.	U	10.	U	10.	U
95-95-4	2,4,5-Trichlorophenol	10.	U	10.	U	10.	U	10.	U	10.	U	10.	U
88-06-2	2,4,6-Trichlorophenol	10.	U	10.	U	10.	U	10.	U	10.	U	10.	U

*** Validation Complete ***

CEDAR CHEMICAL CORPORATION
WEST HELENA, ARKANSAS
PHASE III GROUNDWATER DATA

SVOA									
	SHORT ID -------->	OFFMW-4		OFFMW-4					
	ORIGINAL ID ----->	OFFG000402		OFFG000403					
	SAMPLE DATE ----->	01/09/96		04/02/96					
	DATE EXTRACTED -->	01/16/96		04/05/96					
	DATE ANALYZED --->	01/17/96		04/17/96					
	MATRIX ---------->	Water		Water					
	UNITS ----------->	UG/L		UG/L					
CAS #	Parameter	G114-18	VAL	G114-19	VAL				
83-32-9	Acenaphthene	10.	U	10.	U				
208-96-8	Acenaphthylene	10.	U	10.	U				
120-12-7	Anthracene	10.	U	10.	U				
56-55-3	Benzo(a)anthracene	10.	U	10.	U				
50-32-8	Benzo(a)pyrene	10.	U	10.	U				
205-99-2	Benzo(b)fluoranthene	10.	U	10.	U				
191-24-2	Benzo(g,h,i)perylene	10.	U	10.	U				
207-08-9	Benzo(k)fluoranthene	10.	U	10.	U				
65-85-0	Benzoic acid	20.	U	20.	U				
100-51-6	Benzyl alcohol	10.	U	10.	U				
111-91-1	bis(2-Chloroethoxy)methane	10.	U	10.	U				
111-44-4	bis(2-Chloroethyl)ether	10.	U	10.	U				
39638-32-9	2,2'-Oxybis(2-chloro)propane	10.	U	10.	U				
117-81-7	bis(2-Ethylhexyl)phthalate (BEHP)	10.	U	10.	U				
101-55-3	4-Bromophenyl-phenylether	10.	U	10.	U				
85-68-7	Butylbenzylphthalate	10.	U	10.	U				
106-47-8	4-Chloroaniline	10.	U	10.	U				
59-50-7	4-Chloro-3-methylphenol	10.	U	10.	U				
91-58-7	2-Chloronaphthalene	10.	U	10.	U				
95-57-8	2-Chlorophenol	10.	U	10.	U				
7005-72-3	4-Chlorophenyl-phenylether	10.	U	10.	U				
218-01-9	Chrysene	10.	U	10.	U				
84-74-2	Di-n-butylphthalate	10.	U	10.	U				
117-84-0	Di-n-octylphthalate	10.	U	10.	U				
53-70-3	Dibenz(a,h)anthracene	10.	U	10.	U				
132-64-9	Dibenzofuran	10.	U	10.	U				
95-76-1	3,4-Dichloroaniline	10.	U	10.	U				
95-50-1	1,2-Dichlorobenzene	10.	U	10.	U				
541-73-1	1,3-Dichlorobenzene	10.	U	10.	U				
106-46-7	1,4-Dichlorobenzene	10.	U	10.	U				
91-94-1	3,3'-Dichlorobenzidine	20.	U	20.	U				
120-83-2	2,4-Dichlorophenol	10.	U	10.	U				
84-66-2	Diethylphthalate	10.	U	10.	U				
105-67-9	2,4-Dimethylphenol	10.	U	10.	U				
131-11-3	Dimethylphthalate	10.	U	10.	U				
534-52-1	4,6-Dinitro-2-methylphenol	50.	U	50.	U				
51-28-5	2,4-Dinitrophenol	50.	U	50.	U				
121-14-2	2,4-Dinitrotoluene	10.	U	10.	U				

*** Validation Complete ***

CEDAR CHEMICAL CORPORATION
WEST HELENA, ARKANSAS
PHASE III GROUNDWATER DATA

SVOA									
	SHORT ID -------->	OFFMW-4		OFFMW-4					
	ORIGINAL ID ----->	OFFG000402		OFFG000403					
	SAMPLE DATE ----->	01/09/96		04/02/96					
	DATE EXTRACTED -->	01/16/96		04/05/96					
	DATE ANALYZED --->	01/17/96		04/17/96					
	MATRIX ---------->	Water		Water					
	UNITS ----------->	UG/L		UG/L					
CAS #	Parameter	G114-18	VAL	G114-19	VAL				
606-20-2	2,6-Dinitrotoluene	10.	U	10.	U				
88-85-7	Dinoseb	10.	U	7.	U				
206-44-0	Fluoranthene	10.	U	10.	U				
86-73-7	Fluorene	10.	U	10.	U				
118-74-1	Hexachlorobenzene	10.	U	10.	U				
87-68-3	Hexachlorobutadiene	10.	U	10.	U				
77-47-4	Hexachlorocyclopentadiene	20.	U	20.	U				
67-72-1	Hexachloroethane	10.	U	10.	U				
193-39-5	Indeno(1,2,3-cd)pyrene	10.	U	10.	U				
78-59-1	Isophorone	10.	U	10.	U				
91-57-6	2-Methylnaphthalene	10.	U	10.	U				
95-48-7	2-Methylphenol (o-Cresol)	10.	U	10.	U				
106-44-5	4-Methylphenol (p-Cresol)	10.	U	10.	U				
621-64-7	N-Nitroso-di-n-propylamine	10.	U	10.	U				
86-30-6	N-Nitrosodiphenylamine	10.	U	10.	U				
91-20-3	Naphthalene	10.	U	10.	U				
88-74-4	2-Nitroaniline	10.	U	10.	U				
99-09-2	3-Nitroaniline	10.	U	10.	U				
100-01-6	4-Nitroaniline	10.	U	10.	U				
98-95-3	Nitrobenzene	10.	U	10.	U				
88-75-5	2-Nitrophenol	10.	U	10.	U				
100-02-7	4-Nitrophenol	50.	U	50.	U				
87-86-5	Pentachlorophenol	50.	U	50.	U				
85-01-8	Phenanthrene	10.	U	10.	U				
108-95-2	Phenol	10.	U	10.	U				
709-98-8	Propanil	10.	U	10.	U				
129-00-0	Pyrene	10.	U	10.	U				
120-82-1	1,2,4-Trichlorobenzene	10.	U	10.	U				
95-95-4	2,4,5-Trichlorophenol	10.	U	10.	U				
88-06-2	2,4,6-Trichlorophenol	10.	U	10.	U				

*** Validation Complete ***

CEDAR CHEMICAL CORPORATION
WEST HELENA, ARKANSAS
PHASE III GROUNDWATER DATA

VOA	SHORT ID --------->	1GB-12 (80')		1GB-12 (100')		1GB-7 (100')		1GB-12 (120')		2MW-6		4MW-2	
	ORIGINAL ID ----->	001G001203		001G001204		001GGB0704		001GGB1205		002G000602		004G000202	
	SAMPLE DATE ----->	10/19/95		10/19/95		09/27/95		11/03/95		09/22/95		09/26/95	
	DATE EXTRACTED -->	11/01/95		11/01/95		09/30/95		11/06/95		10/04/95		10/02/95	
	DATE ANALYZED --->	11/01/95		11/01/95		09/30/95		11/06/95		10/04/95		10/02/95	
	MATRIX ---------->	Water		Water		Water		Water		Water		Water	
	UNITS ---------->	UG/L		UG/L		UG/L		UG/L		UG/L		UG/L	
CAS #	Parameter	G114-11	VAL	G114-11	VAL	G114-5	VAL	G114-13	VAL	G114-5	VAL	G114-5	VAL
67-64-1	Acetone	25.	U	25.	U	25.	U	25.	U	43.		25.	U
71-43-2	Benzene	10.	U	10.	U	10.	U	10.	U	10.	U	10.	U
75-27-4	Bromodichloromethane	10.	U	10.	U	10.	U	10.	U	10.	U	10.	U
75-25-2	Bromoform	10.	U	10.	U	10.	U	10.	U	10.	U	10.	U
74-83-9	Bromomethane	10.	U	10.	U	10.	U	10.	U	10.	U	10.	U
78-93-3	2-Butanone (MEK)	10.	U	10.	U	10.	U	10.	U	10.	U	13.	
75-15-0	Carbon disulfide	10.	U	10.	U	10.	U	10.	U	10.	U	14.	
56-23-5	Carbon tetrachloride	10.	U	10.	U	10.	U	10.	U	10.	U	10.	U
108-90-7	Chlorobenzene	10.	U	10.	U	10.	U	10.	U	10.	U	10.	U
75-00-3	Chloroethane	10.	U	10.	U	10.	U	10.	U	10.	U	10.	U
110-75-8	2-Chloroethylvinylether	10.	U	10.	U	10.	U	10.	U	10.	U	10.	U
67-66-3	Chloroform	10.	U	10.	U	10.	U	10.	U	10.	U	760.	
74-87-3	Chloromethane	10.	U	10.	U	10.	U	10.	U	10.	U	10.	U
124-48-1	Dibromochloromethane	10.	U	10.	U	10.	U	10.	U	10.	U	10.	U
95-50-1	1,2-Dichlorobenzene	10.	U	10.	U	10.	U	10.	U	17.		76.	
541-73-1	1,3-Dichlorobenzene	10.	U	10.	U	10.	U	10.	U	10.	U	10.	U
106-46-7	1,4-Dichlorobenzene	10.	U	10.	U	10.	U	10.	U	10.	U	10.	U
75-34-3	1,1-Dichloroethane	10.	U	10.	U	10.	U	10.	U	10.	U	10.	U
107-06-2	1,2-Dichloroethane	10.	U	10.	U	150.		10.	U	10.	U	260.	
75-35-4	1,1-Dichloroethene	10.	U	10.	U	10.	U	10.	U	10.	U	10.	U
156-59-2	cis-1,2-Dichloroethene	10.	U	10.	U	10.	U	10.	U	10.	U	10.	U
156-60-5	trans-1,2-Dichloroethene	10.	U	10.	U	10.	U	10.	U	10.	U	10.	U
78-87-5	1,2-Dichloropropane	10.	U	10.	U	10.	U	10.	U	10.	U	10.	U
10061-01-5	cis-1,3-Dichloropropene	10.	U	10.	U	10.	U	10.	U	10.	U	10.	U
10061-02-6	trans-1,3-Dichloropropene	10.	U	10.	U	10.	U	10.	U	10.	U	10.	U
100-41-4	Ethylbenzene	10.	U	10.	U	10.	U	10.	U	10.	U	10.	U
75-69-4	Trichlorofluoromethane	10.	U	10.	U	10.	U	10.	U	10.	U	10.	U
591-78-6	2-Hexanone	10.	U	10.	U	10.	U	10.	U	10.	U	10.	U
108-10-1	4-Methyl-2-Pentanone (MIBK)	10.	U	10.	U	10.	U	10.	U	10.	U	10.	U
75-09-2	Methylene chloride	10.	U	10.	U	10.	U	10.	U	10.	U	460.	
100-42-5	Styrene	10.	U	10.	U	10.	U	10.	U	10.	U	10.	U
79-34-5	1,1,2,2-Tetrachloroethane	10.	U	10.	U	10.	U	10.	U	10.	U	10.	U
127-18-4	Tetrachloroethene	10.	U	10.	U	10.	U	10.	U	10.	U	10.	U
108-88-3	Toluene	10.	U	10.	U	10.	U	10.	U	10.	U	10.	U
71-55-6	1,1,1-Trichloroethane	10.	U	10.	U	10.	U	10.	U	10.	U	10.	U
79-00-5	1,1,2-Trichloroethane	10.	U	10.	U	10.	U	10.	U	10.	U	10.	U
79-01-6	Trichloroethene	10.	U	10.	U	10.	U	10.	U	10.	U	10.	U
108-05-4	Vinyl acetate	10.	U	10.	U	10.	U	10.	U	10.	U	10.	U

*** Validation Complete ***

CEDAR CHEMICAL CORPORATION
WEST HELENA, ARKANSAS
PHASE III GROUNDWATER DATA

VOA		SHORT ID --------->	1GB-12 (80')		1GB-12 (100')		1GB-7 (100')		1GB-12 (120')		2MW-6		4MW-2	
		ORIGINAL ID ----->	001G001203		001G001204		001GGB0704		001GGB1205		002G000602		004G000202	
		SAMPLE DATE ----->	10/19/95		10/19/95		09/27/95		11/03/95		09/22/95		09/26/95	
		DATE EXTRACTED -->	11/01/95		11/01/95		09/30/95		11/06/95		10/04/95		10/02/95	
		DATE ANALYZED --->	11/01/95		11/01/95		09/30/95		11/06/95		10/04/95		10/02/95	
		MATRIX ---------->	Water		Water		Water		Water		Water		Water	
		UNITS ----------->	UG/L		UG/L		UG/L		UG/L		UG/L		UG/L	
CAS #	Parameter		G114-11	VAL	G114-11	VAL	G114-5	VAL	G114-13	VAL	G114-5	VAL	G114-5	VAL
75-01-4	Vinyl chloride		10.	U	10.	U	10.	U	10.	U	10.	U	10.	U
1330-20-7	Xylene (total)		10.	U	10.	U	10.	U	10.	U	10.	U	12.	
95-47-6	o-Xylene		10.	U	10.	U	10.	U	10.	U	10.	U	10.	U

*** Validation Complete ***

CEDAR CHEMICAL CORPORATION
WEST HELENA, ARKANSAS
PHASE III GROUNDWATER DATA

VOA	SHORT ID --------->	4GB-7 (80')		4GB-9 (118')		4GB-10 (134')		4GB-12 (100')		EMW-1		EMW-7	
	ORIGINAL ID ----->	004GGB0703		004GGB0905		004GGB1005		004GGB1204		00EG000203		00EG000702	
	SAMPLE DATE ----->	10/05/95		11/01/95		11/02/95		11/06/95		04/02/96		09/27/95	
	DATE EXTRACTED -->	10/17/95		11/06/95		11/10/95		11/15/95		04/12/96		10/02/95	
	DATE ANALYZED --->	10/17/95		11/06/95		11/10/95		11/15/95		04/12/96		10/02/95	
	MATRIX ---------->	Water		Water		Water		Water		Water		Water	
	UNITS ---------->	UG/L		UG/L		UG/L		UG/L		UG/L		UG/L	
CAS #	Parameter	G114-5	VAL	G114-13	VAL	G114-13	VAL	G114-13	VAL	G114-19	VAL	G114-5	VAL
67-64-1	Acetone	100.		25.	U	25.	U	25.	U	25.	U	25.	U
71-43-2	Benzene	10.	U	10.	U	10.	U	10.	U	10.	U	10.	U
75-27-4	Bromodichloromethane	10.	U	10.	U	10.	U	10.	U	10.	U	10.	U
75-25-2	Bromoform	10.	U	10.	U	10.	U	10.	U	10.	U	10.	U
74-83-9	Bromomethane	10.	U	10.	U	10.	U	10.	U	10.	U	10.	U
78-93-3	2-Butanone (MEK)	10.	U	10.	U	10.	U	10.	U	10.	U	10.	U
75-15-0	Carbon disulfide	10.	U	10.	U	10.	U	10.	U	10.	U	10.	U
56-23-5	Carbon tetrachloride	10.	U	10.	U	10.	U	10.	U	10.	U	10.	U
108-90-7	Chlorobenzene	10.	U	10.	U	10.	U	10.	U	10.	U	10.	
75-00-3	Chloroethane	10.	U	10.	U	10.	U	10.	U	10.	U	11.	U
110-75-8	2-Chloroethylvinylether	10.	U	10.	U	10.	U	10.	U	10.	U	10.	U
67-66-3	Chloroform	10.	U	10.	U	10.	U	10.	U	10.	U	10.	U
74-87-3	Chloromethane	10.	U	10.	U	10.	U	10.	U	10.	U	10.	U
124-48-1	Dibromochloromethane	10.	U	10.	U	10.	U	10.	U	10.	U	10.	U
95-50-1	1,2-Dichlorobenzene	10.	U	10.	U	10.	U	10.	U	10.	U	10.	U
541-73-1	1,3-Dichlorobenzene	10.	U	10.	U	10.	U	10.	U	10.	U	10.	U
106-46-7	1,4-Dichlorobenzene	10.	U	10.	U	10.	U	10.	U	10.	U	10.	U
75-34-3	1,1-Dichloroethane	10.	U	10.	U	10.	U	10.	U	10.	U	10.	U
107-06-2	1,2-Dichloroethane	3700.		10.	U	10.	U	10.	U	10.	U	87000.	
75-35-4	1,1-Dichloroethene	10.	U	10.	U	10.	U	10.	U	10.	U	10.	U
156-59-2	cis-1,2-Dichloroethene	10.	U	10.	U	10.	U	10.	U	10.	U	10.	U
156-60-5	trans-1,2-Dichloroethene	10.	U	10.	U	10.	U	10.	U	10.	U	10.	
78-87-5	1,2-Dichloropropane	10.	U	10.	U	10.	U	10.	U	10.	U	150.	U
10061-01-5	cis-1,3-Dichloropropene	10.	U	10.	U	10.	U	10.	U	10.	U	10.	U
10061-02-6	trans-1,3-Dichloropropene	10.	U	10.	U	10.	U	10.	U	10.	U	10.	U
100-41-4	Ethylbenzene	10.	U	10.	U	10.	U	10.	U	10.	U	10.	U
75-69-4	Trichlorofluoromethane	10.	U	10.	U	10.	U	10.	U	10.	U	10.	U
591-78-6	2-Hexanone	10.	U	10.	U	10.	U	10.	U	10.	U	10.	U
108-10-1	4-Methyl-2-Pentanone (MIBK)	10.	U	10.	U	10.	U	10.	U	10.	U	10.	U
75-09-2	Methylene chloride	10.	U	10.	U	10.	U	10.	U	10.	U	10.	U
100-42-5	Styrene	10.	U	10.	U	10.	U	10.	U	10.	U	10.	U
79-34-5	1,1,2,2-Tetrachloroethane	10.	U	10.	U	10.	U	10.	U	10.	U	10.	U
127-18-4	Tetrachloroethene	10.	U	10.	U	10.	U	10.	U	10.	U	10.	U
108-88-3	Toluene	10.	U	10.	U	10.	U	10.	U	10.	U	10.	U
71-55-6	1,1,1-Trichloroethane	10.	U	10.	U	10.	U	10.	U	10.	U	10.	U
79-00-5	1,1,2-Trichloroethane	10.	U	10.	U	10.	U	10.	U	10.	U	10.	U
79-01-6	Trichloroethene	10.	U	10.	U	10.	U	10.	U	10.	U	10.	U
108-05-4	Vinyl acetate	10.	U	10.	U	10.	U	10.	U	10.	U	10.	

*** Validation Complete ***

CEDAR CHEMICAL CORPORATION
WEST HELENA, ARKANSAS
PHASE III GROUNDWATER DATA

VOA							
SHORT ID -------->	4GB-7 (80')	4GB-9 (118')	4GB-10 (134')	4GB-12 (100')	EMW-1	EMW-7	
ORIGINAL ID ----->	004GGB0703	004GGB0905	004GGB1005	004GGB1204	00EG000203	00EG000702	
SAMPLE DATE ----->	10/05/95	11/01/95	11/02/95	11/06/95	04/02/96	09/27/95	
DATE EXTRACTED -->	10/17/95	11/06/95	11/10/95	11/15/95	04/12/96	10/02/95	
DATE ANALYZED --->	10/17/95	11/06/95	11/10/95	11/15/95	04/12/96	10/02/95	
MATRIX ---------->	Water	Water	Water	Water	Water	Water	
UNITS ---------->	UG/L	UG/L	UG/L	UG/L	UG/L	UG/L	
CAS #	Parameter	G114-5 VAL	G114-13 VAL	G114-13 VAL	G114-13 VAL	G114-19 VAL	G114-5 VAL
75-01-4	Vinyl chloride	10. U	10. U	10. U	10. U	10. U	23. U
1330-20-7	Xylene (total)	10. U	10. U	10. U	10. U	10. U	10. U
95-47-6	o-Xylene	10. U	10. U	10. U	10. U	10. U	10.

*** Validation Complete ***

CEDAR CHEMICAL CORPORATION
WEST HELENA, ARKANSAS
PHASE III GROUNDWATER DATA

VOA	SHORT ID -------->	BH-1		BH-1		OFFMW-1		OFFMW-1		OFFMW-2		OFFMW-2	
	ORIGINAL ID ----->	BHIGAG0101		BHIGAG0102		OFFG000102		OFFG000103		OFFG000202		OFFG000203	
	SAMPLE DATE ----->	10/02/95		11/07/95		01/09/96		04/02/96		01/09/96		04/02/96	
	DATE EXTRACTED -->	10/04/95		11/15/95		01/19/96		04/11/96		01/22/96		04/12/96	
	DATE ANALYZED --->	10/04/95		11/15/95		01/19/96		04/11/96		01/22/96		04/12/96	
	MATRIX ---------->	Water		Water		Water		Water		Water		Water	
	UNITS ---------->	UG/L		UG/L		UG/L		UG/L		UG/L		UG/L	
CAS #	Parameter	G114-5	VAL	G114-13	VAL	G114-18	VAL	G114-19	VAL	G114-18	VAL	G114-19	VAL
67-64-1	Acetone	25.	U	25.	U	25.	U	25.	U	25.	U	25.	U
71-43-2	Benzene	10.	U	10.	U	10.	U	10.	U	10.	U	10.	U
75-27-4	Bromodichloromethane	10.	U	10.	U	10.	U	10.	U	10.	U	10.	U
75-25-2	Bromoform	10.	U	10.	U	10.	U	10.	U	10.	U	10.	U
74-83-9	Bromomethane	10.	U	10.	U	10.	U	10.	U	10.	U	10.	U
78-93-3	2-Butanone (MEK)	10.	U	10.	U	10.	U	10.	U	77.		10.	U
75-15-0	Carbon disulfide	10.	U	10.	U	10.	U	10.	U	10.	U	10.	U
56-23-5	Carbon tetrachloride	10.	U	10.	U	10.	U	10.	U	10.	U	10.	U
108-90-7	Chlorobenzene	10.	U	10.	U	10.	U	10.	U	10.	U	10.	U
75-00-3	Chloroethane	10.	U	10.	U	10.	U	10.	U	10.	U	10.	U
110-75-8	2-Chloroethylvinylether	10.	U	10.	U	10.	U	10.	U	10.	U	10.	U
67-66-3	Chloroform	10.	U	10.	U	10.	U	10.	U	10.	U	10.	U
74-87-3	Chloromethane	10.	U	10.	U	10.	U	10.	U	10.	U	10.	U
124-48-1	Dibromochloromethane	10.	U	10.	U	10.	U	10.	U	10.	U	10.	U
95-50-1	1,2-Dichlorobenzene	10.	U	10.	U	10.	U	10.	U	10.	U	10.	U
541-73-1	1,3-Dichlorobenzene	10.	U	10.	U	10.	U	10.	U	10.	U	10.	U
106-46-7	1,4-Dichlorobenzene	10.	U	10.	U	10.	U	10.	U	10.	U	10.	U
75-34-3	1,1-Dichloroethane	10.	U	10.	U	10.	U	10.	U	10.	U	10.	U
107-06-2	1,2-Dichloroethane	10.	U	1600.		10.	U	10.	U	110.		140.	
75-35-4	1,1-Dichloroethene	10.	U	10.	U	10.	U	10.	U	10.	U	10.	U
156-59-2	cis-1,2-Dichloroethene	10.	U	10.	U	10.	U	10.	U	10.	U	10.	U
156-60-5	trans-1,2-Dichloroethene	10.	U	10.	U	10.	U	10.	U	10.	U	10.	U
78-87-5	1,2-Dichloropropane	10.	U	10.	U	10.	U	10.	U	10.	U	10.	U
10061-01-5	cis-1,3-Dichloropropene	10.	U	10.	U	10.	U	10.	U	10.	U	10.	U
10061-02-6	trans-1,3-Dichloropropene	10.	U	10.	U	10.	U	10.	U	10.	U	10.	U
100-41-4	Ethylbenzene	10.	U	10.	U	10.	U	10.	U	10.	U	10.	U
75-69-4	Trichlorofluoromethane	10.	U	10.	U	10.	U	10.	U	10.	U	10.	U
591-78-6	2-Hexanone	10.	U	10.	U	10.	U	10.	U	10.	U	10.	U
108-10-1	4-Methyl-2-Pentanone (MIBK)	10.	U	10.	U	10.	U	10.	U	10.	U	10.	U
75-09-2	Methylene chloride	10.	U	10.	U	10.	U	10.	U	10.	U	10.	U
100-42-5	Styrene	10.	U	10.	U	10.	U	10.	U	10.	U	10.	U
79-34-5	1,1,2,2-Tetrachloroethane	10.	U	10.	U	10.	U	10.	U	10.	U	10.	U
127-18-4	Tetrachloroethene	10.	U	10.	U	10.	U	10.	U	10.	U	10.	U
108-88-3	Toluene	10.	U	10.	U	10.	U	10.	U	10.	U	10.	U
71-55-6	1,1,1-Trichloroethane	10.	U	10.	U	10.	U	10.	U	10.	U	10.	U
79-00-5	1,1,2-Trichloroethane	10.	U	10.	U	10.	U	10.	U	10.	U	10.	U
79-01-6	Trichloroethene	10.	U	10.	U	10.	U	10.	U	10.	U	10.	U
108-05-4	Vinyl acetate	10.	U	10.	U	10.	U	10.	U	10.	U	10.	U

*** Validation Complete ***

CEDAR CHEMICAL CORPORATION
WEST HELENA, ARKANSAS
PHASE III GROUNDWATER DATA

VOA													
	SHORT ID -------->	BH-1		BH-1		OFFMW-1		OFFMW-1		OFFMW-2		OFFMW-2	
	ORIGINAL ID ----->	BHIGAG0101		BHIGAG0102		OFFG000102		OFFG000103		OFFG000202		OFFG000203	
	SAMPLE DATE ----->	10/02/95		11/07/95		01/09/96		04/02/96		01/09/96		04/02/96	
	DATE EXTRACTED -->	10/04/95		11/15/95		01/19/96		04/11/96		01/22/96		04/12/96	
	DATE ANALYZED --->	10/04/95		11/15/95		01/19/96		04/11/96		01/22/96		04/12/96	
	MATRIX ---------->	Water		Water		Water		Water		Water		Water	
	UNITS ---------->	UG/L		UG/L		UG/L		UG/L		UG/L		UG/L	
CAS #	Parameter	G114-5	VAL	G114-13	VAL	G114-18	VAL	G114-19	VAL	G114-18	VAL	G114-19	VAL
75-01-4	Vinyl chloride	10.	U	10.	U	10.	U	10.	U	10.	U	10.	U
1330-20-7	Xylene (total)	10.	U	10.	U	10.	U	10.	U	10.	U	10.	U
95-47-6	o-Xylene	10.	U	10.	U	10.	U	10.	U	10.	U	10.	U

*** Validation Complete ***

CEDAR CHEMICAL CORPORATION
WEST HELENA, ARKANSAS
PHASE III GROUNDWATER DATA

VOA	SHORT ID -------->	OFFMW-2 DUP		OFFMW-3		OFFMW-3 DUP		OFFMW-3		OFFMW-4		OFFMW-4	
	ORIGINAL ID ----->	OFFH000203		OFFG000302		OFFH000302		OFFG000303		OFFG000402		OFFG000403	
	SAMPLE DATE ----->	04/02/96		01/09/96		01/09/96		04/02/96		01/09/96		04/02/96	
	DATE EXTRACTED -->	04/12/96		01/19/96		01/19/96		04/11/96		01/19/96		04/11/96	
	DATE ANALYZED --->	04/12/96		01/19/96		01/19/96		04/11/96		01/19/96		04/11/96	
	MATRIX ---------->	Water		Water		Water		Water		Water		Water	
	UNITS ---------->	UG/L		UG/L		UG/L		UG/L		UG/L		UG/L	
CAS #	Parameter	G114-19	VAL	G114-18	VAL	G114-18	VAL	G114-19	VAL	G114-18	VAL	G114-19	VAL
67-64-1	Acetone	25.	U	25.	U	25.	U	25.	U	25.	U	25.	U
71-43-2	Benzene	10.	U	10.	U	10.	U	10.	U	10.	U	10.	U
75-27-4	Bromodichloromethane	10.	U	10.	U	10.	U	10.	U	10.	U	10.	U
75-25-2	Bromoform	10.	U	10.	U	10.	U	10.	U	10.	U	10.	U
74-83-9	Bromomethane	10.	U	10.	U	10.	U	10.	U	10.	U	10.	U
78-93-3	2-Butanone (MEK)	10.		10.	U	10.	U	10.	U	10.	U	10.	U
75-15-0	Carbon disulfide	10.	U	10.	U	10.	U	10.	U	10.	U	10.	U
56-23-5	Carbon tetrachloride	10.	U	10.	U	10.	U	10.	U	10.	U	10.	U
108-90-7	Chlorobenzene	10.	U	10.	U	10.	U	10.	U	10.	U	10.	U
75-00-3	Chloroethane	10.	U	10.	U	10.	U	10.	U	10.	U	10.	U
110-75-8	2-Chloroethylvinylether	10.	U	10.	U	10.	U	10.	U	10.	U	10.	U
67-66-3	Chloroform	10.	U	10.	U	10.	U	10.	U	10.	U	10.	U
74-87-3	Chloromethane	10.	U	10.	U	10.	U	10.	U	10.	U	10.	U
124-48-1	Dibromochloromethane	10.	U	10.	U	10.	U	10.	U	10.	U	10.	U
95-50-1	1,2-Dichlorobenzene	10.	U	10.	U	10.	U	10.	U	10.	U	10.	U
541-73-1	1,3-Dichlorobenzene	10.	U	10.	U	10.	U	10.	U	10.	U	10.	U
106-46-7	1,4-Dichlorobenzene	10.	U	10.	U	10.	U	10.	U	10.	U	10.	U
75-34-3	1,1-Dichloroethane	10.	U	10.	U	10.	U	10.	U	10.	U	10.	U
107-06-2	1,2-Dichloroethane	130.		10.	U	10.	U	10.	U	10.	U	10.	U
75-35-4	1,1-Dichloroethene	10.	U	10.	U	10.	U	10.	U	10.	U	10.	U
156-59-2	cis-1,2-Dichloroethene	10.	U	10.	U	10.	U	10.	U	10.	U	10.	U
156-60-5	trans-1,2-Dichloroethene	10.	U	10.	U	10.	U	10.	U	10.	U	10.	U
78-87-5	1,2-Dichloropropane	10.	U	10.	U	10.	U	10.	U	10.	U	10.	U
10061-01-5	cis-1,3-Dichloropropene	10.	U	10.	U	10.	U	10.	U	10.	U	10.	U
10061-02-6	trans-1,3-Dichloropropene	10.	U	10.	U	10.	U	10.	U	10.	U	10.	U
100-41-4	Ethylbenzene	10.	U	10.	U	10.	U	10.	U	10.	U	10.	U
75-69-4	Trichlorofluoromethane	10.	U	10.	U	10.	U	10.	U	10.	U	10.	U
591-78-6	2-Hexanone	10.	U	10.	U	10.	U	10.	U	10.	U	10.	U
108-10-1	4-Methyl-2-Pentanone (MIBK)	10.	U	10.	U	10.	U	10.	U	10.	U	10.	U
75-09-2	Methylene chloride	10.	U	10.	U	10.	U	10.	U	10.	U	10.	U
100-42-5	Styrene	10.	U	10.	U	10.	U	10.	U	10.	U	10.	U
79-34-5	1,1,2,2-Tetrachloroethane	10.	U	10.	U	10.	U	10.	U	10.	U	10.	U
127-18-4	Tetrachloroethene	10.	U	10.	U	10.	U	10.	U	10.	U	10.	U
108-88-3	Toluene	10.	U	10.	U	10.	U	10.	U	10.	U	10.	U
71-55-6	1,1,1-Trichloroethane	10.	U	10.	U	10.	U	10.	U	10.	U	10.	U
79-00-5	1,1,2-Trichloroethane	10.	U	10.	U	10.	U	10.	U	10.	U	10.	U
79-01-6	Trichloroethene	10.	U	10.	U	10.	U	10.	U	10.	U	10.	U
108-05-4	Vinyl acetate	10.	U	10.	U	10.	U	10.	U	10.	U	10.	U

*** Validation Complete ***

CEDAR CHEMICAL CORPORATION
WEST HELENA, ARKANSAS
PHASE III GROUNDWATER DATA

VOA													
	SHORT ID --------->	OFFMW-2 DUP		OFFMW-3		OFFMW-3 DUP		OFFMW-3		OFFMW-4		OFFMW-4	
	ORIGINAL ID ----->	OFFH000203		OFFG000302		OFFH000302		OFFG000303		OFFG000402		OFFG000403	
	SAMPLE DATE ----->	04/02/96		01/09/96		01/09/96		04/02/96		01/09/96		04/02/96	
	DATE EXTRACTED -->	04/12/96		01/19/96		01/19/96		04/11/96		01/19/96		04/11/96	
	DATE ANALYZED --->	04/12/96		01/19/96		01/19/96		04/11/96		01/19/96		04/11/96	
	MATRIX ---------->	Water		Water		Water		Water		Water		Water	
	UNITS ---------->	UG/L		UG/L		UG/L		UG/L		UG/L		UG/L	
CAS #	Parameter	G114-19	VAL	G114-18	VAL	G114-18	VAL	G114-19	VAL	G114-18	VAL	G114-19	VAL
75-01-4	Vinyl chloride	10.	U	10.	U	10.	U	10.	U	10.	U	10.	U
1330-20-7	Xylene (total)	10.	U	10.	U	10.	U	10.	U	10.	U	10.	U
95-47-6	o-Xylene	10.	U	10.	U	10.	U	10.	U	10.	U	10.	U

*** Validation Complete ***

CEDAR CHEMICAL GROUNDWATER
WEST HELENA, ARKANSAS
PHASE I GROUNDWATER

WQPL		SHORT ID --------->	EMW-6		EMW-7		EMW-6A		EMW-6B			
		ORIGINAL ID ----->	CEDE-GWMW6		CEDE-GWMW7		CEDE-GWMW6A		CEDE-GWMW6B			
		SAMPLE DATE ----->	09/24/93		09/23/93		09/24/93		09/24/93			
		DATE ANALYZED --->	10/12/93		10/12/93		10/12/93		10/12/93			
		MATRIX ---------->	Water		Water		Water		Water			
		UNITS ----------->	MG/L		MG/L		MG/L		MG/L			
CAS #	Parameter		E012	VAL	E012	VAL	E012	VAL	E012	VAL		
10-13-9	BICARBONATE		490.		270.		290.		540.			
14797-55-8	Nitrate (as N)		0.2	U	0.2	U	0.2	U	0.2	U		
14808-79-8	Sulfate		25.		290.		14.		35.			
16887-00-6	Chloride		29.		260.		160.		560.			
7664-41-7	Ammonia (as N)		0.1	U	0.4		0.8		0.1	U		
F	Fluoride		0.3		0.3		0.6		0.5			
CN	Cyanide		0.01	U	0.01	U	0.01	U	0.01	U		

*** Validation Complete ***

CEDAR CHEMICAL CORPORATION
WEST HELENA, ARKANSAS
PHASE II GROUNDWATER DATA

ARSENIC													
	SHORT ID -------->	1MW-1		1MW-2		1MW-3		1MW-4		1MW-5		1MW-6	
	ORIGINAL ID ----->	001G000101		001G000201		001G000301		001G000401		001G000501		001G000601	
	SAMPLE DATE ----->	11/29/94		11/29/94		11/30/94		11/30/94		11/30/94		11/30/94	
	DATE EXTRACTED -->	12/02/94		12/02/94		12/02/94		12/02/94		12/02/94		12/02/94	
	DATE ANALYZED --->	12/02/94		12/02/94		12/02/94		12/02/94		12/02/94		12/02/94	
	MATRIX ---------->	Water		Water		Water		Water		Water		Water	
	UNITS ----------->	MG/L		MG/L		MG/L		MG/L		MG/L		MG/L	
CAS #	Parameter	10834	VAL	10834	VAL	10834	VAL	10834	VAL	10834	VAL	10834	VAL
7440-38-2	Arsenic (As)	0.05	U	0.05	U	0.05	U	0.05	U	0.05	U	0.05	U

*** Validation Complete ***

CEDAR CHEMICAL CORPORATION
WEST HELENA, ARKANSAS
PHASE II GROUNDWATER DATA

ARSENIC													
	SHORT ID -------->	1GB-1 (36')		1GB-2 (42')		1GB-2 (61.5')		1GB-2 (80')		1GB-2 (102')		1GB-3 (37.5')	
	ORIGINAL ID ----->	001GGB0101		001GGB0201		001GGB0202		001GGB0203		001GGB0204		001GGB0301	
	SAMPLE DATE ----->	12/20/94		12/20/94		12/21/94		12/22/94		12/23/94		12/21/94	
	DATE EXTRACTED -->	12/23/94		12/23/94		12/23/94		12/27/94		12/27/94		12/23/94	
	DATE ANALYZED --->	12/27/94		12/27/94		12/27/94		12/27/94		12/27/94		12/27/94	
	MATRIX ---------->	Water		Water		Water		Water		Water		Water	
	UNITS ----------->	MG/L		MG/L		MG/L		MG/L		MG/L		MG/L	
CAS #	Parameter	11213	VAL	11213	VAL	11213	VAL	11234	VAL	11234	VAL	11213	VAL
7440-38-2	Arsenic (As)	0.44		0.12		0.05	U	0.05	U	0.05	U	0.05	U

*** Validation Complete ***

CEDAR CHEMICAL CORPORATION
WEST HELENA, ARKANSAS
PHASE II GROUNDWATER DATA

ARSENIC													
	SHORT ID --------->	1GB-3 (60')		1GB-3 (80')		1GB-3 (100')		1GB-4 (40')		1GB-4 (40') Dup		1GB-4 (60')	
	ORIGINAL ID ----->	001GGB0302		001GGB0303		001GGB0304		001GGB0401		001HGB0401		001GGB0402	
	SAMPLE DATE ----->	12/23/94		12/23/94		12/23/94		01/05/95		01/05/95		01/09/95	
	DATE EXTRACTED -->	12/27/94		12/27/94		12/27/94		01/09/95		01/09/95		01/12/95	
	DATE ANALYZED --->	12/27/94		12/27/94		12/27/94		01/09/95		01/09/95		01/12/95	
	MATRIX ---------->	Water		Water		Water		Water		Water		Water	
	UNITS ----------->	MG/L		MG/L		MG/L		MG/L		MG/L		MG/L	
CAS #	Parameter	11234	VAL	11234	VAL	11234	VAL	11379	VAL	11379	VAL	11462	VAL
7440-38-2	Arsenic (As)	0.05	U	0.05	U	0.05	U	0.05	U	0.05	U	0.05	U

*** Validation Complete ***

CEDAR CHEMICAL CORPORATION
WEST HELENA, ARKANSAS
PHASE II GROUNDWATER DATA

ARSENIC	SHORT ID --------->	1GB-4 (80')	1GB-4 (107')	1MW-7	2MW-2	2MW-3	2MW-4
	ORIGINAL ID ----->	001GGB0403	001GGB0404	001GW00701	002G000201	002G000301	002G000401
	SAMPLE DATE ----->	01/09/95	01/09/95	01/13/95	12/01/94	12/02/94	12/02/94
	DATE EXTRACTED -->	01/12/95	01/12/95	01/16/95	12/06/94	12/06/94	12/06/94
	DATE ANALYZED --->	01/12/95	01/12/95	01/16/95	12/06/94	12/06/94	12/06/94
	MATRIX ---------->	Water	Water	Water	Water	Water	Water
	UNITS ---------->	MG/L	MG/L	MG/L	MG/L	MG/L	MG/L

CAS #	Parameter	11462	VAL	11462	VAL	11513	VAL	10867	VAL	10867	VAL	10867	VAL
7440-38-2	Arsenic (As)	0.05	U	0.05	U	0.05	U	0.21		0.32		0.05	U

*** Validation Complete ***

CEDAR CHEMICAL CORPORATION
WEST HELENA, ARKANSAS
PHASE II GROUNDWATER DATA

ARSENIC													
	SHORT ID -------->	2MW-4 Dup		2MW-5		2MW-7		2MW-7		4MW-1		4MW-2	
	ORIGINAL ID ----->	002H000401		002G000501		002G000701		002GW00701		004G000101		004G000201	
	SAMPLE DATE ----->	12/02/94		12/01/94		12/23/94		01/19/95		12/15/94		12/15/94	
	DATE EXTRACTED -->	12/06/94		12/06/94		12/27/94		01/23/95		12/19/94		12/19/94	
	DATE ANALYZED --->	12/06/94		12/06/94		12/27/94		01/25/95		12/19/94		12/19/94	
	MATRIX ---------->	Water		Water		Water		Water		Water		Water	
	UNITS ----------->	MG/L		MG/L		MG/L		MG/L		MG/L		MG/L	
CAS #	Parameter	10867	VAL	10867	VAL	11234	VAL	11626	VAL	11134	VAL	11134	VAL
7440-38-2	Arsenic (As)	0.05	U	0.05	U	0.05	U	0.05	U	0.075		0.05	U

*** Validation Complete ***

CEDAR CHEMICAL CORPORATION
WEST HELENA, ARKANSAS
PHASE II GROUNDWATER DATA

ARSENIC						
SHORT ID --------->	4GB-4 (40')	4GB-4 (60')	4GB-4 (80')	4GB-4 (100')	4MW-3	4MW-4
ORIGINAL ID ----->	004G00G401	004G00G402	004G00G403	004G00G404	004GW00301	004GW00404
SAMPLE DATE ----->	01/31/95	01/31/95	01/31/95	01/31/95	01/13/95	01/20/95
DATE EXTRACTED -->	02/02/95	02/02/95	02/02/95	02/02/95	01/16/95	01/23/95
DATE ANALYZED --->	02/03/95	02/03/95	02/03/95	02/03/95	01/16/95	01/25/95
MATRIX ---------->	Water	Water	Water	Water	Water	Water
UNITS ---------->	MG/L	MG/L	MG/L	MG/L	MG/L	MG/L

CAS #	Parameter	11834	VAL	11834	VAL	11834	VAL	11834	VAL	11513	VAL	11626	VAL
7440-38-2	Arsenic (As)	0.05	U	0.05	U	0.05	U	0.05	U	0.05	U	0.05	U

*** Validation Complete ***

CEDAR CHEMICAL CORPORATION
WEST HELENA, ARKANSAS
PHASE II GROUNDWATER DATA

ARSENIC													
	SHORT ID -------->	EMW-1		EMW-2		EMW-3		EMW-4		EMW-4 Dup		EMW-6	
	ORIGINAL ID ----->	00EG000101		00EG000201		00EG000301		00EG000401		00EH000401		00EG000601	
	SAMPLE DATE ----->	11/30/94		12/01/94		12/01/94		12/01/94		12/01/94		11/30/94	
	DATE EXTRACTED -->	12/02/94		12/06/94		12/06/94		12/06/94		12/06/94		12/06/94	
	DATE ANALYZED --->	12/02/94		12/06/94		12/06/94		12/06/94		12/06/94		12/06/94	
	MATRIX ---------->	Water		Water		Water		Water		Water		Water	
	UNITS ---------->	MG/L		MG/L		MG/L		MG/L		MG/L		MG/L	
CAS #	Parameter	10834	VAL	10867	VAL	10867	VAL	10867	VAL	10867	VAL	10867	VAL
7440-38-2	Arsenic (As)	0.05	U	0.05	U	0.05	U	0.05	U	0.05	U	0.05	U

*** Validation Complete ***

CEDAR CHEMICAL CORPORATION
WEST HELENA, ARKANSAS
PHASE II GROUNDWATER DATA

ARSENIC							
	SHORT ID --------->	EMW-7	EMW-6A	EMW-6B			
	ORIGINAL ID ----->	00EG000701	00EG0006A0	00EG0006B01			
	SAMPLE DATE ----->	12/01/94	11/30/94	11/30/94			
	DATE EXTRACTED -->	12/06/94	12/06/94	12/02/94			
	DATE ANALYZED --->	12/06/94	12/06/94	12/02/94			
	MATRIX ---------->	Water	Water	Water			
	UNITS ---------->	MG/L	MG/L	MG/L			
CAS #	Parameter	10867 VAL	10867 VAL	10834 VAL			
7440-38-2	Arsenic (As)	0.05 U	0.05 U	0.05 U			

*** Validation Complete ***

CEDAR CHEMICAL CORPORATION
WEST HELENA, ARKANSAS
PHASE II GROUNDWATER DATA

DCA

SHORT ID --------->	4GB-4 (40')	4GB-4 (60')	4GB-4 (80')	4GB-4 (100')		
ORIGINAL ID ----->	004G00G401	004G00G402	004G00G403	004G00G404		
SAMPLE DATE ----->	01/31/95	01/31/95	01/31/95	01/31/95		
DATE ANALYZED --->	02/06/95	02/06/95	02/06/95	02/07/95		
MATRIX ---------->	Water	Water	Water	Water		
UNITS ----------->	UG/L	UG/L	UG/L	UG/L		

CAS #	Parameter	11834	VAL	11834	VAL	11834	VAL	11834	VAL		
95-76-1	3,4-Dichloroaniline	10.	U	10.	U	10.	U	10.	U		

*** Validation Complete ***

CEDAR CHEMICAL CORPORATION
WEST HELENA, ARKANSAS
PHASE II GROUNDWATER DATA

LEAD												
	SHORT ID -------->	1MW-3		1MW-4		1MW-5		1MW-6		1GB-1 (36')		1GB-2 (42')	
	ORIGINAL ID ----->	001G000301		001G000401		001G000501		001G000601		001GGB0101		001GGB0201	
	SAMPLE DATE ----->	11/30/94		11/30/94		11/30/94		11/30/94		12/20/94		12/20/94	
	DATE EXTRACTED -->	12/02/94		12/02/94		12/02/94		12/02/94		12/23/94		12/23/94	
	DATE ANALYZED --->	12/02/94		12/02/94		12/02/94		12/02/94		12/27/94		12/27/94	
	MATRIX ---------->	Water		Water		Water		Water		Water		Water	
	UNITS ---------->	MG/L		MG/L		MG/L		MG/L		MG/L		MG/L	
CAS #	Parameter	10834	VAL	10834	VAL	10834	VAL	10834	VAL	11213	VAL	11213	VAL
7439-92-1	Lead (Pb)	0.0098		0.011		0.0052		0.0029		0.047		0.49	

*** Validation Complete ***

CEDAR CHEMICAL CORPORATION
WEST HELENA, ARKANSAS
PHASE II GROUNDWATER DATA

LEAD

	SHORT ID -------->	1GB-2 (61.5')	1GB-2 (80')	1GB-2 (102')	1GB-3 (37.5')	1GB-3 (60')	1GB-3 (80')
	ORIGINAL ID ----->	001GGB0202	001GGB0203	001GGB0204	001GGB0301	001GGB0302	001GGB0303
	SAMPLE DATE ----->	12/21/94	12/22/94	12/23/94	12/21/94	12/23/94	12/23/94
	DATE EXTRACTED -->	12/23/94	12/27/94	12/27/94	12/23/94	12/27/94	12/27/94
	DATE ANALYZED --->	12/27/94	12/27/94	12/27/94	12/27/94	12/27/94	12/27/94
	MATRIX ---------->	Water	Water	Water	Water	Water	Water
	UNITS ----------->	MG/L	MG/L	MG/L	MG/L	MG/L	MG/L
CAS #	Parameter	11213 VAL	11234 VAL	11234 VAL	11213 VAL	11234 VAL	11234 VAL
7439-92-1	Lead (Pb)	0.096	0.03	0.28	0.12	0.041	0.057

*** Validation Complete ***

CEDAR CHEMICAL CORPORATION
WEST HELENA, ARKANSAS
PHASE II GROUNDWATER DATA

LEAD	SHORT ID --------->	1GB-3 (100')		1GB-4 (40')		1GB-4 (40') Dup		1GB-4 (60')		1GB-4 (80')		1GB-4 (107')	
	ORIGINAL ID ----->	001GGB0304		001GGB0401		001HGB0401		001GGB0402		001GGB0403		001GGB0404	
	SAMPLE DATE ----->	12/23/94		01/05/95		01/05/95		01/09/95		01/09/95		01/09/95	
	DATE EXTRACTED -->	12/27/94		01/09/95		01/09/95		01/12/95		01/12/95		01/12/95	
	DATE ANALYZED --->	12/27/94		01/09/95		01/09/95		01/12/95		01/12/95		01/12/95	
	MATRIX ---------->	Water		Water		Water		Water		Water		Water	
	UNITS ---------->	MG/L		MG/L		MG/L		MG/L		MG/L		MG/L	
CAS #	Parameter	11234	VAL	11379	VAL	11379	VAL	11462	VAL	11462	VAL	11462	VAL
7439-92-1	Lead (Pb)	0.064		0.061		0.066		0.16		0.077		0.3	

*** Validation Complete ***

CEDAR CHEMICAL CORPORATION
WEST HELENA, ARKANSAS
PHASE II GROUNDWATER DATA

LEAD	SHORT ID -------->	1MW-7	2MW-2	2MW-3	2MW-4	2MW-4 Dup	2MW-5
	ORIGINAL ID ----->	001GW00701	002G000201	002G000301	002G000401	002H000401	002G000501
	SAMPLE DATE ----->	01/13/95	12/01/94	12/02/94	12/02/94	12/02/94	12/01/94
	DATE EXTRACTED -->	01/16/95	12/06/94	12/06/94	12/06/94	12/06/94	12/06/94
	DATE ANALYZED --->	01/16/95	12/06/94	12/06/94	12/06/94	12/06/94	12/06/94
	MATRIX ---------->	Water	Water	Water	Water	Water	Water
	UNITS ---------->	MG/L	MG/L	MG/L	MG/L	MG/L	MG/L

CAS #	Parameter	11513	VAL	10867	VAL	10867	VAL	10867	VAL	10867	VAL	10867	VAL
7439-92-1	Lead (Pb)	0.001	U	0.001	U	0.001	U	0.001	U	0.001	U	0.001	U

*** Validation Complete ***

CEDAR CHEMICAL CORPORATION
WEST HELENA, ARKANSAS
PHASE II GROUNDWATER DATA

LEAD	SHORT ID -------->	2MW-7	2MW-7	4MW-1	4MW-2	4GB-4 (40')	4GB-4 (60')
	ORIGINAL ID ----->	002G000701	002GW00701	004G000101	004G000201	004G00G401	004G00G402
	SAMPLE DATE ----->	12/23/94	01/19/95	12/15/94	12/15/94	01/31/95	01/31/95
	DATE EXTRACTED -->	12/27/94	01/23/95	12/19/94	12/19/94	02/02/95	02/02/95
	DATE ANALYZED --->	12/27/94	01/25/95	12/19/94	12/19/94	02/03/95	02/03/95
	MATRIX ---------->	Water	Water	Water	Water	Water	Water
	UNITS ---------->	MG/L	MG/L	MG/L	MG/L	MG/L	MG/L

CAS #	Parameter	11234	VAL	11626	VAL	11134	VAL	11134	VAL	11834	VAL	11834	VAL
7439-92-1	Lead (Pb)	0.049		0.001	U	0.0039		0.001	U	0.0036		0.03	

*** Validation Complete ***

CEDAR CHEMICAL CORPORATION
WEST HELENA, ARKANSAS
PHASE II GROUNDWATER DATA

LEAD												
	SHORT ID --------->	4GB-4 (80')		4GB-4 (100')		4MW-3		4MW-4		EMW-1		EMW-2	
	ORIGINAL ID ----->	004G00G403		004G00G404		004GW00301		004GW00404		00EG000101		00EG000201	
	SAMPLE DATE ----->	01/31/95		01/31/95		01/13/95		01/20/95		11/30/94		12/01/94	
	DATE EXTRACTED -->	02/02/95		02/02/95		01/16/95		01/23/95		12/02/94		12/06/94	
	DATE ANALYZED --->	02/03/95		02/03/95		01/16/95		01/25/95		12/02/94		12/06/94	
	MATRIX ---------->	Water		Water		Water		Water		Water		Water	
	UNITS ---------->	MG/L		MG/L		MG/L		MG/L		MG/L		MG/L	
CAS #	Parameter	11834	VAL	11834	VAL	11513	VAL	11626	VAL	10834	VAL	10867	VAL
7439-92-1	Lead (Pb)	0.0091		0.0071		0.001	U	0.001	U	0.001	U	0.001	U

*** Validation Complete ***

CEDAR CHEMICAL CORPORATION
WEST HELENA, ARKANSAS
PHASE II GROUNDWATER DATA

LEAD	SHORT ID --------->	EMW-3	EMW-4	EMW-4 Dup	EMW-6	EMW-7	EMW-6A
	ORIGINAL ID ----->	00EG000301	00EG000401	00EH000401	00EG000601	00EG000701	00EG0006AD
	SAMPLE DATE ----->	12/01/94	12/01/94	12/01/94	11/30/94	12/01/94	11/30/94
	DATE EXTRACTED -->	12/06/94	12/06/94	12/06/94	12/06/94	12/06/94	12/06/94
	DATE ANALYZED --->	12/06/94	12/06/94	12/06/94	12/06/94	12/06/94	12/06/94
	MATRIX ---------->	Water	Water	Water	Water	Water	Water
	UNITS ---------->	MG/L	MG/L	MG/L	MG/L	MG/L	MG/L
CAS #	Parameter	10867 VAL	10867 VAL	10867 VAL	10867 VAL	10867 VAL	10867 VAL
7439-92-1	Lead (Pb)	0.001 U	0.001 U	0.001 U	0.001 U	0.001 U	0.001 U

*** Validation Complete ***

CEDAR CHEMICAL CORPORATION
WEST HELENA, ARKANSAS
PHASE II GROUNDWATER DATA

LEAD

SHORT ID -------->	EMW-68
ORIGINAL ID ----->	00EG006801
SAMPLE DATE ----->	11/30/94
DATE EXTRACTED -->	12/02/94
DATE ANALYZED --->	12/02/94
MATRIX ---------->	Water
UNITS ----------->	MG/L

CAS #	Parameter	10834 VAL
7439-92-1	Lead (Pb)	0.0088

*** Validation Complete ***

CEDAR CHEMICAL CORPORATION
WEST HELENA, ARKANSAS
PHASE II GROUNDWATER DATA

METAL

SHORT ID --------->	9MW-1
ORIGINAL ID ----->	009GW00101
SAMPLE DATE ----->	01/13/95
DATE EXTRACTED -->	01/16/95
DATE ANALYZED --->	01/16/95
MATRIX ---------->	Water
UNITS ----------->	MG/L

CAS #	Parameter	11513	VAL
7429-90-5	Aluminum (Al)	0.15	
7440-36-0	Antimony (Sb)	0.003	U
7440-38-2	Arsenic (As)	0.12	
7440-39-3	Barium (Ba)	0.13	
7440-41-7	Beryllium (Be)	0.0003	U
7440-43-9	Cadmium (Cd)	0.004	U
7440-70-2	Calcium (Ca)	52.	
7440-47-3	Chromium (Cr)	0.007	U
7440-48-4	Cobalt (Co)	0.007	U
7439-89-6	Iron (Fe)	6.5	
7439-92-1	Lead (Pb)	0.001	U
7439-95-4	Magnesium (Mg)	27.	
7439-96-5	Manganese (Mn)	6.6	
7439-97-6	Mercury (Hg)	0.0002	U
7440-02-0	Nickel (Ni)	0.01	U
7440-09-7	Potassium (K)	8.4	
7782-49-2	Selenium (Se)	0.07	U
7440-22-4	Silver (Ag)	0.007	U
7440-28-0	Thallium (Tl)	0.001	U
7440-62-2	Vanadium (V)	0.056	
7440-66-6	Zinc (Zn)	0.0026	

*** Validation Complete ***

CEDAR CHEMICAL CORPORATION
WEST HELENA, ARKANSAS
PHASE II GROUNDWATER DATA

PEST		SHORT ID --------->	1MW-3		1MW-4		1MW-5		1MW-6		1GB-1 (36')		1GB-2 (42')	
		ORIGINAL ID ----->	001G000301		001G000401		001G000501		001G000601		001GGB0101		001GGB0201	
		SAMPLE DATE ----->	11/30/94		11/30/94		11/30/94		11/30/94		12/20/94		12/20/94	
		DATE EXTRACTED -->	12/04/94		12/04/94		12/04/94		12/04/94		12/22/94		12/22/94	
		DATE ANALYZED --->	12/06/94		12/06/94		12/06/94		12/06/94		12/23/94		12/23/94	
		MATRIX ---------->	Water		Water		Water		Water		Water		Water	
		UNITS ---------->	UG/L		UG/L		UG/L		UG/L		UG/L		UG/L	
CAS #	Parameter		10834	VAL	10834	VAL	10834	VAL	10834	VAL	11213	VAL	11213	VAL
319-84-6	Alpha-BHC		0.03	U	0.03	U	0.03	U	0.03	U	0.03	U	0.03	U
319-85-7	Beta-BHC		0.06	U	0.06	U	0.06	U	0.06	U	0.06	U	0.06	U
319-86-8	Delta-BHC		0.09	U	0.09	U	0.09	U	0.09	U	0.09	U	0.09	U
58-89-9	gamma-BHC (Lindane)		0.04	U	0.04	U	0.04	U	0.04	U	0.04	U	0.04	U
76-44-8	Heptachlor		0.03	U	0.03	U	0.03	U	0.03	U	0.03	U	0.03	U
309-00-2	Aldrin		0.04	U	0.04	U	0.04	U	0.04	U	0.04	U	0.04	U
1024-57-3	Heptachlor Epoxide		0.83	U	0.83	U	0.83	U	0.83	U	0.83	U	0.83	U
959-98-8	Endosulfan I		0.14	U	0.14	U	0.14	U	0.14	U	0.14	U	0.14	U
60-57-1	Dieldrin		0.02	U	0.02	U	0.02	U	0.02	U	0.02	U	0.02	U
72-55-9	4,4'-DDE		0.04	U	0.04	U	0.04	U	0.04	U	0.04	U	0.04	U
72-20-8	Endrin		0.06	U	0.06	U	0.06	U	0.06	U	0.06	U	0.06	U
33213-65-9	Endosulfan II		0.04	U	0.04	U	0.04	U	0.04	U	0.04	U	0.04	U
72-54-8	4,4'-DDD		0.11	U	0.11	U	0.11	U	0.11	U	0.11	U	0.11	U
7421-93-4	Endrin aldehyde		0.23	U	0.23	U	0.23	U	0.23	U	0.23	U	0.23	U
1031-07-8	Endosulfan Sulfate		0.66	U	0.66	U	0.66	U	0.66	U	0.66	U	0.66	U
50-29-3	4,4'-DDT		0.12	U	0.12	U	0.12	U	0.12	U	0.12	U	0.12	U
72-43-5	Methoxychlor		1.8	U	1.8	U	1.8	U	1.8	U	1.8	U	1.8	U
57-74-9	Chlordane		0.14	U	0.14	U	0.14	U	0.14	U	0.14	U	0.14	U
8001-35-2	Toxaphene		2.4	U	2.4	U	2.4	U	2.4	U	2.4	U	2.4	U
12674-11-2	Aroclor-1016		0.89	U	0.89	U	0.89	U	0.89	U	0.89	U	0.89	U
11104-28-2	Aroclor-1221		2.7	U	2.7	U	2.7	U	2.7	U	2.7	U	2.7	U
11141-16-5	Aroclor-1232		0.48	U	0.48	U	0.48	U	0.48	U	0.48	U	0.48	U
53469-21-9	Aroclor-1242		0.65	U	0.65	U	0.65	U	0.65	U	0.65	U	0.65	U
12672-29-6	Aroclor-1248		2.6	U	2.6	U	2.6	U	2.6	U	2.6	U	2.6	U
11097-69-1	Aroclor-1254		1.2	U	1.2	U	1.2	U	1.2	U	1.2	U	1.2	U
11096-82-5	Aroclor-1260		0.36	U	0.36	U	0.36	U	0.36	U	0.36	U	0.36	U

*** Validation Complete ***

CEDAR CHEMICAL CORPORATION
WEST HELENA, ARKANSAS
PHASE II GROUNDWATER DATA

PEST	SHORT ID --------->	1GB-2 (61.5')		1GB-2 (80')		1GB-2 (102')		1GB-3 (37.5')		1GB-3 (60')		1GB-3 (80')	
	ORIGINAL ID ----->	001GGB0202		001GGB0203		001GGB0204		001GGB0301		001GGB0302		001GGB0303	
	SAMPLE DATE ----->	12/21/94		12/22/94		12/23/94		12/21/94		12/23/94		12/23/94	
	DATE EXTRACTED -->	12/22/94		12/28/94		12/28/94		12/22/94		12/28/94		12/28/94	
	DATE ANALYZED --->	12/23/94		12/29/94		12/29/94		12/23/94		12/29/94		12/30/94	
	MATRIX ---------->	Water		Water		Water		Water		Water		Water	
	UNITS ---------->	UG/L		UG/L		UG/L		UG/L		UG/L		UG/L	
CAS #	Parameter	11213	VAL	11234	VAL	11234	VAL	11213	VAL	11234	VAL	11234	VAL
319-84-6	Alpha-BHC	0.03	U	0.03	U	0.03	U	0.03	U	0.03	U	0.03	U
319-85-7	Beta-BHC	0.06	U	0.06	U	0.06	U	0.06	U	0.06	U	0.06	U
319-86-8	Delta-BHC	0.09	U	0.09	U	0.09	U	0.09	U	0.09	U	0.09	U
58-89-9	gamma-BHC (Lindane)	0.04	U	0.04	U	0.04	U	0.04	U	0.04	U	0.04	U
76-44-8	Heptachlor	0.03	U	0.03	U	0.03	U	0.03	U	0.03	U	0.03	U
309-00-2	Aldrin	0.04	U	0.04	U	0.04	U	0.04	U	0.04	U	0.04	U
1024-57-3	Heptachlor Epoxide	0.83	U	0.83	U	0.83	U	0.83	U	0.83	U	0.83	U
959-98-8	Endosulfan I	0.14	U	0.14	U	0.14	U	0.14	U	0.14	U	0.14	U
60-57-1	Dieldrin	0.02	U	0.02	U	0.02	U	0.02	U	0.02	U	0.02	U
72-55-9	4,4'-DDE	0.04	U	0.04	U	0.04	U	0.04	U	0.04	U	0.04	U
72-20-8	Endrin	0.06	U	0.06	U	0.06	U	0.06	U	0.06	U	0.06	U
33213-65-9	Endosulfan II	0.04	U	0.04	U	0.04	U	0.04	U	0.04	U	0.04	U
72-54-8	4,4'-DDD	0.11	U	0.11	U	0.11	U	0.11	U	0.11	U	0.11	U
7421-93-4	Endrin aldehyde	0.23	U	0.23	U	0.23	U	0.23	U	0.23	U	0.23	U
1031-07-8	Endosulfan Sulfate	0.66	U	0.66	U	0.66	U	0.66	U	0.66	U	0.66	U
50-29-3	4,4'-DDT	0.12	U	0.12	U	0.12	U	0.12	U	0.12	U	0.12	U
72-43-5	Methoxychlor	1.8	U	1.8	U	1.8	U	1.8	U	1.8	U	1.8	U
57-74-9	Chlordane	0.14	U	0.14	U	0.14	U	0.14	U	0.14	U	0.14	U
8001-35-2	Toxaphene	2.4	U	2.4	U	2.4	U	2.4	U	2.4	U	2.4	U
12674-11-2	Aroclor-1016	0.89	U	0.89	U	0.89	U	0.89	U	0.89	U	0.89	U
11104-28-2	Aroclor-1221	2.7	U	2.7	U	2.7	U	2.7	U	2.7	U	2.7	U
11141-16-5	Aroclor-1232	0.48	U	0.48	U	0.48	U	0.48	U	0.48	U	0.48	U
53469-21-9	Aroclor-1242	0.65	U	0.65	U	0.65	U	0.65	U	0.65	U	0.65	U
12672-29-6	Aroclor-1248	2.6	U	2.6	U	2.6	U	2.6	U	2.6	U	2.6	U
11097-69-1	Aroclor-1254	1.2	U	1.2	U	1.2	U	1.2	U	1.2	U	1.2	U
11096-82-5	Aroclor-1260	0.36	U	0.36	U	0.36	U	0.36	U	0.36	U	0.36	U

*** Validation Complete ***

CEDAR CHEMICAL CORPORATION
WEST HELENA, ARKANSAS
PHASE II GROUNDWATER DATA

PEST							
SHORT ID --------->	1GB-3 (100')	2MW-2	2MW-3	2MW-4	2MW-4 Dup	2MW-5
ORIGINAL ID ----->	001GGB0304	002G000201	002G000301	002G000401	002H000401	002G000501
SAMPLE DATE ----->	12/23/94	12/01/94	12/02/94	12/02/94	12/02/94	12/01/94
DATE EXTRACTED -->	12/28/94	12/06/94	12/06/94	12/07/94	12/07/94	12/06/94
DATE ANALYZED --->	12/30/94	12/08/94	12/08/94	12/08/94	12/08/94	12/08/94
MATRIX ---------->	Water	Water	Water	Water	Water	Water
UNITS ---------->	UG/L	UG/L	UG/L	UG/L	UG/L	UG/L

CAS #	Parameter	11234	VAL	10867	VAL	10867	VAL	10867	VAL	10867	VAL	10867	VAL
319-84-6	Alpha-BHC	0.03	U	0.03	U	0.03	U	0.03	U	0.03	U	0.03	U
319-85-7	Beta-BHC	0.06	U	0.06	U	0.06	U	0.06	U	0.06	U	0.06	U
319-86-8	Delta-BHC	0.09	U	0.09	U	0.09	U	0.09	U	0.09	U	0.09	U
58-89-9	gamma-BHC (Lindane)	0.04	U	0.04	U	0.04	U	0.04	U	0.04	U	0.04	U
76-44-8	Heptachlor	0.03	U	0.03	U	0.03	U	0.03	U	0.03	U	0.03	U
309-00-2	Aldrin	0.04	U	0.04	U	0.04	U	0.04	U	0.04	U	0.04	U
1024-57-3	Heptachlor Epoxide	0.83	U	0.83	U	0.83	U	0.83	U	0.83	U	0.83	U
959-98-8	Endosulfan I	0.14	U	0.14	U	0.14	U	0.14	U	0.14	U	0.14	U
60-57-1	Dieldrin	0.02	U	0.02	U	0.02	U	0.02	U	0.02	U	0.02	U
72-55-9	4,4'-DDE	0.04	U	0.04	U	0.04	U	0.04	U	0.04	U	0.04	U
72-20-8	Endrin	0.06	U	0.06	U	0.06	U	0.06	U	0.06	U	0.06	U
33213-65-9	Endosulfan II	0.04	U	0.04	U	0.04	U	0.04	U	0.04	U	0.04	U
72-54-8	4,4'-DDD	0.11	U	0.11	U	0.11	U	0.11	U	0.11	U	0.11	U
7421-93-4	Endrin aldehyde	0.23	U	0.23	U	0.23	U	0.23	U	0.23	U	0.23	U
1031-07-8	Endosulfan Sulfate	0.66	U	0.66	U	0.66	U	0.66	U	0.66	U	0.66	U
50-29-3	4,4'-DDT	0.12	U	0.12	U	0.12	U	0.12	U	0.12	U	0.12	U
72-43-5	Methoxychlor	1.8	U	1.8	U	1.8	U	1.8	U	1.8	U	1.8	U
57-74-9	Chlordane	0.14	U	0.14	U	0.14	U	0.14	U	0.14	U	0.14	U
8001-35-2	Toxaphene	2.4	U	2.4	U	2.4	U	2.4	U	2.4	U	2.4	U
12674-11-2	Aroclor-1016	0.89	U	0.89	U	0.89	U	0.89	U	0.89	U	0.89	U
11104-28-2	Aroclor-1221	2.7	U	2.7	U	2.7	U	2.7	U	2.7	U	2.7	U
11141-16-5	Aroclor-1232	0.48	U	0.48	U	0.48	U	0.48	U	0.48	U	0.48	U
53469-21-9	Aroclor-1242	0.65	U	0.65	U	0.65	U	0.65	U	0.65	U	0.65	U
12672-29-6	Aroclor-1248	2.6	U	2.6	U	2.6	U	2.6	U	2.6	U	2.6	U
11097-69-1	Aroclor-1254	1.2	U	1.2	U	1.2	U	1.2	U	1.2	U	1.2	U
11096-82-5	Aroclor-1260	0.36	U	0.36	U	0.36	U	0.36	U	0.36	U	0.36	U

*** Validation Complete ***

CEDAR CHEMICAL CORPORATION
WEST HELENA, ARKANSAS
PHASE II GROUNDWATER DATA

PEST

	SHORT ID --------->	4MW-1	4MW-2	4GB-4 (40')	4GB-4 (60')	4GB-4 (80')	4GB-4 (100')
	ORIGINAL ID ----->	004G000101	004G000201	004G00G401	004G00G402	004G00G403	004G00G404
	SAMPLE DATE ----->	12/15/94	12/15/94	01/31/95	01/31/95	01/31/95	01/31/95
	DATE EXTRACTED -->	12/20/94	12/20/94	02/03/95	02/03/95	02/03/95	02/03/95
	DATE ANALYZED --->	12/21/94	12/21/94	02/07/95	02/07/95	02/07/95	02/07/95
	MATRIX ---------->	Water	Water	Water	Water	Water	Water
	UNITS ---------->	UG/L	UG/L	UG/L	UG/L	UG/L	UG/L

CAS #	Parameter	11134	VAL	11134	VAL	11834	VAL	11834	VAL	11834	VAL	11834	VAL
319-84-6	Alpha-BHC	0.03	U	0.03	U	0.03	U	0.03	U	0.03	U	0.03	U
319-85-7	Beta-BHC	0.06	U	0.06	U	0.06	U	0.06	U	0.06	U	0.06	U
319-86-8	Delta-BHC	0.09	U	0.09	U	0.09	U	0.09	U	0.09	U	0.09	U
58-89-9	gamma-BHC (Lindane)	0.04	U	0.04	U	0.04	U	0.04	U	0.04	U	0.04	U
76-44-8	Heptachlor	0.03	U	0.03	U	0.03	U	0.03	U	0.03	U	0.03	U
309-00-2	Aldrin	0.04	U	0.04	U	0.04	U	0.04	U	0.04	U	0.04	U
1024-57-3	Heptachlor Epoxide	0.83	U	0.83	U	0.83	U	0.83	U	0.83	U	0.83	U
959-98-8	Endosulfan I	0.14	U	0.14	U	0.14	U	0.14	U	0.14	U	0.14	U
60-57-1	Dieldrin	0.02	U	0.02	U	0.02	U	0.02	U	0.02	U	0.02	U
72-55-9	4,4'-DDE	0.04	U	0.04	U	0.04	U	0.04	U	0.04	U	0.04	U
72-20-8	Endrin	0.06	U	0.06	U	0.06	U	0.06	U	0.06	U	0.06	U
33213-65-9	Endosulfan II	0.04	U	0.04	U	0.04	U	0.04	U	0.04	U	0.04	U
72-54-8	4,4'-DDD	0.11	U	0.11	U	0.11	U	0.11	U	0.11	U	0.11	U
7421-93-4	Endrin aldehyde	0.23	U	0.23	U	0.23	U	0.23	U	0.23	U	0.23	U
1031-07-8	Endosulfan Sulfate	0.66	U	0.66	U	0.66	U	0.66	U	0.66	U	0.66	U
50-29-3	4,4'-DDT	0.12	U	0.12	U	0.12	U	0.12	U	0.12	U	0.12	U
72-43-5	Methoxychlor	1.8	U	1.8	U	1.8	U	1.8	U	1.8	U	1.8	U
57-74-9	Chlordane	0.14	U	0.14	U	0.14	U	0.14	U	0.14	U	0.14	U
8001-35-2	Toxaphene	2.4	U	2.4	U	2.4	U	2.4	U	2.4	U	2.4	U
12674-11-2	Aroclor-1016	0.89	U	0.89	U	0.89	U	0.89	U	0.89	U	0.89	U
11104-28-2	Aroclor-1221	2.7	U	2.7	U	2.7	U	2.7	U	2.7	U	2.7	U
11141-16-5	Aroclor-1232	0.48	U	0.48	U	0.48	U	0.48	U	0.48	U	0.48	U
53469-21-9	Aroclor-1242	0.65	U	0.65	U	0.65	U	0.65	U	0.65	U	0.65	U
12672-29-6	Aroclor-1248	2.6	U	2.6	U	2.6	U	2.6	U	2.6	U	2.6	U
11097-69-1	Aroclor-1254	1.2	U	1.2	U	1.2	U	1.2	U	1.2	U	1.2	U
11096-82-5	Aroclor-1260	0.36	U	0.36	U	0.36	U	0.36	U	0.36	U	0.36	U

*** Validation Complete ***

CEDAR CHEMICAL CORPORATION
WEST HELENA, ARKANSAS
PHASE II GROUNDWATER DATA

PEST													
	SHORT ID -------->	9MW-1		EMW-1		EMW-2		EMW-3		EMW-4		EMW-4 Dup	
	ORIGINAL ID ----->	009GW00101		00EG000101		00EG000201		00EG000301		00EG000401		00EH000401	
	SAMPLE DATE ----->	01/13/95		11/30/94		12/01/94		12/01/94		12/01/94		12/01/94	
	DATE EXTRACTED -->	01/16/95		12/04/94		12/06/94		12/06/94		12/06/94		12/06/94	
	DATE ANALYZED --->	01/18/95		12/06/94		12/08/94		12/08/94		12/08/94		12/08/94	
	MATRIX ---------->	Water		Water		Water		Water		Water		Water	
	UNITS ---------->	UG/L		UG/L		UG/L		UG/L		UG/L		UG/L	
CAS #	Parameter	11513	VAL	10834	VAL	10867	VAL	10867	VAL	10867	VAL	10867	VAL
319-84-6	Alpha-BHC	0.03	U	0.03	U	0.03	U	0.2	U	0.03	U	0.03	U
319-85-7	Beta-BHC	0.06	U	0.06	U	0.06	U	0.3	U	0.06	U	0.06	U
319-86-8	Delta-BHC	0.09	U	0.09	U	0.09	U	0.4	U	0.09	U	0.09	U
58-89-9	gamma-BHC (Lindane)	0.04	U	0.04	U	0.04	U	0.2	U	0.04	U	0.04	U
76-44-8	Heptachlor	0.03	U	0.03	U	0.03	U	0.2	U	0.03	U	0.03	U
309-00-2	Aldrin	0.04	U	0.04	U	0.04	U	0.2	U	0.04	U	0.04	U
1024-57-3	Heptachlor Epoxide	0.83	U	0.83	U	0.83	U	4.2	U	0.83	U	0.83	U
959-98-8	Endosulfan I	0.14	U	0.14	U	0.14	U	0.7	U	0.14	U	0.14	U
60-57-1	Dieldrin	0.02	U	0.02	U	0.02	U	0.1	U	0.02	U	0.02	U
72-55-9	4,4'-DDE	0.04	U	0.04	U	0.04	U	0.2	U	0.04	U	0.04	U
72-20-8	Endrin	0.06	U	0.06	U	0.06	U	0.3	U	0.06	U	0.06	U
33213-65-9	Endosulfan II	0.04	U	0.04	U	0.04	U	0.2	U	0.04	U	0.04	U
72-54-8	4,4'-DDD	0.11	U	0.11	U	0.11	U	0.55	U	0.11	U	0.11	U
7421-93-4	Endrin aldehyde	0.23	U	0.23	U	0.23	U	1.2	U	0.23	U	0.23	U
1031-07-8	Endosulfan Sulfate	0.66	U	0.66	U	0.66	U	3.3	U	0.66	U	0.66	U
50-29-3	4,4'-DDT	0.12	U	0.12	U	0.12	U	0.6	U	0.12	U	0.12	U
72-43-5	Methoxychlor	1.8	U	1.8	U	1.8	U	9.	U	1.8	U	1.8	U
57-74-9	Chlordane	0.14	U	0.14	U	0.14	U	0.7	U	0.14	U	0.14	U
8001-35-2	Toxaphene	2.4	U	2.4	U	2.4	U	12.	U	2.4	U	2.4	U
12674-11-2	Aroclor-1016	0.89	U	0.89	U	0.89	U	4.4	U	0.89	U	0.89	U
11104-28-2	Aroclor-1221	2.7	U	2.7	U	2.7	U	14.	U	2.7	U	2.7	U
11141-16-5	Aroclor-1232	0.48	U	0.48	U	0.48	U	2.4	U	0.48	U	0.48	U
53469-21-9	Aroclor-1242	0.65	U	0.65	U	0.65	U	3.2	U	0.65	U	0.65	U
12672-29-6	Aroclor-1248	2.6	U	2.6	U	2.6	U	13.	U	2.6	U	2.6	U
11097-69-1	Aroclor-1254	1.2	U	1.2	U	1.2	U	6.	U	1.2	U	1.2	U
11096-82-5	Aroclor-1260	0.36	U	0.36	U	0.36	U	1.8	U	0.36	U	0.36	U

*** Validation Complete ***

CEDAR CHEMICAL CORPORATION
WEST HELENA, ARKANSAS
PHASE II GROUNDWATER DATA

PEST									
	SHORT ID --------->	EMW-6		EMW-7		EMW-6A		EMW-6B	
	ORIGINAL ID ----->	00EG000601		00EG000701		00EG0006A0		00EG006B01	
	SAMPLE DATE ----->	11/30/94		12/01/94		11/30/94		11/30/94	
	DATE EXTRACTED -->	12/06/94		12/06/94		12/06/94		12/04/94	
	DATE ANALYZED --->	12/08/94		12/08/94		12/08/94		12/06/94	
	MATRIX ---------->	Water		Water		Water		Water	
	UNITS ---------->	UG/L		UG/L		UG/L		UG/L	
CAS #	Parameter	10867	VAL	10867	VAL	10867	VAL	10834	VAL
319-84-6	Alpha-BHC	0.03	U	0.03	U	0.03	U	0.03	U
319-85-7	Beta-BHC	0.06	U	0.06	U	0.06	U	0.06	U
319-86-8	Delta-BHC	0.09	U	0.09	U	0.09	U	0.09	U
58-89-9	gamma-BHC (Lindane)	0.04	U	0.04	U	0.04	U	0.04	U
76-44-8	Heptachlor	0.03	U	0.03	U	0.03	U	0.03	U
309-00-2	Aldrin	0.04	U	0.04	U	0.04	U	0.04	U
1024-57-3	Heptachlor Epoxide	0.83	U	0.83	U	0.83	U	0.83	U
959-98-8	Endosulfan I	0.14	U	0.14	U	0.14	U	0.14	U
60-57-1	Dieldrin	0.02	U	0.02	U	0.02	U	0.02	U
72-55-9	4,4'-DDE	0.04	U	0.04	U	0.04	U	0.04	U
72-20-8	Endrin	0.06	U	0.06	U	0.06	U	0.06	U
33213-65-9	Endosulfan II	0.04	U	0.04	U	0.04	U	0.04	U
72-54-8	4,4'-DDD	0.11	U	0.11	U	0.11	U	0.11	U
7421-93-4	Endrin aldehyde	0.23	U	0.23	U	0.23	U	0.23	U
1031-07-8	Endosulfan Sulfate	0.66	U	0.66	U	0.66	U	0.66	U
50-29-3	4,4'-DDT	0.12	U	0.12	U	0.12	U	0.12	U
72-43-5	Methoxychlor	1.8	U	1.8	U	1.8	U	1.8	U
57-74-9	Chlordane	0.14	U	0.14	U	0.14	U	0.14	U
8001-35-2	Toxaphene	2.4	U	2.4	U	2.4	U	2.4	U
12674-11-2	Aroclor-1016	0.89	U	0.89	U	0.89	U	0.89	U
11104-28-2	Aroclor-1221	2.7	U	2.7	U	2.7	U	2.7	U
11141-16-5	Aroclor-1232	0.48	U	0.48	U	0.48	U	0.48	U
53469-21-9	Aroclor-1242	0.65	U	0.65	U	0.65	U	0.65	U
12672-29-6	Aroclor-1248	2.6	U	2.6	U	2.6	U	2.6	U
11097-69-1	Aroclor-1254	1.2	U	1.2	U	1.2	U	1.2	U
11096-82-5	Aroclor-1260	0.36	U	0.36	U	0.36	U	0.36	U

*** Validation Complete ***

CEDAR CHEMICAL CORPORATION
WEST HELENA, ARKANSAS
PHASE II GROUNDWATER DATA

SVOA	SHORT ID -------->	1MW-1		1MW-2		1MW-3		1MW-4		1MW-5		1MW-6	
	ORIGINAL ID ----->	001G000101		001G000201		001G000301		001G000401		001G000501		001G000601	
	SAMPLE DATE ----->	11/29/94		11/29/94		11/30/94		11/30/94		11/30/94		11/30/94	
	DATE EXTRACTED -->	12/02/94		12/02/94		12/02/94		12/02/94		12/02/94		12/02/94	
	DATE ANALYZED --->	12/02/94		12/03/94		12/03/94		12/03/94		12/07/94		12/07/94	
	MATRIX ---------->	Water		Water		Water		Water		Water		Water	
	UNITS ----------->	UG/L		UG/L		UG/L		UG/L		UG/L		UG/L	
CAS #	Parameter	10834	VAL	10834	VAL	10834	VAL	10834	VAL	10834	VAL	10834	VAL
108-95-2	Phenol	10.	U	10.	U	10.	U	10.	U	10.	U	10.	U
111-44-4	bis(2-Chloroethyl)ether	10.	U	10.	U	10.	U	10.	U	10.	U	10.	U
95-57-8	2-Chlorophenol	10.	U	10.	U	10.	U	10.	U	10.	U	10.	U
541-73-1	1,3-Dichlorobenzene	10.	U	10.	U	10.	U	10.	U	10.	U	10.	U
106-46-7	1,4-Dichlorobenzene	10.	U	10.	U	10.	U	10.	U	10.	U	10.	U
100-51-6	Benzyl alcohol	20.	U	20.	U	20.	U	20.	U	20.	U	20.	U
95-50-1	1,2-Dichlorobenzene	10.	U	10.	U	31.		10.	U	10.	U	10.	U
95-48-7	2-Methylphenol (o-Cresol)	10.	U	10.	U	10.	U	10.	U	10.	U	10.	U
108-60-1	bis(2-chloroisopropyl) ether	10.	U	10.	U	10.	U	10.	U	10.	U	10.	U
106-44-5	4-Methylphenol (p-Cresol)	10.	U	10.	U	10.	U	10.	U	10.	U	10.	U
621-64-7	N-Nitroso-di-n-propylamine	10.	U	10.	U	10.	U	10.	U	10.	U	10.	U
67-72-1	Hexachloroethane	10.	U	10.	U	10.	U	10.	U	10.	U	10.	U
98-95-3	Nitrobenzene	10.	U	10.	U	10.	U	10.	U	10.	U	10.	U
78-59-1	Isophorone	10.	U	10.	U	10.	U	10.	U	10.	U	10.	U
88-75-5	2-Nitrophenol	10.	U	10.	U	10.	U	10.	U	10.	U	10.	U
105-67-9	2,4-Dimethylphenol	10.	U	10.	U	10.	U	10.	U	10.	U	10.	U
111-91-1	bis(2-Chloroethoxy)methane	10.	U	10.	U	10.	U	10.	U	10.	U	10.	U
120-83-2	2,4-Dichlorophenol	10.	U	10.	U	10.	U	10.	U	10.	U	10.	U
120-82-1	1,2,4-Trichlorobenzene	10.	U	10.	U	10.	U	10.	U	10.	U	10.	U
91-20-3	Naphthalene	10.	U	10.	U	10.	U	10.	U	10.	U	10.	U
87-68-3	Hexachlorobutadiene	10.	U	10.	U	10.	U	10.	U	10.	U	10.	U
59-50-7	4-Chloro-3-methylphenol	20.	U	20.	U	20.	U	20.	U	20.	U	20.	U
91-57-6	2-Methylnaphthalene	10.	U	10.	U	10.	U	10.	U	10.	U	10.	U
77-47-4	Hexachlorocyclopentadiene	10.	U	10.	U	10.	U	10.	U	10.	U	10.	U
88-06-2	2,4,6-Trichlorophenol	10.	U	10.	U	10.	U	10.	U	10.	U	10.	U
95-95-4	2,4,5-Trichlorophenol	10.	U	10.	U	10.	U	10.	U	10.	U	10.	U
91-58-7	2-Chloronaphthalene	10.	U	10.	U	10.	U	10.	U	10.	U	10.	U
88-74-4	2-Nitroaniline	50.	U	50.	U	50.	U	50.	U	50.	U	50.	U
131-11-3	Dimethylphthalate	10.	U	10.	U	10.	U	10.	U	10.	U	10.	U
208-96-8	Acenaphthylene	10.	U	10.	U	10.	U	10.	U	10.	U	10.	U
99-09-2	3-Nitroaniline	50.	U	50.	U	50.	U	50.	U	50.	U	50.	U
83-32-9	Acenaphthene	10.	U	10.	U	10.	U	10.	U	10.	U	10.	U
51-28-5	2,4-Dinitrophenol	50.	U	50.	U	50.	U	50.	U	50.	U	50.	U
100-02-7	4-Nitrophenol	50.	U	50.	U	50.	U	50.	U	50.	U	50.	U
132-64-9	Dibenzofuran	10.	U	10.	U	10.	U	10.	U	10.	U	10.	U
121-14-2	2,4-Dinitrotoluene	10.	U	10.	U	10.	U	10.	U	10.	U	10.	U
606-20-2	2,6-Dinitrotoluene	10.	U	10.	U	10.	U	10.	U	10.	U	10.	U
84-66-2	Diethylphthalate	10.	U	10.	U	10.	U	10.	U	10.	U	10.	U

*** Validation Complete ***

CEDAR CHEMICAL CORPORATION
WEST HELENA, ARKANSAS
PHASE II GROUNDWATER DATA

SVOA		SHORT ID -------->	1MW-1		1MW-2		1MW-3		1MW-4		1MW-5		1MW-6	
		ORIGINAL ID ----->	001G000101		001G000201		001G000301		001G000401		001G000501		001G000601	
		SAMPLE DATE ----->	11/29/94		11/29/94		11/30/94		11/30/94		11/30/94		11/30/94	
		DATE EXTRACTED -->	12/02/94		12/02/94		12/02/94		12/02/94		12/02/94		12/02/94	
		DATE ANALYZED --->	12/02/94		12/03/94		12/03/94		12/03/94		12/07/94		12/07/94	
		MATRIX ---------->	Water		Water		Water		Water		Water		Water	
		UNITS ---------->	UG/L		UG/L		UG/L		UG/L		UG/L		UG/L	
CAS #	Parameter		10834	VAL	10834	VAL	10834	VAL	10834	VAL	10834	VAL	10834	VAL
7005-72-3	4-Chlorophenyl-phenylether		10.	U	10.	U	10.	U	10.	U	10.	U	10.	U
86-73-7	Fluorene		10.	U	10.	U	10.	U	10.	U	10.	U	10.	U
100-01-6	4-Nitroaniline		50.	U	50.	U	50.	U	50.	U	50.	U	50.	U
534-52-1	4,6-Dinitro-2-methylphenol		50.	U	50.	U	50.	U	50.	U	50.	U	50.	U
86-30-6	N-Nitrosodiphenylamine		10.	U	10.	U	10.	U	10.	U	10.	U	10.	U
101-55-3	4-Bromophenyl-phenylether		10.	U	10.	U	10.	U	10.	U	10.	U	10.	U
118-74-1	Hexachlorobenzene		10.	U	10.	U	10.	U	10.	U	10.	U	10.	U
87-86-5	Pentachlorophenol		50.	U	50.	U	50.	U	50.	U	50.	U	50.	U
85-01-8	Phenanthrene		10.	U	10.	U	10.	U	10.	U	10.	U	10.	U
120-12-7	Anthracene		10.	U	10.	U	10.	U	10.	U	10.	U	10.	U
206-44-0	Fluoranthene		10.	U	10.	U	10.	U	10.	U	10.	U	10.	U
129-00-0	Pyrene		10.	U	10.	U	10.	U	10.	U	10.	U	10.	U
85-68-7	Butylbenzylphthalate		10.	U	10.	U	10.	U	10.	U	10.	U	10.	U
91-94-1	3,3'-Dichlorobenzidine		20.	U	20.	U	20.	U	20.	U	20.	U	20.	U
56-55-3	Benzo(a)anthracene		10.	U	10.	U	10.	U	10.	U	10.	U	10.	U
117-81-7	bis(2-Ethylhexyl)phthalate (BEHP)		10.	U	10.	U	10.	U	10.	U	10.	U	10.	U
218-01-9	Chrysene		10.	U	10.	U	10.	U	10.	U	10.	U	10.	U
117-84-0	Di-n-octylphthalate		10.	U	10.	U	10.	U	10.	U	10.	U	10.	U
205-99-2	Benzo(b)fluoranthene		10.	U	10.	U	10.	U	10.	U	10.	U	10.	U
207-08-9	Benzo(k)fluoranthene		10.	U	10.	U	10.	U	10.	U	10.	U	10.	U
50-32-8	Benzo(a)pyrene		10.	U	10.	U	10.	U	10.	U	10.	U	10.	U
193-39-5	Indeno(1,2,3-cd)pyrene		10.	U	10.	U	10.	U	10.	U	10.	U	10.	U
53-70-3	Dibenz(a,h)anthracene		10.	U	10.	U	10.	U	10.	U	10.	U	10.	U
191-24-2	Benzo(g,h,i)perylene		10.	U	10.	U	10.	U	10.	U	10.	U	10.	U
88-85-7	Dinoseb		7.	U	7.	U	7.	U	7.	U	7.	U	7.	U
65-85-0	Benzoic acid		50.	U	50.	U	50.	U	50.	U	50.	U	50.	U
106-47-8	4-Chloroaniline		20.	U	20.	U	100.		20.	U	20.	U	20.	U
84-74-2	Di-n-butylphthalate		10.	U	10.	U	10.	U	10.	U	10.	U	10.	U

*** Validation Complete ***

CEDAR CHEMICAL CORPORATION
WEST HELENA, ARKANSAS
PHASE II GROUNDWATER DATA

SVOA		SHORT ID --------->	1GB-1 (36')		1GB-2 (42')		1GB-2 (61.5')		1GB-2 (80')		1GB-2 (102')		1GB-3 (37.5')	
		ORIGINAL ID ----->	001GGB0101		001GGB0201		001GGB0202		001GGB0203		001GGB0204		001GGB0301	
		SAMPLE DATE ----->	12/20/94		12/20/94		12/21/94		12/22/94		12/23/94		12/21/94	
		DATE EXTRACTED -->	12/22/94		12/22/94		12/22/94		12/27/94		12/27/94		12/22/94	
		DATE ANALYZED --->	12/23/94		12/23/94		12/23/94		12/27/94		12/27/94		12/23/94	
		MATRIX ---------->	Water		Water		Water		Water		Water		Water	
		UNITS ---------->	UG/L		UG/L		UG/L		UG/L		UG/L		UG/L	
CAS #	Parameter		11213	VAL	11213	VAL	11213	VAL	11234	VAL	11234	VAL	11213	VAL
108-95-2	Phenol		10.	U	10.	U	10.	U	10.	U	10.	U	10.	U
111-44-4	bis(2-Chloroethyl)ether		10.	U	10.	U	10.	U	10.	U	10.	U	10.	U
95-57-8	2-Chlorophenol		10.	U	10.	U	10.	U	10.	U	10.	U	10.	U
541-73-1	1,3-Dichlorobenzene		10.	U	10.	U	10.	U	10.	U	10.	U	10.	U
106-46-7	1,4-Dichlorobenzene		10.	U	10.	U	10.	U	10.	U	10.	U	10.	U
100-51-6	Benzyl alcohol		20.	U	20.	U	20.	U	20.	U	20.	U	20.	U
95-50-1	1,2-Dichlorobenzene		10.	U	10.	U	10.	U	10.	U	10.	U	10.	U
95-48-7	2-Methylphenol (o-Cresol)		10.	U	10.	U	10.	U	10.	U	10.	U	10.	U
108-60-1	bis(2-chloroisopropyl) ether		10.	U	10.	U	10.	U	10.	U	10.	U	10.	U
106-44-5	4-Methylphenol (p-Cresol)		10.	U	10.	U	10.	U	10.	U	10.	U	10.	U
621-64-7	N-Nitroso-di-n-propylamine		10.	U	10.	U	10.	U	10.	U	10.	U	10.	U
67-72-1	Hexachloroethane		10.	U	10.	U	10.	U	10.	U	10.	U	10.	U
98-95-3	Nitrobenzene		10.	U	10.	U	10.	U	10.	U	10.	U	10.	U
78-59-1	Isophorone		10.	U	10.	U	10.	U	10.	U	10.	U	10.	U
88-75-5	2-Nitrophenol		10.	U	10.	U	10.	U	10.	U	10.	U	10.	U
105-67-9	2,4-Dimethylphenol		10.	U	10.	U	10.	U	10.	U	10.	U	10.	U
111-91-1	bis(2-Chloroethoxy)methane		10.	U	10.	U	10.	U	10.	U	10.	U	10.	U
120-83-2	2,4-Dichlorophenol		10.	U	10.	U	10.	U	10.	U	10.	U	10.	U
120-82-1	1,2,4-Trichlorobenzene		10.	U	10.	U	10.	U	10.	U	10.	U	10.	U
91-20-3	Naphthalene		10.	U	10.	U	10.	U	10.	U	10.	U	10.	U
87-68-3	Hexachlorobutadiene		10.	U	10.	U	10.	U	10.	U	10.	U	10.	U
59-50-7	4-Chloro-3-methylphenol		20.	U	20.	U	20.	U	20.	U	20.	U	20.	U
91-57-6	2-Methylnaphthalene		10.	U	10.	U	10.	U	10.	U	10.	U	10.	U
77-47-4	Hexachlorocyclopentadiene		10.	U	10.	U	10.	U	10.	U	10.	U	10.	U
88-06-2	2,4,6-Trichlorophenol		10.	U	10.	U	10.	U	10.	U	10.	U	10.	U
95-95-4	2,4,5-Trichlorophenol		10.	U	10.	U	10.	U	10.	U	10.	U	10.	U
91-58-7	2-Chloronaphthalene		10.	U	10.	U	10.	U	10.	U	10.	U	10.	U
88-74-4	2-Nitroaniline		50.	U	50.	U	50.	U	50.	U	50.	U	50.	U
131-11-3	Dimethylphthalate		10.	U	10.	U	10.	U	10.	U	10.	U	10.	U
208-96-8	Acenaphthylene		10.	U	10.	U	10.	U	10.	U	10.	U	10.	U
99-09-2	3-Nitroaniline		50.	U	50.	U	50.	U	50.	U	50.	U	50.	U
83-32-9	Acenaphthene		10.	U	10.	U	10.	U	10.	U	10.	U	10.	U
51-28-5	2,4-Dinitrophenol		50.	U	50.	U	50.	U	50.	U	50.	U	50.	U
100-02-7	4-Nitrophenol		50.	U	50.	U	50.	U	50.	U	50.	U	50.	U
132-64-9	Dibenzofuran		10.	U	10.	U	10.	U	10.	U	10.	U	10.	U
121-14-2	2,4-Dinitrotoluene		10.	U	10.	U	10.	U	10.	U	10.	U	10.	U
606-20-2	2,6-Dinitrotoluene		10.	U	10.	U	10.	U	10.	U	10.	U	10.	U
84-66-2	Diethylphthalate		10.	U	10.	U	10.	U	10.	U	10.	U	10.	U

*** Validation Complete ***

CEDAR CHEMICAL CORPORATION
WEST HELENA, ARKANSAS
PHASE II GROUNDWATER DATA

SVOA	SHORT ID --------->	1GB-1 (36')		1GB-2 (42')		1GB-2 (61.5')		1GB-2 (80')		1GB-2 (102')		1GB-3 (37.5')	
	ORIGINAL ID ------>	001GGB0101		001GGB0201		001GGB0202		001GGB0203		001GGB0204		001GGB0301	
	SAMPLE DATE ----->	12/20/94		12/20/94		12/21/94		12/22/94		12/23/94		12/21/94	
	DATE EXTRACTED -->	12/22/94		12/22/94		12/22/94		12/27/94		12/27/94		12/22/94	
	DATE ANALYZED --->	12/23/94		12/23/94		12/23/94		12/27/94		12/27/94		12/23/94	
	MATRIX ---------->	Water		Water		Water		Water		Water		Water	
	UNITS ---------->	UG/L		UG/L		UG/L		UG/L		UG/L		UG/L	
CAS #	Parameter	11213	VAL	11213	VAL	11213	VAL	11234	VAL	11234	VAL	11213	VAL
7005-72-3	4-Chlorophenyl-phenylether	10.	U	10.	U	10.	U	10.	U	10.	U	10.	U
86-73-7	Fluorene	10.	U	10.	U	10.	U	10.	U	10.	U	10.	U
100-01-6	4-Nitroaniline	50.	U	50.	U	50.	U	50.	U	50.	U	50.	U
534-52-1	4,6-Dinitro-2-methylphenol	50.	U	50.	U	50.	U	50.	U	50.	U	50.	U
86-30-6	N-Nitrosodiphenylamine	10.	U	10.	U	10.	U	10.	U	10.	U	10.	U
101-55-3	4-Bromophenyl-phenylether	10.	U	10.	U	10.	U	10.	U	10.	U	10.	U
118-74-1	Hexachlorobenzene	10.	U	10.	U	10.	U	10.	U	10.	U	10.	U
87-86-5	Pentachlorophenol	50.	U	50.	U	50.	U	50.	U	50.	U	50.	U
85-01-8	Phenanthrene	10.	U	10.	U	10.	U	10.	U	10.	U	10.	U
120-12-7	Anthracene	10.	U	10.	U	10.	U	10.	U	10.	U	10.	U
206-44-0	Fluoranthene	10.	U	10.	U	10.	U	10.	U	10.	U	10.	U
129-00-0	Pyrene	10.	U	10.	U	10.	U	10.	U	10.	U	10.	U
85-68-7	Butylbenzylphthalate	10.	U	10.	U	10.	U	10.	U	10.	U	10.	U
91-94-1	3,3'-Dichlorobenzidine	20.	U	20.	U	20.	U	20.	U	20.	U	20.	U
56-55-3	Benzo(a)anthracene	10.	U	10.	U	10.	U	10.	U	10.	U	10.	U
117-81-7	bis(2-Ethylhexyl)phthalate (BEHP)	10.	U	10.	U	10.	U	10.	U	10.	U	10.	U
218-01-9	Chrysene	10.	U	10.	U	10.	U	10.	U	10.	U	10.	U
117-84-0	Di-n-octylphthalate	10.	U	10.	U	10.	U	10.	U	10.	U	10.	U
205-99-2	Benzo(b)fluoranthene	10.	U	10.	U	10.	U	10.	U	10.	U	10.	U
207-08-9	Benzo(k)fluoranthene	10.	U	10.	U	10.	U	10.	U	10.	U	10.	U
50-32-8	Benzo(a)pyrene	10.	U	10.	U	10.	U	10.	U	10.	U	10.	U
193-39-5	Indeno(1,2,3-cd)pyrene	10.	U	10.	U	10.	U	10.	U	10.	U	10.	U
53-70-3	Dibenz(a,h)anthracene	10.	U	10.	U	10.	U	10.	U	10.	U	10.	U
191-24-2	Benzo(g,h,i)perylene	10.	U	10.	U	10.	U	10.	U	10.	U	10.	U
88-85-7	Dinoseb	7.	U	7.	U	7.	U	7.	U	7.	U	7.	U
65-85-0	Benzoic acid	50.	U	50.	U	50.	U	50.	U	50.	U	50.	U
106-47-8	4-Chloroaniline	20.	U	20.	U	20.	U	20.	U	20.	U	20.	U
84-74-2	Di-n-butylphthalate	10.	U	10.	U	10.	U	10.	U	10.	U	10.	U

*** Validation Complete ***

CEDAR CHEMICAL CORPORATION
WEST HELENA, ARKANSAS
PHASE II GROUNDWATER DATA

SVOA	SHORT ID --------->	1GB-3 (60')		1GB-3 (80')		1GB-3 (100')		1GB-4 (40')		1GB-4 (40') Dup		1GB-4 (60')	
	ORIGINAL ID ----->	001GGB0302		001GGB0303		001GGB0304		001GGB0401		001HGB0401		001GGB0402	
	SAMPLE DATE ----->	12/23/94		12/23/94		12/23/94		01/05/95		01/05/95		01/09/95	
	DATE EXTRACTED -->	12/27/94		12/27/94		12/27/94		01/10/95		01/10/95		01/13/95	
	DATE ANALYZED --->	12/28/94		12/28/94		12/28/94		01/10/95		01/10/95		01/13/95	
	MATRIX ---------->	Water		Water		Water		Water		Water		Water	
	UNITS ---------->	UG/L		UG/L		UG/L		UG/L		UG/L		UG/L	
CAS #	Parameter	11234	VAL	11234	VAL	11234	VAL	11379	VAL	11379	VAL	11462	VAL
108-95-2	Phenol	10.	U	10.	U	10.	U	10.	U	10.	U	10.	U
111-44-4	bis(2-Chloroethyl)ether	10.	U	10.	U	10.	U	10.	U	10.	U	10.	U
95-57-8	2-Chlorophenol	10.	U	10.	U	10.	U	10.	U	10.	U	10.	U
541-73-1	1,3-Dichlorobenzene	10.	U	10.	U	10.	U	10.	U	10.	U	10.	U
106-46-7	1,4-Dichlorobenzene	10.	U	10.	U	10.	U	10.	U	10.	U	10.	U
100-51-6	Benzyl alcohol	20.	U	20.	U	20.	U	20.	U	20.	U	20.	U
95-50-1	1,2-Dichlorobenzene	10.	U	10.	U	10.	U	10.	U	10.	U	10.	U
95-48-7	2-Methylphenol (o-Cresol)	10.	U	10.	U	10.	U	10.	U	10.	U	10.	U
108-60-1	bis(2-chloroisopropyl) ether	10.	U	10.	U	10.	U	10.	U	10.	U	10.	U
106-44-5	4-Methylphenol (p-Cresol)	10.	U	10.	U	10.	U	10.	U	10.	U	10.	U
621-64-7	N-Nitroso-di-n-propylamine	10.	U	10.	U	10.	U	10.	U	10.	U	10.	U
67-72-1	Hexachloroethane	10.	U	10.	U	10.	U	10.	U	10.	U	10.	U
98-95-3	Nitrobenzene	10.	U	10.	U	10.	U	10.	U	10.	U	10.	U
78-59-1	Isophorone	10.	U	10.	U	10.	U	10.	U	10.	U	10.	U
88-75-5	2-Nitrophenol	10.	U	10.	U	10.	U	10.	U	10.	U	10.	U
105-67-9	2,4-Dimethylphenol	10.	U	10.	U	10.	U	10.	U	10.	U	10.	U
111-91-1	bis(2-Chloroethoxy)methane	10.	U	10.	U	10.	U	10.	U	10.	U	10.	U
120-83-2	2,4-Dichlorophenol	10.	U	10.	U	10.	U	10.	U	10.	U	10.	U
120-82-1	1,2,4-Trichlorobenzene	10.	U	10.	U	10.	U	10.	U	10.	U	10.	U
91-20-3	Naphthalene	10.	U	10.	U	10.	U	10.	U	10.	U	10.	U
87-68-3	Hexachlorobutadiene	10.	U	10.	U	10.	U	10.	U	10.	U	10.	U
59-50-7	4-Chloro-3-methylphenol	20.	U	20.	U	20.	U	20.	U	20.	U	20.	U
91-57-6	2-Methylnaphthalene	10.	U	10.	U	10.	U	10.	U	10.	U	10.	U
77-47-4	Hexachlorocyclopentadiene	10.	U	10.	U	10.	U	10.	U	10.	U	10.	U
88-06-2	2,4,6-Trichlorophenol	10.	U	10.	U	10.	U	10.	U	10.	U	10.	U
95-95-4	2,4,5-Trichlorophenol	10.	U	10.	U	10.	U	10.	U	10.	U	10.	U
91-58-7	2-Chloronaphthalene	10.	U	10.	U	10.	U	10.	U	10.	U	10.	U
88-74-4	2-Nitroaniline	50.	U	50.	U	50.	U	50.	U	50.	U	50.	U
131-11-3	Dimethylphthalate	10.	U	10.	U	10.	U	10.	U	10.	U	10.	U
208-96-8	Acenaphthylene	10.	U	10.	U	10.	U	10.	U	10.	U	10.	U
99-09-2	3-Nitroaniline	50.	U	50.	U	50.	U	50.	U	50.	U	50.	U
83-32-9	Acenaphthene	10.	U	10.	U	10.	U	10.	U	10.	U	10.	U
51-28-5	2,4-Dinitrophenol	50.	U	50.	U	50.	U	50.	U	50.	U	50.	U
100-02-7	4-Nitrophenol	50.	U	50.	U	50.	U	50.	U	50.	U	50.	U
132-64-9	Dibenzofuran	10.	U	10.	U	10.	U	10.	U	10.	U	10.	U
121-14-2	2,4-Dinitrotoluene	10.	U	10.	U	10.	U	10.	U	10.	U	10.	U
606-20-2	2,6-Dinitrotoluene	10.	U	10.	U	10.	U	10.	U	10.	U	10.	U
84-66-2	Diethylphthalate	10.	U	10.	U	10.	U	10.	U	10.	U	10.	U

*** Validation Complete ***

CEDAR CHEMICAL CORPORATION
WEST HELENA, ARKANSAS
PHASE II GROUNDWATER DATA

SVOA		SHORT ID --------->	1GB-3 (60')		1GB-3 (80')		1GB-3 (100')		1GB-4 (40')		1GB-4 (40') Dup		1GB-4 (60')	
		ORIGINAL ID ----->	001GGB0302		001GGB0303		001GGB0304		001GGB0401		001HGB0401		001GGB0402	
		SAMPLE DATE ----->	12/23/94		12/23/94		12/23/94		01/05/95		01/05/95		01/09/95	
		DATE EXTRACTED -->	12/27/94		12/27/94		12/27/94		01/10/95		01/10/95		01/13/95	
		DATE ANALYZED --->	12/28/94		12/28/94		12/28/94		01/10/95		01/10/95		01/13/95	
		MATRIX ---------->	Water		Water		Water		Water		Water		Water	
		UNITS ----------->	UG/L		UG/L		UG/L		UG/L		UG/L		UG/L	
CAS #	Parameter		11234	VAL	11234	VAL	11234	VAL	11379	VAL	11379	VAL	11462	VAL
7005-72-3	4-Chlorophenyl-phenylether		10.	U	10.	U	10.	U	10.	U	10.	U	10.	U
86-73-7	Fluorene		10.	U	10.	U	10.	U	10.	U	10.	U	10.	U
100-01-6	4-Nitroaniline		50.	U	50.	U	50.	U	50.	U	50.	U	50.	U
534-52-1	4,6-Dinitro-2-methylphenol		50.	U	50.	U	50.	U	50.	U	50.	U	50.	U
86-30-6	N-Nitrosodiphenylamine		10.	U	10.	U	10.	U	10.	U	10.	U	10.	U
101-55-3	4-Bromophenyl-phenylether		10.	U	10.	U	10.	U	10.	U	10.	U	10.	U
118-74-1	Hexachlorobenzene		10.	U	10.	U	10.	U	10.	U	10.	U	10.	U
87-86-5	Pentachlorophenol		50.	U	50.	U	50.	U	50.	U	50.	U	50.	U
85-01-8	Phenanthrene		10.	U	10.	U	10.	U	10.	U	10.	U	10.	U
120-12-7	Anthracene		10.	U	10.	U	10.	U	10.	U	10.	U	10.	U
206-44-0	Fluoranthene		10.	U	10.	U	10.	U	10.	U	10.	U	10.	U
129-00-0	Pyrene		10.	U	10.	U	10.	U	10.	U	10.	U	10.	U
85-68-7	Butylbenzylphthalate		10.	U	10.	U	10.	U	10.	U	10.	U	10.	U
91-94-1	3,3'-Dichlorobenzidine		20.	U	20.	U	20.	U	20.	U	20.	U	20.	U
56-55-3	Benzo(a)anthracene		10.	U	10.	U	10.	U	10.	U	10.	U	10.	U
117-81-7	bis(2-Ethylhexyl)phthalate (BEHP)		10.	U	10.	U	10.	U	10.	U	10.	U	10.	U
218-01-9	Chrysene		10.	U	10.	U	10.	U	10.	U	10.	U	10.	U
117-84-0	Di-n-octylphthalate		10.	U	10.	U	10.	U	10.	U	10.	U	10.	U
205-99-2	Benzo(b)fluoranthene		10.	U	10.	U	10.	U	10.	U	10.	U	10.	U
207-08-9	Benzo(k)fluoranthene		10.	U	10.	U	10.	U	10.	U	10.	U	10.	U
50-32-8	Benzo(a)pyrene		10.	U	10.	U	10.	U	10.	U	10.	U	10.	U
193-39-5	Indeno(1,2,3-cd)pyrene		10.	U	10.	U	10.	U	10.	U	10.	U	10.	U
53-70-3	Dibenz(a,h)anthracene		10.	U	10.	U	10.	U	10.	U	10.	U	10.	U
191-24-2	Benzo(g,h,i)perylene		10.	U	10.	U	10.	U	10.	U	10.	U	10.	U
88-85-7	Dinoseb		7.	U	7.	U	7.	U	7.	U	7.	U	7.	U
65-85-0	Benzoic acid		50.	U	50.	U	50.	U	50.	U	50.	U	50.	U
106-47-8	4-Chloroaniline		20.	U	20.	U	20.	U	20.	U	20.	U	20.	U
84-74-2	Di-n-butylphthalate		10.	U	10.	U	10.	U	10.	U	10.	U	10.	U

*** Validation Complete ***

CEDAR CHEMICAL CORPORATION
WEST HELENA, ARKANSAS
PHASE II GROUNDWATER DATA

SVOA	SHORT ID -------->	1GB-4 (80')		1GB-4 (107')		1MW-7		2MW-2		2MW-3		2MW-4	
	ORIGINAL ID ----->	001GGB0403		001GGB0404		001GW00701		002G000201		002G000301		002G000401	
	SAMPLE DATE ----->	01/09/95		01/09/95		01/13/95		12/01/94		12/02/94		12/02/94	
	DATE EXTRACTED -->	01/13/95		01/13/95		01/16/95		12/06/94		12/06/94		12/06/94	
	DATE ANALYZED --->	01/13/95		01/13/95		01/17/95		12/09/94		12/09/94		12/09/94	
	MATRIX ---------->	Water		Water		Water		Water		Water		Water	
	UNITS ---------->	UG/L		UG/L		UG/L		UG/L		UG/L		UG/L	
CAS #	Parameter	11462	VAL	11462	VAL	11513	VAL	10867	VAL	10867	VAL	10867	VAL
108-95-2	Phenol	10.	U	10.	U	10.	U	10.	U	250.		10.	U
111-44-4	bis(2-Chloroethyl)ether	10.	U	10.	U	10.	U	10.	U	10.	U	10.	U
95-57-8	2-Chlorophenol	10.	U	10.	U	10.	U	10.	U	10.	U	10.	U
541-73-1	1,3-Dichlorobenzene	10.	U	10.	U	10.	U	10.	U	10.	U	10.	U
106-46-7	1,4-Dichlorobenzene	10.	U	10.	U	10.	U	10.	U	10.	U	10.	U
100-51-6	Benzyl alcohol	20.	U	20.	U	20.	U	20.	U	20.	U	20.	U
95-50-1	1,2-Dichlorobenzene	10.	U	10.	U	10.	U	40.		51.		20.	
95-48-7	2-Methylphenol (o-Cresol)	10.	U	10.	U	10.	U	10.	U	25.		10.	U
108-60-1	bis(2-chloroisopropyl) ether	10.	U	10.	U	10.	U	10.	U	10.	U	10.	U
106-44-5	4-Methylphenol (p-Cresol)	10.	U	10.	U	10.	U	10.	U	71.		10.	U
621-64-7	N-Nitroso-di-n-propylamine	10.	U	10.	U	10.	U	10.	U	10.	U	10.	U
67-72-1	Hexachloroethane	10.	U	10.	U	10.	U	10.	U	10.	U	10.	U
98-95-3	Nitrobenzene	10.	U	10.	U	10.	U	10.	U	10.	U	10.	U
78-59-1	Isophorone	10.	U	10.	U	10.	U	10.	U	10.	U	10.	U
88-75-5	2-Nitrophenol	10.	U	10.	U	10.	U	10.	U	10.	U	10.	U
105-67-9	2,4-Dimethylphenol	10.	U	10.	U	10.	U	10.	U	10.	U	10.	U
111-91-1	bis(2-Chloroethoxy)methane	10.	U	10.	U	10.	U	10.	U	10.	U	10.	U
120-83-2	2,4-Dichlorophenol	10.	U	10.	U	10.	U	10.	U	10.	U	10.	U
120-82-1	1,2,4-Trichlorobenzene	10.	U	10.	U	10.	U	10.	U	10.	U	10.	U
91-20-3	Naphthalene	10.	U	10.	U	10.	U	10.	U	10.	U	10.	U
87-68-3	Hexachlorobutadiene	10.	U	10.	U	10.	U	10.	U	10.	U	10.	U
59-50-7	4-Chloro-3-methylphenol	20.	U	20.	U	20.	U	20.	U	20.	U	20.	U
91-57-6	2-Methylnaphthalene	10.	U	10.	U	10.	U	10.	U	10.	U	10.	U
77-47-4	Hexachlorocyclopentadiene	10.	U	10.	U	10.	U	10.	U	10.	U	10.	U
88-06-2	2,4,6-Trichlorophenol	10.	U	10.	U	10.	U	10.	U	10.	U	10.	U
95-95-4	2,4,5-Trichlorophenol	10.	U	10.	U	10.	U	10.	U	10.	U	10.	U
91-58-7	2-Chloronaphthalene	10.	U	10.	U	10.	U	10.	U	10.	U	10.	U
88-74-4	2-Nitroaniline	50.	U	50.	U	50.	U	50.	U	50.	U	50.	U
131-11-3	Dimethylphthalate	10.	U	10.	U	10.	U	10.	U	10.	U	10.	U
208-96-8	Acenaphthylene	10.	U	10.	U	10.	U	10.	U	10.	U	10.	U
99-09-2	3-Nitroaniline	50.	U	50.	U	50.	U	50.	U	50.	U	50.	U
83-32-9	Acenaphthene	10.	U	10.	U	10.	U	10.	U	10.	U	10.	U
51-28-5	2,4-Dinitrophenol	50.	U	50.	U	50.	U	50.	U	50.	U	50.	U
100-02-7	4-Nitrophenol	50.	U	50.	U	50.	U	50.	U	50.	U	50.	U
132-64-9	Dibenzofuran	10.	U	10.	U	10.	U	10.	U	10.	U	10.	U
121-14-2	2,4-Dinitrotoluene	10.	U	10.	U	10.	U	10.	U	10.	U	10.	U
606-20-2	2,6-Dinitrotoluene	10.	U	10.	U	10.	U	10.	U	10.	U	10.	U
84-66-2	Diethylphthalate	10.	U	10.	U	10.	U	10.	U	10.	U	10.	U

*** Validation Complete ***

CEDAR CHEMICAL CORPORATION
WEST HELENA, ARKANSAS
PHASE II GROUNDWATER DATA

SVOA		SHORT ID -------->	1GB-4 (80')		1GB-4 (107')		1MW-7		2MW-2		2MW-3		2MW-4	
		ORIGINAL ID ----->	001GGB0403		001GGB0404		001GW00701		002G000201		002G000301		002G000401	
		SAMPLE DATE ----->	01/09/95		01/09/95		01/13/95		12/01/94		12/02/94		12/02/94	
		DATE EXTRACTED -->	01/13/95		01/13/95		01/16/95		12/06/94		12/06/94		12/06/94	
		DATE ANALYZED --->	01/13/95		01/13/95		01/17/95		12/09/94		12/09/94		12/09/94	
		MATRIX ---------->	Water		Water		Water		Water		Water		Water	
		UNITS ---------->	UG/L		UG/L		UG/L		UG/L		UG/L		UG/L	
CAS #	Parameter		11462	VAL	11462	VAL	11513	VAL	10867	VAL	10867	VAL	10867	VAL
7005-72-3	4-Chlorophenyl-phenylether		10.	U	10.	U	10.	U	10.	U	10.	U	10.	U
86-73-7	Fluorene		10.	U	10.	U	10.	U	10.	U	10.	U	10.	U
100-01-6	4-Nitroaniline		50.	U	50.	U	50.	U	50.	U	50.	U	50.	U
534-52-1	4,6-Dinitro-2-methylphenol		50.	U	50.	U	50.	U	50.	U	50.	U	50.	U
86-30-6	N-Nitrosodiphenylamine		10.	U	10.	U	10.	U	10.	U	10.	U	10.	U
101-55-3	4-Bromophenyl-phenylether		10.	U	10.	U	10.	U	10.	U	10.	U	10.	U
118-74-1	Hexachlorobenzene		10.	U	10.	U	10.	U	10.	U	10.	U	10.	U
87-86-5	Pentachlorophenol		50.	U	50.	U	50.	U	50.	U	50.	U	50.	U
85-01-8	Phenanthrene		10.	U	10.	U	10.	U	10.	U	10.	U	10.	U
120-12-7	Anthracene		10.	U	10.	U	10.	U	10.	U	10.	U	10.	U
206-44-0	Fluoranthene		10.	U	10.	U	10.	U	10.	U	10.	U	10.	U
129-00-0	Pyrene		10.	U	10.	U	10.	U	10.	U	10.	U	10.	U
85-68-7	Butylbenzylphthalate		10.	U	10.	U	10.	U	10.	U	10.	U	10.	U
91-94-1	3,3'-Dichlorobenzidine		20.	U	20.	U	20.	U	20.	U	20.	U	20.	U
56-55-3	Benzo(a)anthracene		10.	U	10.	U	10.	U	10.	U	10.	U	10.	U
117-81-7	bis(2-Ethylhexyl)phthalate (BEHP)		10.	U	10.	U	10.	U	10.	U	10.	U	10.	U
218-01-9	Chrysene		10.	U	10.	U	10.	U	10.	U	10.	U	10.	U
117-84-0	Di-n-octylphthalate		10.	U	10.	U	10.	U	10.	U	10.	U	10.	U
205-99-2	Benzo(b)fluoranthene		10.	U	10.	U	10.	U	10.	U	10.	U	10.	U
207-08-9	Benzo(k)fluoranthene		10.	U	10.	U	10.	U	10.	U	10.	U	10.	U
50-32-8	Benzo(a)pyrene		10.	U	10.	U	10.	U	10.	U	10.	U	10.	U
193-39-5	Indeno(1,2,3-cd)pyrene		10.	U	10.	U	10.	U	10.	U	10.	U	10.	U
53-70-3	Dibenz(a,h)anthracene		10.	U	10.	U	10.	U	10.	U	10.	U	10.	U
191-24-2	Benzo(g,h,i)perylene		10.	U	10.	U	10.	U	10.	U	10.	U	10.	U
88-85-7	Dinoseb		7.	U	7.	U	7.	U	7.	U	7.	U	7.	U
65-85-0	Benzoic acid		50.	U	50.	U	50.	U	50.	U	50.	U	50.	U
106-47-8	4-Chloroaniline		20.	U	20.	U	20.	U	20.	U	57.		140.	
84-74-2	Di-n-butylphthalate		10.	U	10.	U	10.	U	10.	U	10.	U	10.	U

*** Validation Complete ***

CEDAR CHEMICAL CORPORATION
WEST HELENA, ARKANSAS
PHASE II GROUNDWATER DATA

SVOA	SHORT ID --------->	2MW-4 Dup		2MW-5		2MW-7		2MW-6		2MW-7		4MW-1	
	ORIGINAL ID ----->	002H000401		002G000501		002G000701		002GW00602		002GW00701		004G000101	
	SAMPLE DATE ----->	12/02/94		12/01/94		12/23/94		01/20/95		01/19/95		12/15/94	
	DATE EXTRACTED -->	12/06/94		12/06/94		12/27/94		01/24/95		01/24/95		12/19/94	
	DATE ANALYZED --->	12/09/94		12/09/94		12/27/94		01/24/95		01/24/95		12/21/94	
	MATRIX ---------->	Water		Water		Water		Water		Water		Water	
	UNITS ---------->	UG/L		UG/L		UG/L		UG/L		UG/L		UG/L	
CAS #	Parameter	10867	VAL	10867	VAL	11234	VAL	11626	VAL	11626	VAL	11134	VAL
108-95-2	Phenol	2.		10.	U	10.	U	10.	U	10.	U	2400.	
111-44-4	bis(2-Chloroethyl)ether	10.	U	10.	U	10.	U	10.	U	10.	U	100.	U
95-57-8	2-Chlorophenol	10.	U	10.	U	10.	U	10.	U	10.	U	110.	
541-73-1	1,3-Dichlorobenzene	10.	U	10.	U	10.	U	10.	U	10.	U	100.	U
106-46-7	1,4-Dichlorobenzene	10.	U	10.	U	10.	U	10.	U	10.	U	100.	U
100-51-6	Benzyl alcohol	20.	U	20.	U	20.	U	20.	U	20.	U	200.	U
95-50-1	1,2-Dichlorobenzene	22.		11.		10.	U	15.		10.	U	820.	
95-48-7	2-Methylphenol (o-Cresol)	10.	U	10.	U	10.	U	10.	U	10.	U	180.	
108-60-1	bis(2-chloroisopropyl) ether	10.	U	10.	U	10.	U	10.	U	10.	U	100.	U
106-44-5	4-Methylphenol (p-Cresol)	10.	U	10.	U	10.	U	10.	U	10.	U	340.	
621-64-7	N-Nitroso-di-n-propylamine	10.	U	10.	U	10.	U	10.	U	10.	U	100.	U
67-72-1	Hexachloroethane	10.	U	10.	U	10.	U	10.	U	10.	U	100.	U
98-95-3	Nitrobenzene	10.	U	10.	U	10.	U	10.	U	10.	U	100.	U
78-59-1	Isophorone	10.	U	10.	U	10.	U	10.	U	10.	U	150.	
88-75-5	2-Nitrophenol	10.	U	10.	U	10.	U	10.	U	10.	U	100.	U
105-67-9	2,4-Dimethylphenol	10.	U	10.	U	10.	U	10.	U	10.	U	100.	U
111-91-1	bis(2-Chloroethoxy)methane	10.	U	10.	U	10.	U	10.	U	10.	U	100.	U
120-83-2	2,4-Dichlorophenol	10.	U	10.	U	10.	U	10.	U	10.	U	100.	U
120-82-1	1,2,4-Trichlorobenzene	10.	U	10.	U	10.	U	10.	U	10.	U	100.	U
91-20-3	Naphthalene	10.	U	10.	U	10.	U	10.	U	10.	U	100.	U
87-68-3	Hexachlorobutadiene	10.	U	10.	U	10.	U	10.	U	10.	U	100.	U
59-50-7	4-Chloro-3-methylphenol	20.	U	20.	U	20.	U	20.	U	20.	U	200.	U
91-57-6	2-Methylnaphthalene	10.	U	10.	U	10.	U	10.	U	10.	U	100.	U
77-47-4	Hexachlorocyclopentadiene	10.	U	10.	U	10.	U	10.	U	10.	U	100.	U
88-06-2	2,4,6-Trichlorophenol	10.	U	10.	U	10.	U	10.	U	10.	U	100.	U
95-95-4	2,4,5-Trichlorophenol	10.	U	10.	U	10.	U	10.	U	10.	U	100.	U
91-58-7	2-Chloronaphthalene	10.	U	10.	U	10.	U	10.	U	10.	U	100.	U
88-74-4	2-Nitroaniline	50.	U	50.	U	50.	U	50.	U	50.	U	500.	U
131-11-3	Dimethylphthalate	10.	U	10.	U	10.	U	10.	U	10.	U	100.	U
208-96-8	Acenaphthylene	10.	U	10.	U	10.	U	10.	U	10.	U	100.	U
99-09-2	3-Nitroaniline	50.	U	50.	U	50.	U	50.	U	50.	U	500.	U
83-32-9	Acenaphthene	10.	U	10.	U	10.	U	10.	U	10.	U	100.	U
51-28-5	2,4-Dinitrophenol	50.	U	50.	U	50.	U	50.	U	50.	U	500.	U
100-02-7	4-Nitrophenol	50.	U	50.	U	50.	U	50.	U	50.	U	500.	U
132-64-9	Dibenzofuran	10.	U	10.	U	10.	U	10.	U	10.	U	100.	U
121-14-2	2,4-Dinitrotoluene	10.	U	10.	U	10.	U	10.	U	10.	U	100.	U
606-20-2	2,6-Dinitrotoluene	10.	U	10.	U	10.	U	10.	U	10.	U	100.	U
84-66-2	Diethylphthalate	10.	U	10.	U	10.	U	10.	U	10.	U	100.	U

*** Validation Complete ***

CEDAR CHEMICAL CORPORATION
WEST HELENA, ARKANSAS
PHASE II GROUNDWATER DATA

SVOA																					
	SHORT ID -------->	2MW-4 Dup		2MW-5		2MW-7		2MW-6		2MW-7		4MW-1									
	ORIGINAL ID ----->	002H000401		002G000501		002G000701		002GW00602		002GW00701		004G000101									
	SAMPLE DATE ----->	12/02/94		12/01/94		12/23/94		01/20/95		01/19/95		12/15/94									
	DATE EXTRACTED -->	12/06/94		12/06/94		12/27/94		01/24/95		01/24/95		12/19/94									
	DATE ANALYZED --->	12/09/94		12/09/94		12/27/94		01/24/95		01/24/95		12/21/94									
	MATRIX ---------->	Water		Water		Water		Water		Water		Water									
	UNITS ---------->	UG/L		UG/L		UG/L		UG/L		UG/L		UG/L									
CAS #	Parameter	10867	VAL	10867	VAL	11234	VAL	11626	VAL	11626	VAL	11134	VAL								
7005-72-3	4-Chlorophenyl-phenylether	10.	U	10.	U	10.	U	10.	U	10.	U	100.	U								
86-73-7	Fluorene	10.	U	10.	U	10.	U	10.	U	10.	U	100.	U								
100-01-6	4-Nitroaniline	50.	U	50.	U	50.	U	50.	U	50.	U	500.	U								
534-52-1	4,6-Dinitro-2-methylphenol	50.	U	50.	U	50.	U	50.	U	50.	U	500.	U								
86-30-6	N-Nitrosodiphenylamine	10.	U	10.	U	10.	U	10.	U	10.	U	100.	U								
101-55-3	4-Bromophenyl-phenylether	10.	U	10.	U	10.	U	10.	U	10.	U	100.	U								
118-74-1	Hexachlorobenzene	10.	U	10.	U	10.	U	10.	U	10.	U	100.	U								
87-86-5	Pentachlorophenol	50.	U	50.	U	50.	U	50.	U	50.	U	500.	U								
85-01-8	Phenanthrene	10.	U	10.	U	10.	U	10.	U	10.	U	100.	U								
120-12-7	Anthracene	10.	U	10.	U	10.	U	10.	U	10.	U	100.	U								
206-44-0	Fluoranthene	10.	U	10.	U	10.	U	10.	U	10.	U	100.	U								
129-00-0	Pyrene	10.	U	10.	U	10.	U	10.	U	10.	U	100.	U								
85-68-7	Butylbenzylphthalate	10.	U	10.	U	10.	U	10.	U	10.	U	100.	U								
91-94-1	3,3'-Dichlorobenzidine	20.	U	20.	U	20.	U	20.	U	20.	U	200.	U								
56-55-3	Benzo(a)anthracene	10.	U	10.	U	10.	U	10.	U	10.	U	100.	U								
117-81-7	bis(2-Ethylhexyl)phthalate (BEHP)	10.	U	10.	U	10.	U	10.	U	10.	U	100.	U								
218-01-9	Chrysene	10.	U	10.	U	10.	U	10.	U	10.	U	100.	U								
117-84-0	Di-n-octylphthalate	10.	U	10.	U	10.	U	10.	U	10.	U	100.	U								
205-99-2	Benzo(b)fluoranthene	10.	U	10.	U	10.	U	10.	U	10.	U	100.	U								
207-08-9	Benzo(k)fluoranthene	10.	U	10.	U	10.	U	10.	U	10.	U	100.	U								
50-32-8	Benzo(a)pyrene	10.	U	10.	U	10.	U	10.	U	10.	U	100.	U								
193-39-5	Indeno(1,2,3-cd)pyrene	10.	U	10.	U	10.	U	10.	U	10.	U	100.	U								
53-70-3	Dibenz(a,h)anthracene	10.	U	10.	U	10.	U	10.	U	10.	U	100.	U								
191-24-2	Benzo(g,h,i)perylene	10.	U	10.	U	10.	U	10.	U	10.	U	100.	U								
88-85-7	Dinoseb	7.	U	26.		7.	U	7.	U	7.	U	70.	U								
65-85-0	Benzoic acid	50.	U	50.	U	50.	U	50.	U	50.	U	500.	U								
106-47-8	4-Chloroaniline	170.		20.	U	20.	U	20.	U	20.	U	5800.									
84-74-2	Di-n-butylphthalate	10.	U	10.	U	10.	U	10.	U	10.	U	100.	U								

*** Validation Complete ***

CEDAR CHEMICAL CORPORATION
WEST HELENA, ARKANSAS
PHASE II GROUNDWATER DATA

SVOA		SHORT ID --------->	4MW-2		4GB-3 (51')		4GB-3 (65')		4GB-3 (80')		4GB-3 (95')		4GB-4 (40')	
		ORIGINAL ID ----->	004G000201		004G00G301		004G00G302		004G00G303		004G00G304		004G00G401	
		SAMPLE DATE ----->	12/15/94		12/13/94		12/14/94		12/14/94		12/14/94		01/31/95	
		DATE EXTRACTED -->	12/19/94		12/19/94		12/19/94		12/19/94		12/19/94		02/03/95	
		DATE ANALYZED --->	12/21/94		12/21/94		12/21/94		12/21/94		12/21/94		02/06/95	
		MATRIX ---------->	Water		Water		Water		Water		Water		Water	
		UNITS ---------->	UG/L		UG/L		UG/L		UG/L		UG/L		UG/L	
CAS #	Parameter		11134	VAL	11097	VAL	11097	VAL	11097	VAL	11097	VAL	11834	VAL
108-95-2	Phenol		200.	U	10.	U	10.	U	10.	U	10.	U	10.	U
111-44-4	bis(2-Chloroethyl)ether		200.	U	10.	U	10.	U	10.	U	10.	U	10.	U
95-57-8	2-Chlorophenol		200.	U	10.	U	10.	U	10.	U	10.	U	10.	U
541-73-1	1,3-Dichlorobenzene		200.	U	10.	U	10.	U	10.	U	10.	U	10.	U
106-46-7	1,4-Dichlorobenzene		200.	U	10.	U	10.	U	10.	U	10.	U	10.	U
100-51-6	Benzyl alcohol		400.	U	20.	U	20.	U	20.	U	20.	U	20.	U
95-50-1	1,2-Dichlorobenzene		200.	U	10.	U	10.	U	10.	U	10.	U	10.	U
95-48-7	2-Methylphenol (o-Cresol)		200.	U	10.	U	10.	U	10.	U	10.	U	10.	U
108-60-1	bis(2-chloroisopropyl) ether		200.	U	10.	U	10.	U	10.	U	10.	U	10.	U
106-44-5	4-Methylphenol (p-Cresol)		200.	U	10.	U	10.	U	10.	U	10.	U	10.	U
621-64-7	N-Nitroso-di-n-propylamine		200.	U	10.	U	10.	U	10.	U	10.	U	10.	U
67-72-1	Hexachloroethane		200.	U	10.	U	10.	U	10.	U	10.	U	10.	U
98-95-3	Nitrobenzene		200.	U	10.	U	10.	U	10.	U	10.	U	10.	U
78-59-1	Isophorone		200.	U	10.	U	10.	U	10.	U	10.	U	10.	U
88-75-5	2-Nitrophenol		200.	U	10.	U	10.	U	10.	U	10.	U	10.	U
105-67-9	2,4-Dimethylphenol		200.	U	10.	U	10.	U	10.	U	10.	U	10.	U
111-91-1	bis(2-Chloroethoxy)methane		200.	U	10.	U	10.	U	10.	U	10.	U	10.	U
120-83-2	2,4-Dichlorophenol		200.	U	10.	U	10.	U	10.	U	10.	U	10.	U
120-82-1	1,2,4-Trichlorobenzene		200.	U	10.	U	10.	U	10.	U	10.	U	10.	U
91-20-3	Naphthalene		200.	U	10.	U	10.	U	10.	U	10.	U	10.	U
87-68-3	Hexachlorobutadiene		200.	U	10.	U	10.	U	10.	U	10.	U	10.	U
59-50-7	4-Chloro-3-methylphenol		400.	U	20.	U	20.	U	20.	U	20.	U	20.	U
91-57-6	2-Methylnaphthalene		200.	U	10.	U	10.	U	10.	U	10.	U	10.	U
77-47-4	Hexachlorocyclopentadiene		200.	U	10.	U	10.	U	10.	U	10.	U	10.	U
88-06-2	2,4,6-Trichlorophenol		200.	U	10.	U	10.	U	10.	U	10.	U	10.	U
95-95-4	2,4,5-Trichlorophenol		200.	U	10.	U	10.	U	10.	U	10.	U	10.	U
91-58-7	2-Chloronaphthalene		200.	U	10.	U	10.	U	10.	U	10.	U	10.	U
88-74-4	2-Nitroaniline		1000.	U	50.	U	50.	U	50.	U	50.	U	50.	U
131-11-3	Dimethylphthalate		200.	U	10.	U	10.	U	10.	U	10.	U	10.	U
208-96-8	Acenaphthylene		200.	U	10.	U	10.	U	10.	U	10.	U	10.	U
99-09-2	3-Nitroaniline		1000.	U	50.	U	50.	U	50.	U	50.	U	50.	U
83-32-9	Acenaphthene		200.	U	10.	U	10.	U	10.	U	10.	U	10.	U
51-28-5	2,4-Dinitrophenol		1000.	U	50.	U	50.	U	50.	U	50.	U	50.	U
100-02-7	4-Nitrophenol		1000.	U	50.	U	50.	U	50.	U	50.	U	50.	U
132-64-9	Dibenzofuran		200.	U	10.	U	10.	U	10.	U	10.	U	10.	U
121-14-2	2,4-Dinitrotoluene		200.	U	10.	U	10.	U	10.	U	10.	U	10.	U
606-20-2	2,6-Dinitrotoluene		200.	U	10.	U	10.	U	10.	U	10.	U	10.	U
84-66-2	Diethylphthalate		200.	U	10.	U	10.	U	10.	U	10.	U	10.	U

*** Validation Complete ***

CEDAR CHEMICAL CORPORATION
WEST HELENA, ARKANSAS
PHASE II GROUNDWATER DATA

SVOA		SHORT ID -------->	4MW-2		4GB-3 (51')		4GB-3 (65')		4GB-3 (80')		4GB-3 (95')		4GB-4 (40')	
		ORIGINAL ID ----->	004G000201		004G00G301		004G00G302		004G00G303		004G00G304		004G00G401	
		SAMPLE DATE ----->	12/15/94		12/13/94		12/14/94		12/14/94		12/14/94		01/31/95	
		DATE EXTRACTED -->	12/19/94		12/19/94		12/19/94		12/19/94		12/19/94		02/03/95	
		DATE ANALYZED --->	12/21/94		12/21/94		12/21/94		12/21/94		12/21/94		02/06/95	
		MATRIX ---------->	Water		Water		Water		Water		Water		Water	
		UNITS ---------->	UG/L		UG/L		UG/L		UG/L		UG/L		UG/L	
CAS #	Parameter		11134	VAL	11097	VAL	11097	VAL	11097	VAL	11097	VAL	11834	VAL
7005-72-3	4-Chlorophenyl-phenylether		200.	U	10.	U	10.	U	10.	U	10.	U	10.	U
86-73-7	Fluorene		200.	U	10.	U	10.	U	10.	U	10.	U	10.	U
100-01-6	4-Nitroaniline		1000.	U	50.	U	50.	U	50.	U	50.	U	50.	U
534-52-1	4,6-Dinitro-2-methylphenol		1000.	U	50.	U	50.	U	50.	U	50.	U	50.	U
86-30-6	N-Nitrosodiphenylamine		200.	U	10.	U	10.	U	10.	U	10.	U	10.	U
101-55-3	4-Bromophenyl-phenylether		200.	U	10.	U	10.	U	10.	U	10.	U	10.	U
118-74-1	Hexachlorobenzene		200.	U	10.	U	10.	U	10.	U	10.	U	10.	U
87-86-5	Pentachlorophenol		1000.	U	50.	U	50.	U	50.	U	50.	U	50.	U
85-01-8	Phenanthrene		200.	U	10.	U	10.	U	10.	U	10.	U	10.	U
120-12-7	Anthracene		200.	U	10.	U	10.	U	10.	U	10.	U	10.	U
206-44-0	Fluoranthene		200.	U	10.	U	10.	U	10.	U	10.	U	10.	U
129-00-0	Pyrene		200.	U	10.	U	10.	U	10.	U	10.	U	10.	U
85-68-7	Butylbenzylphthalate		200.	U	10.	U	10.	U	10.	U	10.	U	10.	U
91-94-1	3,3'-Dichlorobenzidine		400.	U	20.	U	20.	U	20.	U	20.	U	20.	U
56-55-3	Benzo(a)anthracene		200.	U	10.	U	10.	U	10.	U	10.	U	10.	U
117-81-7	bis(2-Ethylhexyl)phthalate (BEHP)		200.	U	10.	U	10.	U	10.	U	10.	U	10.	U
218-01-9	Chrysene		200.	U	10.	U	10.	U	10.	U	10.	U	10.	U
117-84-0	Di-n-octylphthalate		200.	U	10.	U	10.	U	10.	U	10.	U	10.	U
205-99-2	Benzo(b)fluoranthene		200.	U	10.	U	10.	U	10.	U	10.	U	10.	U
207-08-9	Benzo(k)fluoranthene		200.	U	10.	U	10.	U	10.	U	10.	U	10.	U
50-32-8	Benzo(a)pyrene		200.	U	10.	U	10.	U	10.	U	10.	U	10.	U
193-39-5	Indeno(1,2,3-cd)pyrene		200.	U	10.	U	10.	U	10.	U	10.	U	10.	U
53-70-3	Dibenz(a,h)anthracene		200.	U	10.	U	10.	U	10.	U	10.	U	10.	U
191-24-2	Benzo(g,h,i)perylene		200.	U	10.	U	10.	U	10.	U	10.	U	10.	U
88-85-7	Dinoseb		170000.		7.	U	7.	U	7.	U	7.	U	7.	U
65-85-0	Benzoic acid		1000.	U	50.	U	50.	U	50.	U	50.	U	50.	U
106-47-8	4-Chloroaniline		400.	U	20.	U	20.	U	20.	U	20.	U	20.	U
84-74-2	Di-n-butylphthalate		200.	U	10.	U	10.	U	10.	U	10.	U	10.	U

*** Validation Complete ***

CEDAR CHEMICAL CORPORATION
WEST HELENA, ARKANSAS
PHASE II GROUNDWATER DATA

SVOA		SHORT ID --------->	4GB-4 (60')		4GB-4 (80')		4GB-4 (100')		4MW-3		4MW-4		9GB-21 (30')	
		ORIGINAL ID ----->	004G00G402		004G00G403		004G00G404		004GW00301		004GW00404		009G002101	
		SAMPLE DATE ----->	01/31/95		01/31/95		01/31/95		01/13/95		01/20/95		12/07/94	
		DATE EXTRACTED -->	02/03/95		02/03/95		02/03/95		01/16/95		01/24/95		12/12/94	
		DATE ANALYZED --->	02/06/95		02/06/95		02/07/95		01/17/95		01/25/95		12/15/94	
		MATRIX ---------->	Water		Water		Water		Water		Water		Water	
		UNITS ---------->	UG/L		UG/L		UG/L		UG/L		UG/L		UG/L	
CAS #	Parameter		11834	VAL	11834	VAL	11834	VAL	11513	VAL	11626	VAL	11008	VAL
108-95-2	Phenol		10.	U	10.	U	10.	U	100.	U	10.	U	100.	U
111-44-4	bis(2-Chloroethyl)ether		10.	U	10.	U	10.	U	100.	U	10.	U	100.	U
95-57-8	2-Chlorophenol		10.	U	10.	U	10.	U	100.	U	10.	U	100.	U
541-73-1	1,3-Dichlorobenzene		10.	U	10.	U	10.	U	100.	U	10.	U	100.	U
106-46-7	1,4-Dichlorobenzene		10.	U	10.	U	10.	U	100.	U	10.	U	100.	U
100-51-6	Benzyl alcohol		20.	U	20.	U	20.	U	200.	U	20.	U	200.	U
95-50-1	1,2-Dichlorobenzene		10.	U	10.	U	10.	U	100.	U	10.	U	100.	U
95-48-7	2-Methylphenol (o-Cresol)		10.	U	10.	U	10.	U	100.	U	10.	U	100.	U
108-60-1	bis(2-chloroisopropyl) ether		10.	U	10.	U	10.	U	100.	U	10.	U	100.	U
106-44-5	4-Methylphenol (p-Cresol)		10.	U	10.	U	10.	U	100.	U	10.	U	100.	U
621-64-7	N-Nitroso-di-n-propylamine		10.	U	10.	U	10.	U	100.	U	10.	U	100.	U
67-72-1	Hexachloroethane		10.	U	10.	U	10.	U	100.	U	10.	U	100.	U
98-95-3	Nitrobenzene		10.	U	10.	U	10.	U	100.	U	10.	U	100.	U
78-59-1	Isophorone		10.	U	10.	U	10.	U	100.	U	10.	U	100.	U
88-75-5	2-Nitrophenol		10.	U	10.	U	10.	U	100.	U	10.	U	100.	U
105-67-9	2,4-Dimethylphenol		10.	U	10.	U	10.	U	100.	U	10.	U	100.	U
111-91-1	bis(2-Chloroethoxy)methane		10.	U	10.	U	10.	U	100.	U	10.	U	100.	U
120-83-2	2,4-Dichlorophenol		10.	U	10.	U	10.	U	100.	U	10.	U	100.	U
120-82-1	1,2,4-Trichlorobenzene		10.	U	10.	U	10.	U	100.	U	10.	U	100.	U
91-20-3	Naphthalene		10.	U	10.	U	10.	U	100.	U	10.	U	100.	U
87-68-3	Hexachlorobutadiene		10.	U	10.	U	10.	U	100.	U	10.	U	100.	U
59-50-7	4-Chloro-3-methylphenol		20.	U	20.	U	20.	U	200.	U	20.	U	200.	U
91-57-6	2-Methylnaphthalene		10.	U	10.	U	10.	U	100.	U	10.	U	100.	U
77-47-4	Hexachlorocyclopentadiene		10.	U	10.	U	10.	U	100.	U	10.	U	100.	U
88-06-2	2,4,6-Trichlorophenol		10.	U	10.	U	10.	U	100.	U	10.	U	100.	U
95-95-4	2,4,5-Trichlorophenol		10.	U	10.	U	10.	U	100.	U	10.	U	100.	U
91-58-7	2-Chloronaphthalene		10.	U	10.	U	10.	U	100.	U	10.	U	100.	U
88-74-4	2-Nitroaniline		50.	U	50.	U	50.	U	500.	U	50.	U	500.	U
131-11-3	Dimethylphthalate		10.	U	10.	U	10.	U	100.	U	10.	U	100.	U
208-96-8	Acenaphthylene		10.	U	10.	U	10.	U	100.	U	10.	U	100.	U
99-09-2	3-Nitroaniline		50.	U	50.	U	50.	U	500.	U	50.	U	500.	U
83-32-9	Acenaphthene		10.	U	10.	U	10.	U	100.	U	10.	U	100.	U
51-28-5	2,4-Dinitrophenol		50.	U	50.	U	50.	U	500.	U	50.	U	500.	U
100-02-7	4-Nitrophenol		50.	U	50.	U	50.	U	500.	U	50.	U	500.	U
132-64-9	Dibenzofuran		10.	U	10.	U	10.	U	100.	U	10.	U	100.	U
121-14-2	2,4-Dinitrotoluene		10.	U	10.	U	10.	U	100.	U	10.	U	100.	U
606-20-2	2,6-Dinitrotoluene		10.	U	10.	U	10.	U	100.	U	10.	U	100.	U
84-66-2	Diethylphthalate		10.	U	10.	U	10.	U	100.	U	10.	U	100.	U

*** Validation Complete ***

CEDAR CHEMICAL CORPORATION
WEST HELENA, ARKANSAS
PHASE II GROUNDWATER DATA

SVOA		4GB-4 (60')		4GB-4 (80')		4GB-4 (100')		4MW-3		4MW-4		9GB-21 (30')	
	ORIGINAL ID ----->	004G00G402		004G00G403		004G00G404		004GW00301		004GW00404		009G002101	
	SAMPLE DATE ----->	01/31/95		01/31/95		01/31/95		01/13/95		01/20/95		12/07/94	
	DATE EXTRACTED -->	02/03/95		02/03/95		02/03/95		01/16/95		01/24/95		12/12/94	
	DATE ANALYZED --->	02/06/95		02/06/95		02/07/95		01/17/95		01/25/95		12/15/94	
	MATRIX ---------->	Water		Water		Water		Water		Water		Water	
	UNITS ----------->	UG/L		UG/L		UG/L		UG/L		UG/L		UG/L	
CAS #	Parameter	11834	VAL	11834	VAL	11834	VAL	11513	VAL	11626	VAL	11008	VAL
7005-72-3	4-Chlorophenyl-phenylether	10.	U	10.	U	10.	U	100.	U	10.	U	100.	U
86-73-7	Fluorene	10.	U	10.	U	10.	U	100.	U	10.	U	100.	U
100-01-6	4-Nitroaniline	50.	U	50.	U	50.	U	500.	U	50.	U	500.	U
534-52-1	4,6-Dinitro-2-methylphenol	50.	U	50.	U	50.	U	500.	U	50.	U	500.	U
86-30-6	N-Nitrosodiphenylamine	10.	U	10.	U	10.	U	100.	U	10.	U	100.	U
101-55-3	4-Bromophenyl-phenylether	10.	U	10.	U	10.	U	100.	U	10.	U	100.	U
118-74-1	Hexachlorobenzene	10.	U	10.	U	10.	U	100.	U	10.	U	100.	U
87-86-5	Pentachlorophenol	50.	U	50.	U	50.	U	500.	U	50.	U	500.	U
85-01-8	Phenanthrene	10.	U	10.	U	10.	U	100.	U	10.	U	100.	U
120-12-7	Anthracene	10.	U	10.	U	10.	U	100.	U	10.	U	100.	U
206-44-0	Fluoranthene	10.	U	10.	U	10.	U	100.	U	10.	U	100.	U
129-00-0	Pyrene	10.	U	10.	U	10.	U	100.	U	10.	U	100.	U
85-68-7	Butylbenzylphthalate	10.	U	10.	U	10.	U	100.	U	10.	U	100.	U
91-94-1	3,3'-Dichlorobenzidine	20.	U	20.	U	20.	U	200.	U	20.	U	200.	U
56-55-3	Benzo(a)anthracene	10.	U	10.	U	10.	U	100.	U	10.	U	100.	U
117-81-7	bis(2-Ethylhexyl)phthalate (BEHP)	10.	U	10.	U	10.	U	100.	U	10.	U	100.	U
218-01-9	Chrysene	10.	U	10.	U	10.	U	100.	U	10.	U	100.	U
117-84-0	Di-n-octylphthalate	10.	U	10.	U	10.	U	100.	U	10.	U	100.	U
205-99-2	Benzo(b)fluoranthene	10.	U	10.	U	10.	U	100.	U	10.	U	100.	U
207-08-9	Benzo(k)fluoranthene	10.	U	10.	U	10.	U	100.	U	10.	U	100.	U
50-32-8	Benzo(a)pyrene	10.	U	10.	U	10.	U	100.	U	10.	U	100.	U
193-39-5	Indeno(1,2,3-cd)pyrene	10.	U	10.	U	10.	U	100.	U	10.	U	100.	U
53-70-3	Dibenz(a,h)anthracene	10.	U	10.	U	10.	U	100.	U	10.	U	100.	U
191-24-2	Benzo(g,h,i)perylene	10.	U	10.	U	10.	U	100.	U	10.	U	100.	U
88-85-7	Dinoseb	7.	U	7.	U	7.	U	70.	U	7.	U	1000.	
65-85-0	Benzoic acid	50.	U	50.	U	50.	U	500.	U	50.	U	500.	U
106-47-8	4-Chloroaniline	20.	U	20.	U	20.	U	200.	U	20.	U	200.	U
84-74-2	Di-n-butylphthalate	10.	U	10.	U	10.	U	100.	U	10.	U	100.	U

*** Validation Complete ***

CEDAR CHEMICAL CORPORATION
WEST HELENA, ARKANSAS
PHASE II GROUNDWATER DATA

SVOA	SHORT ID --------->	9GB-21 (45')		9GB-21 (60')		9GB-21 (75')		9GB-21 (90')		9MW-1		EMW-1	
	ORIGINAL ID ----->	009G002102		009G002103		009G002104		009G002105		009GW00101		00EG000101	
	SAMPLE DATE ----->	12/07/94		12/08/94		12/09/94		12/16/94		01/13/95		11/30/94	
	DATE EXTRACTED -->	12/12/94		12/12/94		12/12/94		12/19/94		01/16/95		12/02/94	
	DATE ANALYZED --->	12/15/94		12/15/94		12/15/94		12/21/94		01/17/95		12/07/94	
	MATRIX ---------->	Water		Water		Water		Water		Water		Water	
	UNITS ---------->	UG/L		UG/L		UG/L		UG/L		UG/L		UG/L	
CAS #	Parameter	11008	VAL	11008	VAL	11008	VAL	11134	VAL	11513	VAL	10834	VAL
108-95-2	Phenol	100.	U	100.	U	100.	U	10.	U	10.	U	10.	U
111-44-4	bis(2-Chloroethyl)ether	100.	U	100.	U	100.	U	10.	U	10.	U	10.	U
95-57-8	2-Chlorophenol	100.	U	100.	U	100.	U	10.	U	10.	U	10.	U
541-73-1	1,3-Dichlorobenzene	100.	U	100.	U	100.	U	10.	U	10.	U	10.	U
106-46-7	1,4-Dichlorobenzene	100.	U	100.	U	100.	U	10.	U	10.	U	10.	U
100-51-6	Benzyl alcohol	200.	U	200.	U	200.	U	20.	U	20.	U	20.	U
95-50-1	1,2-Dichlorobenzene	100.	U	100.	U	100.	U	10.	U	36.		18.	
95-48-7	2-Methylphenol (o-Cresol)	100.	U	100.	U	100.	U	10.	U	10.	U	10.	U
108-60-1	bis(2-chloroisopropyl) ether	100.	U	100.	U	100.	U	10.	U	10.	U	10.	U
106-44-5	4-Methylphenol (p-Cresol)	100.	U	100.	U	100.	U	10.	U	10.	U	10.	U
621-64-7	N-Nitroso-di-n-propylamine	100.	U	100.	U	100.	U	10.	U	10.	U	10.	U
67-72-1	Hexachloroethane	100.	U	100.	U	100.	U	10.	U	10.	U	10.	U
98-95-3	Nitrobenzene	100.	U	100.	U	100.	U	10.	U	10.	U	10.	U
78-59-1	Isophorone	100.	U	100.	U	100.	U	10.	U	10.	U	10.	U
88-75-5	2-Nitrophenol	100.	U	100.	U	100.	U	10.	U	10.	U	10.	U
105-67-9	2,4-Dimethylphenol	100.	U	100.	U	100.	U	10.	U	10.	U	10.	U
111-91-1	bis(2-Chloroethoxy)methane	100.	U	100.	U	100.	U	10.	U	10.	U	10.	U
120-83-2	2,4-Dichlorophenol	100.	U	100.	U	100.	U	10.	U	10.	U	10.	U
120-82-1	1,2,4-Trichlorobenzene	100.	U	100.	U	100.	U	10.	U	10.	U	10.	U
91-20-3	Naphthalene	100.	U	100.	U	100.	U	10.	U	10.	U	10.	U
87-68-3	Hexachlorobutadiene	100.	U	100.	U	100.	U	10.	U	10.	U	10.	U
59-50-7	4-Chloro-3-methylphenol	200.	U	200.	U	200.	U	20.	U	20.	U	20.	U
91-57-6	2-Methylnaphthalene	100.	U	100.	U	100.	U	10.	U	10.	U	10.	U
77-47-4	Hexachlorocyclopentadiene	100.	U	100.	U	100.	U	10.	U	10.	U	10.	U
88-06-2	2,4,6-Trichlorophenol	100.	U	100.	U	100.	U	10.	U	10.	U	10.	U
95-95-4	2,4,5-Trichlorophenol	100.	U	100.	U	100.	U	10.	U	10.	U	10.	U
91-58-7	2-Chloronaphthalene	100.	U	100.	U	100.	U	10.	U	10.	U	10.	U
88-74-4	2-Nitroaniline	500.	U	500.	U	500.	U	50.	U	50.	U	50.	U
131-11-3	Dimethylphthalate	100.	U	100.	U	100.	U	10.	U	10.	U	10.	U
208-96-8	Acenaphthylene	100.	U	100.	U	100.	U	10.	U	10.	U	10.	U
99-09-2	3-Nitroaniline	500.	U	500.	U	500.	U	50.	U	50.	U	50.	U
83-32-9	Acenaphthene	100.	U	100.	U	100.	U	10.	U	10.	U	10.	U
51-28-5	2,4-Dinitrophenol	500.	U	500.	U	500.	U	50.	U	50.	U	50.	U
100-02-7	4-Nitrophenol	500.	U	500.	U	500.	U	50.	U	50.	U	50.	U
132-64-9	Dibenzofuran	100.	U	100.	U	100.	U	10.	U	10.	U	10.	U
121-14-2	2,4-Dinitrotoluene	100.	U	100.	U	100.	U	10.	U	10.	U	10.	U
606-20-2	2,6-Dinitrotoluene	100.	U	100.	U	100.	U	10.	U	10.	U	10.	U
84-66-2	Diethylphthalate	100.	U	100.	U	100.	U	10.	U	10.	U	10.	U

*** Validation Complete ***

CEDAR CHEMICAL CORPORATION
WEST HELENA, ARKANSAS
PHASE II GROUNDWATER DATA

SVOA	SHORT ID -------->	9GB-21 (45')		9GB-21 (60')		9GB-21 (75')		9GB-21 (90')		9MW-1		EMW-1	
	ORIGINAL ID ----->	009G002102		009G002103		009G002104		009G002105		009GW00101		00EG000101	
	SAMPLE DATE ----->	12/07/94		12/08/94		12/09/94		12/16/94		01/13/95		11/30/94	
	DATE EXTRACTED -->	12/12/94		12/12/94		12/12/94		12/19/94		01/16/95		12/02/94	
	DATE ANALYZED --->	12/15/94		12/15/94		12/15/94		12/21/94		01/17/95		12/07/94	
	MATRIX ---------->	Water		Water		Water		Water		Water		Water	
	UNITS ----------->	UG/L		UG/L		UG/L		UG/L		UG/L		UG/L	
CAS #	Parameter	11008	VAL	11008	VAL	11008	VAL	11134	VAL	11513	VAL	10834	VAL
7005-72-3	4-Chlorophenyl-phenylether	100.	U	100.	U	100.	U	10.	U	10.	U	10.	U
86-73-7	Fluorene	100.	U	100.	U	100.	U	10.	U	10.	U	10.	U
100-01-6	4-Nitroaniline	500.	U	500.	U	500.	U	50.	U	50.	U	50.	U
534-52-1	4,6-Dinitro-2-methylphenol	500.	U	500.	U	500.	U	50.	U	50.	U	50.	U
86-30-6	N-Nitrosodiphenylamine	100.	U	100.	U	100.	U	10.	U	10.	U	10.	U
101-55-3	4-Bromophenyl-phenylether	100.	U	100.	U	100.	U	10.	U	10.	U	10.	U
118-74-1	Hexachlorobenzene	100.	U	100.	U	100.	U	10.	U	10.	U	10.	U
87-86-5	Pentachlorophenol	500.	U	500.	U	500.	U	50.	U	50.	U	50.	U
85-01-8	Phenanthrene	100.	U	100.	U	100.	U	10.	U	10.	U	10.	U
120-12-7	Anthracene	100.	U	100.	U	100.	U	10.	U	10.	U	10.	U
206-44-0	Fluoranthene	100.	U	100.	U	100.	U	10.	U	10.	U	10.	U
129-00-0	Pyrene	100.	U	100.	U	100.	U	10.	U	10.	U	10.	U
85-68-7	Butylbenzylphthalate	100.	U	100.	U	100.	U	10.	U	10.	U	10.	U
91-94-1	3,3'-Dichlorobenzidine	200.	U	200.	U	200.	U	20.	U	20.	U	20.	U
56-55-3	Benzo(a)anthracene	100.	U	100.	U	100.	U	10.	U	10.	U	10.	U
117-81-7	bis(2-Ethylhexyl)phthalate (BEHP)	100.	U	100.	U	100.	U	10.	U	10.	U	10.	U
218-01-9	Chrysene	100.	U	100.	U	100.	U	10.	U	10.	U	10.	U
117-84-0	Di-n-octylphthalate	100.	U	100.	U	100.	U	10.	U	10.	U	10.	U
205-99-2	Benzo(b)fluoranthene	100.	U	100.	U	100.	U	10.	U	10.	U	10.	U
207-08-9	Benzo(k)fluoranthene	100.	U	100.	U	100.	U	10.	U	10.	U	10.	U
50-32-8	Benzo(a)pyrene	100.	U	100.	U	100.	U	10.	U	10.	U	10.	U
193-39-5	Indeno(1,2,3-cd)pyrene	100.	U	100.	U	100.	U	10.	U	10.	U	10.	U
53-70-3	Dibenz(a,h)anthracene	100.	U	100.	U	100.	U	10.	U	10.	U	10.	U
191-24-2	Benzo(g,h,i)perylene	100.	U	100.	U	100.	U	10.	U	10.	U	10.	U
88-85-7	Dinoseb	70.	U	70.	U	2800.		7.	U	18.		48.	
65-85-0	Benzoic acid	500.	U	500.	U	500.	U	50.	U	50.	U	50.	U
106-47-8	4-Chloroaniline	200.	U	200.	U	200.	U	20.	U	20.	U	20.	U
84-74-2	Di-n-butylphthalate	100.	U	100.	U	100.	U	10.	U	10.	U	10.	U

*** Validation Complete ***

CEDAR CHEMICAL CORPORATION
WEST HELENA, ARKANSAS
PHASE II GROUNDWATER DATA

SVOA		SHORT ID -------->	EMW-2		EMW-3		EMW-4		EMW-4 Dup		EMW-6		EMW-7	
		ORIGINAL ID ----->	00EG000201		00EG000301		00EG000401		00EH000401		00EG000601		00EG000701	
		SAMPLE DATE ----->	12/01/94		12/01/94		12/01/94		12/01/94		11/30/94		12/01/94	
		DATE EXTRACTED -->	12/06/94		12/06/94		12/06/94		12/06/94		12/06/94		12/06/94	
		DATE ANALYZED --->	12/08/94		12/09/94		12/08/94		12/08/94		12/08/94		12/13/94	
		MATRIX ---------->	Water		Water		Water		Water		Water		Water	
		UNITS ---------->	UG/L		UG/L		UG/L		UG/L		UG/L		UG/L	
CAS #	Parameter		10867	VAL	10867	VAL	10867	VAL	10867	VAL	10867	VAL	10867	VAL
108-95-2	Phenol		10.	U	20.	U	10.	U	10.	U	10.	U	100.	U
111-44-4	bis(2-Chloroethyl)ether		10.	U	20.	U	10.	U	10.	U	10.	U	100.	U
95-57-8	2-Chlorophenol		10.	U	20.	U	10.	U	10.	U	10.	U	100.	U
541-73-1	1,3-Dichlorobenzene		10.	U	20.	U	10.	U	10.	U	10.	U	100.	U
106-46-7	1,4-Dichlorobenzene		10.	U	20.	U	10.	U	10.	U	10.	U	100.	U
100-51-6	Benzyl alcohol		20.	U	40.	U	20.	U	20.	U	20.	U	200.	U
95-50-1	1,2-Dichlorobenzene		10.	U	280.		10.	U	10.	U	10.	U	100.	U
95-48-7	2-Methylphenol (o-Cresol)		10.	U	20.	U	10.	U	10.	U	10.	U	100.	U
108-60-1	bis(2-chloroisopropyl) ether		10.	U	20.	U	10.	U	10.	U	10.	U	100.	U
106-44-5	4-Methylphenol (p-Cresol)		10.	U	20.	U	10.	U	10.	U	10.	U	100.	U
621-64-7	N-Nitroso-di-n-propylamine		10.	U	20.	U	10.	U	10.	U	10.	U	100.	U
67-72-1	Hexachloroethane		10.	U	20.	U	10.	U	10.	U	10.	U	100.	U
98-95-3	Nitrobenzene		10.	U	20.	U	10.	U	10.	U	10.	U	100.	U
78-59-1	Isophorone		10.	U	20.	U	10.	U	10.	U	10.	U	100.	U
88-75-5	2-Nitrophenol		10.	U	20.	U	10.	U	10.	U	10.	U	100.	U
105-67-9	2,4-Dimethylphenol		10.	U	20.	U	10.	U	10.	U	10.	U	100.	U
111-91-1	bis(2-Chloroethoxy)methane		10.	U	20.	U	10.	U	10.	U	10.	U	100.	U
120-83-2	2,4-Dichlorophenol		10.	U	20.	U	10.	U	10.	U	10.	U	100.	U
120-82-1	1,2,4-Trichlorobenzene		10.	U	20.	U	10.	U	10.	U	10.	U	100.	U
91-20-3	Naphthalene		10.	U	20.	U	10.	U	10.	U	10.	U	100.	U
87-68-3	Hexachlorobutadiene		10.	U	20.	U	10.	U	10.	U	10.	U	100.	U
59-50-7	4-Chloro-3-methylphenol		20.	U	40.	U	20.	U	20.	U	20.	U	200.	U
91-57-6	2-Methylnaphthalene		10.	U	20.	U	10.	U	10.	U	10.	U	100.	U
77-47-4	Hexachlorocyclopentadiene		10.	U	20.	U	10.	U	10.	U	10.	U	100.	U
88-06-2	2,4,6-Trichlorophenol		10.	U	20.	U	10.	U	10.	U	10.	U	100.	U
95-95-4	2,4,5-Trichlorophenol		10.	U	20.	U	10.	U	10.	U	10.	U	100.	U
91-58-7	2-Chloronaphthalene		10.	U	20.	U	10.	U	10.	U	10.	U	100.	U
88-74-4	2-Nitroaniline		50.	U	100.	U	50.	U	50.	U	50.	U	500.	U
131-11-3	Dimethylphthalate		10.	U	20.	U	10.	U	10.	U	10.	U	100.	U
208-96-8	Acenaphthylene		10.	U	20.	U	10.	U	10.	U	10.	U	100.	U
99-09-2	3-Nitroaniline		50.	U	100.	U	50.	U	50.	U	50.	U	500.	U
83-32-9	Acenaphthene		10.	U	20.	U	10.	U	10.	U	10.	U	100.	U
51-28-5	2,4-Dinitrophenol		50.	U	100.	U	50.	U	50.	U	50.	U	500.	U
100-02-7	4-Nitrophenol		50.	U	100.	U	50.	U	50.	U	50.	U	500.	U
132-64-9	Dibenzofuran		10.	U	20.	U	10.	U	10.	U	10.	U	100.	U
121-14-2	2,4-Dinitrotoluene		10.	U	20.	U	10.	U	10.	U	10.	U	100.	U
606-20-2	2,6-Dinitrotoluene		10.	U	20.	U	10.	U	10.	U	10.	U	100.	U
84-66-2	Diethylphthalate		10.	U	20.	U	10.	U	10.	U	10.	U	100.	U

*** Validation Complete ***

CEDAR CHEMICAL CORPORATION
WEST HELENA, ARKANSAS
PHASE II GROUNDWATER DATA

SVOA		SHORT ID -------->	EMW-2		EMW-3		EMW-4		EMW-4 Dup		EMW-6		EMW-7	
		ORIGINAL ID ----->	00EG000201		00EG000301		00EG000401		00EH000401		00EG000601		00EG000701	
		SAMPLE DATE ----->	12/01/94		12/01/94		12/01/94		12/01/94		11/30/94		12/01/94	
		DATE EXTRACTED -->	12/06/94		12/06/94		12/06/94		12/06/94		12/06/94		12/06/94	
		DATE ANALYZED --->	12/08/94		12/09/94		12/08/94		12/08/94		12/08/94		12/13/94	
		MATRIX ---------->	Water		Water		Water		Water		Water		Water	
		UNITS ---------->	UG/L		UG/L		UG/L		UG/L		UG/L		UG/L	
CAS #	Parameter		10867	VAL	10867	VAL	10867	VAL	10867	VAL	10867	VAL	10867	VAL
7005-72-3	4-Chlorophenyl-phenylether		10.	U	20.	U	10.	U	10.	U	10.	U	100.	U
86-73-7	Fluorene		10.	U	20.	U	10.	U	10.	U	10.	U	100.	U
100-01-6	4-Nitroaniline		50.	U	100.	U	50.	U	50.	U	50.	U	500.	U
534-52-1	4,6-Dinitro-2-methylphenol		50.	U	100.	U	50.	U	50.	U	50.	U	500.	U
86-30-6	N-Nitrosodiphenylamine		10.	U	20.	U	10.	U	10.	U	10.	U	100.	U
101-55-3	4-Bromophenyl-phenylether		10.	U	20.	U	10.	U	10.	U	10.	U	100.	U
118-74-1	Hexachlorobenzene		10.	U	20.	U	10.	U	10.	U	10.	U	100.	U
87-86-5	Pentachlorophenol		50.	U	100.	U	50.	U	50.	U	50.	U	500.	U
85-01-8	Phenanthrene		10.	U	20.	U	10.	U	10.	U	10.	U	100.	U
120-12-7	Anthracene		10.	U	20.	U	10.	U	10.	U	10.	U	100.	U
206-44-0	Fluoranthene		10.	U	20.	U	10.	U	10.	U	10.	U	100.	U
129-00-0	Pyrene		10.	U	20.	U	10.	U	10.	U	10.	U	100.	U
85-68-7	Butylbenzylphthalate		10.	U	20.	U	10.	U	10.	U	10.	U	100.	U
91-94-1	3,3'-Dichlorobenzidine		20.	U	40.	U	20.	U	20.	U	20.	U	200.	U
56-55-3	Benzo(a)anthracene		10.	U	20.	U	10.	U	10.	U	10.	U	100.	U
117-81-7	bis(2-Ethylhexyl)phthalate (BEHP)		10.	U	20.	U	10.	U	10.	U	10.	U	100.	U
218-01-9	Chrysene		10.	U	20.	U	10.	U	10.	U	10.	U	100.	U
117-84-0	Di-n-octylphthalate		10.	U	20.	U	10.	U	10.	U	10.	U	100.	U
205-99-2	Benzo(b)fluoranthene		10.	U	20.	U	10.	U	10.	U	10.	U	100.	U
207-08-9	Benzo(k)fluoranthene		10.	U	20.	U	10.	U	10.	U	10.	U	100.	U
50-32-8	Benzo(a)pyrene		10.	U	20.	U	10.	U	10.	U	10.	U	100.	U
193-39-5	Indeno(1,2,3-cd)pyrene		10.	U	20.	U	10.	U	10.	U	10.	U	100.	U
53-70-3	Dibenz(a,h)anthracene		10.	U	20.	U	10.	U	10.	U	10.	U	100.	U
191-24-2	Benzo(g,h,i)perylene		10.	U	20.	U	10.	U	10.	U	10.	U	100.	U
88-85-7	Dinoseb		7.	U	980.		7.	U	7.	U	7.	U	70.	U
65-85-0	Benzoic acid		50.	U	100.	U	50.	U	50.	U	50.	U	500.	U
106-47-8	4-Chloroaniline		20.	U	40.	U	180.		140.		20.	U	200.	U
84-74-2	Di-n-butylphthalate		10.	U	20.	U	10.	U	10.	U	10.	U	100.	U

*** Validation Complete ***

CEDAR CHEMICAL CORPORATION
WEST HELENA, ARKANSAS
PHASE II GROUNDWATER DATA

SVOA									
	SHORT ID --------->	EMW-6A		EMW-6B					
	ORIGINAL ID ----->	00EG0006A0		00EG0006B01					
	SAMPLE DATE ----->	11/30/94		11/30/94					
	DATE EXTRACTED -->	12/06/94		12/02/94					
	DATE ANALYZED --->	12/08/94		12/03/94					
	MATRIX ---------->	Water		Water					
	UNITS ----------->	UG/L		UG/L					
CAS #	Parameter	10867	VAL	10834	VAL				
108-95-2	Phenol	10.	U	100.	U				
111-44-4	bis(2-Chloroethyl)ether	10.	U	100.	U				
95-57-8	2-Chlorophenol	10.	U	100.	U				
541-73-1	1,3-Dichlorobenzene	10.	U	100.	U				
106-46-7	1,4-Dichlorobenzene	10.	U	100.	U				
100-51-6	Benzyl alcohol	20.	U	200.	U				
95-50-1	1,2-Dichlorobenzene	10.	U	120.					
95-48-7	2-Methylphenol (o-Cresol)	10.	U	100.	U				
108-60-1	bis(2-chloroisopropyl) ether	10.	U	100.	U				
106-44-5	4-Methylphenol (p-Cresol)	10.	U	100.	U				
621-64-7	N-Nitroso-di-n-propylamine	10.	U	100.	U				
67-72-1	Hexachloroethane	10.	U	100.	U				
98-95-3	Nitrobenzene	10.	U	100.	U				
78-59-1	Isophorone	10.	U	100.	U				
88-75-5	2-Nitrophenol	10.	U	100.	U				
105-67-9	2,4-Dimethylphenol	10.	U	100.	U				
111-91-1	bis(2-Chloroethoxy)methane	10.	U	100.	U				
120-83-2	2,4-Dichlorophenol	10.	U	100.	U				
120-82-1	1,2,4-Trichlorobenzene	10.	U	100.	U				
91-20-3	Naphthalene	10.	U	100.	U				
87-68-3	Hexachlorobutadiene	10.	U	100.	U				
59-50-7	4-Chloro-3-methylphenol	20.	U	200.	U				
91-57-6	2-Methylnaphthalene	10.	U	100.	U				
77-47-4	Hexachlorocyclopentadiene	10.	U	100.	U				
88-06-2	2,4,6-Trichlorophenol	10.	U	100.	U				
95-95-4	2,4,5-Trichlorophenol	10.	U	100.	U				
91-58-7	2-Chloronaphthalene	10.	U	100.	U				
88-74-4	2-Nitroaniline	50.	U	500.	U				
131-11-3	Dimethylphthalate	10.	U	100.	U				
208-96-8	Acenaphthylene	10.	U	100.	U				
99-09-2	3-Nitroaniline	50.	U	500.	U				
83-32-9	Acenaphthene	10.	U	100.	U				
51-28-5	2,4-Dinitrophenol	50.	U	500.	U				
100-02-7	4-Nitrophenol	50.	U	500.	U				
132-64-9	Dibenzofuran	10.	U	100.	U				
121-14-2	2,4-Dinitrotoluene	10.	U	100.	U				
606-20-2	2,6-Dinitrotoluene	10.	U	100.	U				
84-66-2	Diethylphthalate	10.	U	100.	U				

*** Validation Complete ***

CEDAR CHEMICAL CORPORATION
WEST HELENA, ARKANSAS
PHASE II GROUNDWATER DATA

SVOA										
	SHORT ID -------->	EMW-6A		EMW-6B						
	ORIGINAL ID ----->	00EG0006A0		00EG0006B01						
	SAMPLE DATE ----->	11/30/94		11/30/94						
	DATE EXTRACTED -->	12/06/94		12/02/94						
	DATE ANALYZED --->	12/08/94		12/03/94						
	MATRIX ---------->	Water		Water						
	UNITS ----------->	UG/L		UG/L						
CAS #	Parameter	10867	VAL	10834	VAL					
7005-72-3	4-Chlorophenyl-phenylether	10.	U	100.	U					
86-73-7	Fluorene	10.	U	100.	U					
100-01-6	4-Nitroaniline	50.	U	500.	U					
534-52-1	4,6-Dinitro-2-methylphenol	50.	U	500.	U					
86-30-6	N-Nitrosodiphenylamine	10.	U	100.	U					
101-55-3	4-Bromophenyl-phenylether	10.	U	100.	U					
118-74-1	Hexachlorobenzene	10.	U	100.	U					
87-86-5	Pentachlorophenol	50.	U	500.	U					
85-01-8	Phenanthrene	10.	U	100.	U					
120-12-7	Anthracene	10.	U	100.	U					
206-44-0	Fluoranthene	10.	U	100.	U					
129-00-0	Pyrene	10.	U	100.	U					
85-68-7	Butylbenzylphthalate	10.	U	100.	U					
91-94-1	3,3'-Dichlorobenzidine	20.	U	200.	U					
56-55-3	Benzo(a)anthracene	10.	U	100.	U					
117-81-7	bis(2-Ethylhexyl)phthalate (BEHP)	10.	U	100.	U					
218-01-9	Chrysene	10.	U	100.	U					
117-84-0	Di-n-octylphthalate	10.	U	100.	U					
205-99-2	Benzo(b)fluoranthene	10.	U	100.	U					
207-08-9	Benzo(k)fluoranthene	10.	U	100.	U					
50-32-8	Benzo(a)pyrene	10.	U	100.	U					
193-39-5	Indeno(1,2,3-cd)pyrene	10.	U	100.	U					
53-70-3	Dibenz(a,h)anthracene	10.	U	100.	U					
191-24-2	Benzo(g,h,i)perylene	10.	U	100.	U					
88-85-7	Dinoseb	7.	U	70.	U					
65-85-0	Benzoic acid	50.	U	500.	U					
106-47-8	4-Chloroaniline	20.	U	6900.						
84-74-2	Di-n-butylphthalate	10.	U	100.	U					

*** Validation Complete ***

CEDAR CHEMICAL CORPORATION
WEST HELENA, ARKANSAS
PHASE II GROUNDWATER DATA

VOA													
	SHORT ID -------->	1MW-1		1MW-2		1MW-3		1MW-4		1MW-5		1MW-6	
	ORIGINAL ID ----->	001G000101		001G000201		001G000301		001G000401		001G000501		001G000601	
	SAMPLE DATE ----->	11/29/94		11/29/94		11/30/94		11/30/94		11/30/94		11/30/94	
	DATE EXTRACTED -->	12/04/94		12/04/94		12/04/94		12/04/94		12/04/94		12/04/94	
	DATE ANALYZED --->	12/03/94		12/03/94		12/02/94		12/02/94		12/04/94		12/02/94	
	MATRIX ---------->	Water		Water		Water		Water		Water		Water	
	UNITS ---------->	UG/L		UG/L		UG/L		UG/L		UG/L		UG/L	
CAS #	Parameter	10834	VAL	10834	VAL	10834	VAL	10834	VAL	10834	VAL	10834	VAL
74-87-3	Chloromethane	10.	U	10.	U	10.	U	10.	U	10.	U	10.	U
74-83-9	Bromomethane	10.	U	10.	U	10.	U	10.	U	10.	U	10.	U
75-01-4	Vinyl chloride	10.	U	10.	U	10.	U	10.	U	10.	U	10.	U
75-00-3	Chloroethane	10.	U	10.	U	10.	U	10.	U	10.	U	10.	U
75-09-2	Methylene chloride	20.	U	20.	U	20.	U	20.	U	20.	U	20.	U
67-64-1	Acetone	100.	U	100.	U	100.	U	100.	U	100.	U	100.	U
75-15-0	Carbon disulfide	100.	U	100.	U	100.	U	100.	U	100.	U	100.	U
75-35-4	1,1-Dichloroethene	5.	U	5.	U	5.	U	5.	U	5.	U	5.	U
75-34-3	1,1-Dichloroethane	5.	U	5.	U	5.	U	5.	U	5.	U	5.	U
156-60-5	trans-1,2-Dichloroethene	5.	U	5.	U	5.	U	5.	U	5.	U	5.	U
67-66-3	Chloroform	5.	U	5.	U	5.	U	5.	U	5.	U	5.	U
107-06-2	1,2-Dichloroethane	14.		5.	U	1100.		1100.		5.	U	1300.	
78-93-3	2-Butanone (MEK)	100.	U	100.	U	100.	U	100.	U	100.	U	100.	U
71-55-6	1,1,1-Trichloroethane	5.	U	5.	U	5.	U	5.	U	5.	U	5.	U
56-23-5	Carbon tetrachloride	5.	U	5.	U	5.	U	5.	U	5.	U	5.	U
108-05-4	Vinyl acetate	50.	U	50.	U	50.	U	50.	U	50.	U	50.	U
75-27-4	Bromodichloromethane	5.	U	5.	U	5.	U	5.	U	5.	U	5.	U
79-34-5	1,1,2,2-Tetrachloroethane	5.	U	5.	U	5.	U	5.	U	5.	U	5.	U
78-87-5	1,2-Dichloropropane	5.	U	5.	U	5.	U	5.	U	5.	U	5.	U
10061-02-6	trans-1,3-Dichloropropene	5.	U	5.	U	5.	U	5.	U	5.	U	5.	U
79-01-6	Trichloroethene	5.	U	5.	U	5.	U	5.	U	5.	U	5.	U
124-48-1	Dibromochloromethane	5.	U	5.	U	5.	U	5.	U	5.	U	5.	U
79-00-5	1,1,2-Trichloroethane	5.	U	5.	U	5.	U	5.	U	5.	U	5.	U
71-43-2	Benzene	5.	U	5.	U	5.	U	5.	U	5.	U	5.	U
10061-01-5	cis-1,3-Dichloropropene	5.	U	5.	U	5.	U	5.	U	5.	U	5.	U
110-75-8	2-Chloroethylvinylether	10.	U	10.	U	10.	U	10.	U	10.	U	10.	U
75-25-2	Bromoform	5.	U	5.	U	5.	U	5.	U	5.	U	5.	U
591-78-6	2-Hexanone	50.	U	50.	U	50.	U	50.	U	50.	U	50.	U
108-10-1	4-Methyl-2-Pentanone (MIBK)	50.	U	50.	U	50.	U	50.	U	50.	U	50.	U
127-18-4	Tetrachloroethene	5.	U	5.	U	5.	U	5.	U	5.	U	5.	U
108-88-3	Toluene	5.	U	5.	U	5.	U	5.	U	5.	U	5.	U
108-90-7	Chlorobenzene	5.	U	5.	U	11.		5.	U	5.	U	5.	U
100-41-4	Ethylbenzene	5.	U	5.	U	5.	U	5.	U	5.	U	5.	U
100-42-5	Styrene	5.	U	5.	U	5.	U	5.	U	5.	U	5.	U
1330-20-7	Xylene (total)	5.	U	5.	U	5.	U	5.	U	5.	U	5.	U

*** Validation Complete ***

CEDAR CHEMICAL CORPORATION
WEST HELENA, ARKANSAS
PHASE II GROUNDWATER DATA

VOA													
	SHORT ID --------->	1GB-1 (36')		1GB-2 (42')		1GB-2 (61.5')		1GB-2 (80')		1GB-2 (102')		1GB-3 (37.5')	
	ORIGINAL ID ------>	001GGB0101		001GGB0201		001GGB0202		001GGB0203		001GGB0204		001GGB0301	
	SAMPLE DATE ------>	12/20/94		12/20/94		12/21/94		12/22/94		12/23/94		12/21/94	
	DATE EXTRACTED -->	12/23/94		12/22/94		12/22/94		12/27/94		12/27/94		12/22/94	
	DATE ANALYZED --->	12/23/94		12/23/94		12/23/94		12/27/94		12/27/94		12/23/94	
	MATRIX ----------->	Water		Water		Water		Water		Water		Water	
	UNITS ------------>	UG/L		UG/L		UG/L		UG/L		UG/L		UG/L	
CAS #	Parameter	11213	VAL	11213	VAL	11213	VAL	11234	VAL	11234	VAL	11213	VAL
74-87-3	Chloromethane	10.	U	10.	U	10.	U	10.	U	10.	U	10.	U
74-83-9	Bromomethane	10.	U	10.	U	10.	U	10.	U	10.	U	10.	U
75-01-4	Vinyl chloride	10.	U	10.	U	10.	U	10.	U	10.	U	10.	U
75-00-3	Chloroethane	10.	U	10.	U	10.	U	10.	U	10.	U	10.	U
75-09-2	Methylene chloride	20.	U	20.	U	20.	U	20.	U	20.	U	20.	U
67-64-1	Acetone	100.	U	100.	U	100.	U	100.	U	100.	U	100.	U
75-15-0	Carbon disulfide	100.	U	100.	U	100.	U	100.	U	100.	U	100.	U
75-35-4	1,1-Dichloroethene	5.	U	5.	U	5.	U	5.	U	5.	U	5.	U
75-34-3	1,1-Dichloroethane	5.	U	5.	U	5.	U	5.	U	5.	U	5.	U
156-60-5	trans-1,2-Dichloroethene	5.	U	5.	U	5.	U	5.	U	5.	U	5.	U
67-66-3	Chloroform	5.	U	5.	U	5.	U	5.	U	5.	U	5.	U
107-06-2	1,2-Dichloroethane	5.	U	5.	U	5.	U	9.1		9.4		5.	U
78-93-3	2-Butanone (MEK)	100.	U	100.	U	100.	U	100.	U	100.	U	100.	U
71-55-6	1,1,1-Trichloroethane	5.	U	5.	U	5.	U	5.	U	5.	U	5.	U
56-23-5	Carbon tetrachloride	5.	U	5.	U	5.	U	5.	U	5.	U	5.	U
108-05-4	Vinyl acetate	50.	U	50.	U	50.	U	50.	U	50.	U	50.	U
75-27-4	Bromodichloromethane	5.	U	5.	U	5.	U	5.	U	5.	U	5.	U
79-34-5	1,1,2,2-Tetrachloroethane	5.	U	5.	U	5.	U	5.	U	5.	U	5.	U
78-87-5	1,2-Dichloropropane	5.	U	5.	U	5.	U	5.	U	5.	U	5.	U
10061-02-6	trans-1,3-Dichloropropene	5.	U	5.	U	5.	U	5.	U	5.	U	5.	U
79-01-6	Trichloroethene	5.	U	5.	U	5.	U	5.	U	5.	U	5.	U
124-48-1	Dibromochloromethane	5.	U	5.	U	5.	U	5.	U	5.	U	5.	U
79-00-5	1,1,2-Trichloroethane	5.	U	5.	U	5.	U	5.	U	5.	U	5.	U
71-43-2	Benzene	5.	U	5.	U	5.	U	5.	U	5.	U	5.	U
10061-01-5	cis-1,3-Dichloropropene	5.	U	5.	U	5.	U	5.	U	5.	U	5.	U
110-75-8	2-Chloroethylvinylether	10.	U	10.	U	10.	U	10.	U	10.	U	10.	U
75-25-2	Bromoform	5.	U	5.	U	5.	U	5.	U	5.	U	5.	U
591-78-6	2-Hexanone	50.	U	50.	U	50.	U	50.	U	50.	U	50.	U
108-10-1	4-Methyl-2-Pentanone (MIBK)	50.	U	50.	U	50.	U	50.	U	50.	U	50.	U
127-18-4	Tetrachloroethene	5.	U	5.	U	5.	U	5.	U	5.	U	5.	U
108-88-3	Toluene	5.	U	5.	U	5.	U	5.	U	5.	U	5.	U
108-90-7	Chlorobenzene	5.	U	5.	U	5.	U	5.	U	5.	U	5.	U
100-41-4	Ethylbenzene	5.	U	5.	U	5.	U	5.	U	5.	U	5.	U
100-42-5	Styrene	5.	U	5.	U	5.	U	5.	U	5.	U	5.	U
1330-20-7	Xylene (total)	5.	U	5.	U	5.	U	5.	U	5.	U	5.	U

*** Validation Complete ***

CEDAR CHEMICAL CORPORATION
WEST HELENA, ARKANSAS
PHASE II GROUNDWATER DATA

VOA												
	SHORT ID -------->	1GB-3 (60')		1GB-3 (80')		1GB-3 (100')		1GB-4 (40')		1GB-4 (40') Dup		1GB-4 (60')	
	ORIGINAL ID ----->	001GGB0302		001GGB0303		001GGB0304		001GGB0401		001HGB0401		001GGB0402	
	SAMPLE DATE ----->	12/23/94		12/23/94		12/23/94		01/05/95		01/05/95		01/09/95	
	DATE EXTRACTED -->	12/27/94		12/27/94		12/27/94		01/09/95		01/09/95		01/12/95	
	DATE ANALYZED --->	12/28/94		12/28/94		12/28/94		01/10/95		01/10/95		01/12/95	
	MATRIX ---------->	Water		Water		Water		Water		Water		Water	
	UNITS ----------->	UG/L		UG/L		UG/L		UG/L		UG/L		UG/L	
CAS #	Parameter	11234	VAL	11234	VAL	11234	VAL	11379	VAL	11379	VAL	11462	VAL
74-87-3	Chloromethane	10.	U	10.	U	10.	U	10.	U	10.	U	10.	U
74-83-9	Bromomethane	10.	U	10.	U	10.	U	10.	U	10.	U	10.	U
75-01-4	Vinyl chloride	10.	U	10.	U	10.	U	10.	U	10.	U	10.	U
75-00-3	Chloroethane	10.	U	10.	U	10.	U	10.	U	10.	U	10.	U
75-09-2	Methylene chloride	20.	U	20.	U	20.	U	20.	U	20.	U	20.	U
67-64-1	Acetone	100.	U	100.	U	620.		100.	U	100.	U	100.	U
75-15-0	Carbon disulfide	100.	U	100.	U	100.	U	100.	U	100.	U	100.	U
75-35-4	1,1-Dichloroethene	5.	U	5.	U	5.	U	5.	U	5.	U	5.	U
75-34-3	1,1-Dichloroethane	5.	U	5.	U	5.	U	5.	U	5.	U	5.	U
156-60-5	trans-1,2-Dichloroethene	5.	U	5.	U	5.	U	5.	U	5.	U	5.	U
67-66-3	Chloroform	5.	U	5.	U	5.	U	5.	U	5.	U	5.	U
107-06-2	1,2-Dichloroethane	5.	U	5.9		63.		5.	U	5.	U	5.	U
78-93-3	2-Butanone (MEK)	100.	U	100.	U	100.	U	100.	U	100.	U	100.	U
71-55-6	1,1,1-Trichloroethane	5.	U	5.	U	5.	U	5.	U	5.	U	5.	U
56-23-5	Carbon tetrachloride	5.	U	5.	U	5.	U	5.	U	5.	U	5.	U
108-05-4	Vinyl acetate	50.	U	50.	U	50.	U	50.	U	50.	U	50.	U
75-27-4	Bromodichloromethane	5.	U	5.	U	5.	U	5.	U	5.	U	5.	U
79-34-5	1,1,2,2-Tetrachloroethane	5.	U	5.	U	5.	U	5.	U	5.	U	5.	U
78-87-5	1,2-Dichloropropane	5.	U	5.	U	5.	U	5.	U	5.	U	5.	U
10061-02-6	trans-1,3-Dichloropropene	5.	U	5.	U	5.	U	5.	U	5.	U	5.	U
79-01-6	Trichloroethene	5.	U	5.	U	5.	U	5.	U	5.	U	5.	U
124-48-1	Dibromochloromethane	5.	U	5.	U	5.	U	5.	U	5.	U	5.	U
79-00-5	1,1,2-Trichloroethane	5.	U	5.	U	5.	U	5.	U	5.	U	5.	U
71-43-2	Benzene	5.	U	5.	U	5.	U	5.	U	5.	U	5.	U
10061-01-5	cis-1,3-Dichloropropene	5.	U	5.	U	5.	U	5.	U	5.	U	5.	U
110-75-8	2-Chloroethylvinylether	10.	U	10.	U	10.	U	10.	U	10.	U	10.	U
75-25-2	Bromoform	5.	U	5.	U	5.	U	5.	U	5.	U	5.	U
591-78-6	2-Hexanone	50.	U	50.	U	50.	U	50.	U	50.	U	50.	U
108-10-1	4-Methyl-2-Pentanone (MIBK)	50.	U	50.	U	50.	U	50.	U	50.	U	50.	U
127-18-4	Tetrachloroethene	5.	U	5.	U	5.	U	5.	U	5.	U	5.	U
108-88-3	Toluene	5.	U	5.	U	5.	U	5.	U	5.	U	5.	U
108-90-7	Chlorobenzene	5.	U	5.	U	5.	U	5.	U	5.	U	5.	U
100-41-4	Ethylbenzene	5.	U	5.	U	5.	U	5.	U	5.	U	5.	U
100-42-5	Styrene	5.	U	5.	U	5.	U	5.	U	5.	U	5.	U
1330-20-7	Xylene (total)	5.	U	5.	U	5.	U	5.	U	5.	U	5.	U

*** Validation Complete ***

CEDAR CHEMICAL CORPORATION
WEST HELENA, ARKANSAS
PHASE II GROUNDWATER DATA

VOA		1GB-4 (80')		1GB-4 (107')		1MW-7		2MW-2		2MW-3		2MW-4	
	SHORT ID -------->	1GB-4 (80')		1GB-4 (107')		1MW-7		2MW-2		2MW-3		2MW-4	
	ORIGINAL ID ----->	001GGB0403		001GGB0404		001GW00701		002G000201		002G000301		002G000401	
	SAMPLE DATE ----->	01/09/95		01/09/95		01/13/95		12/01/94		12/02/94		12/02/94	
	DATE EXTRACTED -->	01/12/95		01/12/95		01/16/95		12/09/94		12/09/94		12/09/94	
	DATE ANALYZED --->	01/12/95		01/12/95		01/17/95		12/08/94		12/08/94		12/08/94	
	MATRIX ---------->	Water		Water		Water		Water		Water		Water	
	UNITS ----------->	UG/L		UG/L		UG/L		UG/L		UG/L		UG/L	
CAS #	Parameter	11462	VAL	11462	VAL	11513	VAL	10867	VAL	10867	VAL	10867	VAL
74-87-3	Chloromethane	10.	U	10.	U	10.	U	10.	U	10.	U	10.	U
74-83-9	Bromomethane	10.	U	10.	U	10.	U	10.	U	10.	U	10.	U
75-01-4	Vinyl chloride	10.	U	10.	U	10.	U	10.	U	10.	U	10.	U
75-00-3	Chloroethane	10.	U	10.	U	10.	U	10.	U	79.		10.	U
75-09-2	Methylene chloride	20.	U	20.	U	20.	U	20.	U	130.		20.	U
67-64-1	Acetone	170.		790.		100.	U	100.	U	2000.		140.	
75-15-0	Carbon disulfide	100.	U	100.	U	100.	U	100.	U	100.	U	100.	U
75-35-4	1,1-Dichloroethene	5.	U	5.	U	5.	U	5.	U	5.	U	5.	U
75-34-3	1,1-Dichloroethane	5.	U	5.	U	5.	U	5.	U	5.	U	5.	U
156-60-5	trans-1,2-Dichloroethene	5.	U	5.	U	5.	U	5.	U	5.	U	5.	U
67-66-3	Chloroform	5.	U	5.	U	5.	U	5.	U	63.		5.	U
107-06-2	1,2-Dichloroethane	5.	U	5.	U	39.		5.	U	230.		150.	
78-93-3	2-Butanone (MEK)	100.	U	100.	U	100.	U	100.	U	100.	U	100.	U
71-55-6	1,1,1-Trichloroethane	5.	U	5.	U	5.	U	5.	U	5.	U	5.	U
56-23-5	Carbon tetrachloride	5.	U	5.	U	5.	U	5.	U	5.	U	5.	U
108-05-4	Vinyl acetate	50.	U	50.	U	50.	U	50.	U	50.	U	50.	U
75-27-4	Bromodichloromethane	5.	U	5.	U	5.	U	5.	U	5.	U	5.	U
79-34-5	1,1,2,2-Tetrachloroethane	5.	U	5.	U	5.	U	5.	U	5.	U	5.	U
78-87-5	1,2-Dichloropropane	5.	U	5.	U	5.	U	5.	U	5.	U	5.	U
10061-02-6	trans-1,3-Dichloropropene	5.	U	5.	U	5.	U	5.	U	5.	U	5.	U
79-01-6	Trichloroethene	5.	U	5.	U	5.	U	5.	U	5.	U	5.	U
124-48-1	Dibromochloromethane	5.	U	5.	U	5.	U	5.	U	5.	U	5.	U
79-00-5	1,1,2-Trichloroethane	5.	U	5.	U	5.	U	5.	U	5.	U	5.	U
71-43-2	Benzene	5.	U	5.	U	5.	U	5.	U	5.	U	5.	U
10061-01-5	cis-1,3-Dichloropropene	5.	U	5.	U	5.	U	5.	U	5.	U	5.	U
110-75-8	2-Chloroethylvinylether	10.	U	10.	U	10.	U	10.	U	10.	U	10.	U
75-25-2	Bromoform	5.	U	5.	U	5.	U	5.	U	5.	U	5.	U
591-78-6	2-Hexanone	50.	U	50.	U	50.	U	50.	U	50.	U	50.	U
108-10-1	4-Methyl-2-Pentanone (MIBK)	50.	U	50.	U	50.	U	50.	U	2500.		250.	U
127-18-4	Tetrachloroethene	5.	U	5.	U	5.	U	5.	U	5.	U	5.	U
108-88-3	Toluene	5.	U	5.	U	5.	U	5.	U	710.		21.	
108-90-7	Chlorobenzene	5.	U	5.	U	5.	U	5.	U	62.		210.	
100-41-4	Ethylbenzene	5.	U	5.	U	5.	U	5.	U	5.	U	5.	U
100-42-5	Styrene	5.	U	5.	U	5.	U	5.	U	5.	U	5.	U
1330-20-7	Xylene (total)	5.	U	5.	U	5.	U	5.	U	17.		11.	

*** Validation Complete ***

CEDAR CHEMICAL CORPORATION
WEST HELENA, ARKANSAS
PHASE II GROUNDWATER DATA

VOA		SHORT ID --------->	2MW-4 Dup		2MW-5		2MW-7		2MW-7		4MW-1		4MW-2	
		ORIGINAL ID ----->	002H000401		002G000501		002G000701		002GW00701		004G000101		004G000201	
		SAMPLE DATE ----->	12/02/94		12/01/94		12/23/94		01/19/95		12/15/94		12/15/94	
		DATE EXTRACTED -->	12/09/94		12/09/94		12/27/94		01/23/95		12/22/94		12/22/94	
		DATE ANALYZED --->	12/08/94		12/08/94		12/27/94		01/23/95		12/22/94		12/22/94	
		MATRIX ---------->	Water		Water		Water		Water		Water		Water	
		UNITS ---------->	UG/L		UG/L		UG/L		UG/L		UG/L		UG/L	
CAS #	Parameter		10867	VAL	10867	VAL	11234	VAL	11626	VAL	11134	VAL	11134	VAL
74-87-3	Chloromethane		10.	U	10.	U	10.	U	10.	U	5000.	U	50.	U
74-83-9	Bromomethane		10.	U	10.	U	10.	U	10.	U	5000.	U	50.	U
75-01-4	Vinyl chloride		10.	U	10.	U	10.	U	10.	U	5000.	U	50.	U
75-00-3	Chloroethane		10.	U	10.	U	10.	U	10.	U	5000.	U	50.	U
75-09-2	Methylene chloride		20.	U	20.	U	20.	U	20.	U	10000.	U	1300.	
67-64-1	Acetone		100.	U	100.	U	100.	U	1000.		50000.	U	500.	U
75-15-0	Carbon disulfide		100.	U	100.	U	100.	U	100.	U	50000.	U	500.	U
75-35-4	1,1-Dichloroethene		5.	U	5.	U	5.	U	5.	U	2500.	U	25.	U
75-34-3	1,1-Dichloroethane		5.	U	5.	U	5.	U	5.	U	2500.	U	25.	U
156-60-5	trans-1,2-Dichloroethene		5.	U	5.	U	5.	U	5.	U	2500.	U	25.	U
67-66-3	Chloroform		5.	U	5.	U	5.	U	5.	U	2500.	U	460.	
107-06-2	1,2-Dichloroethane		150.		5.	U	5.	U	5.	U	4300.		310.	
78-93-3	2-Butanone (MEK)		100.	U	100.	U	100.	U	100.	U	50000.	U	500.	U
71-55-6	1,1,1-Trichloroethane		5.	U	5.	U	5.	U	5.	U	2500.	U	25.	U
56-23-5	Carbon tetrachloride		5.	U	5.	U	5.	U	5.	U	2500.	U	25.	U
108-05-4	Vinyl acetate		50.	U	50.	U	50.	U	50.	U	25000.	U	250.	U
75-27-4	Bromodichloromethane		5.	U	5.	U	5.	U	5.	U	2500.	U	25.	U
79-34-5	1,1,2,2-Tetrachloroethane		5.	U	5.	U	5.	U	5.	U	2500.	U	25.	U
78-87-5	1,2-Dichloropropane		5.	U	5.	U	5.	U	5.	U	2500.	U	25.	U
10061-02-6	trans-1,3-Dichloropropene		5.	U	5.	U	5.	U	5.	U	2500.	U	25.	U
79-01-6	Trichloroethene		5.	U	5.	U	5.	U	5.	U	2500.	U	25.	U
124-48-1	Dibromochloromethane		5.	U	5.	U	5.	U	5.	U	2500.	U	25.	U
79-00-5	1,1,2-Trichloroethane		5.	U	5.	U	5.	U	5.	U	2500.	U	25.	U
71-43-2	Benzene		5.	U	5.	U	5.	U	5.	U	2500.	U	25.	U
10061-01-5	cis-1,3-Dichloropropene		5.	U	5.	U	5.	U	5.	U	2500.	U	25.	U
110-75-8	2-Chloroethylvinylether		10.	U	10.	U	10.	U	10.	U	5000.	U	50.	U
75-25-2	Bromoform		5.	U	5.	U	5.	U	5.	U	2500.	U	25.	U
591-78-6	2-Hexanone		50.	U	50.	U	50.	U	50.	U	25000.	U	250.	U
108-10-1	4-Methyl-2-Pentanone (MIBK)		50.	U	50.	U	50.	U	50.	U	25000.	U	520.	
127-18-4	Tetrachloroethene		5.	U	5.	U	5.	U	5.	U	2500.	U	25.	U
108-88-3	Toluene		12.		5.	U	5.	U	5.	U	140000.		25.	U
108-90-7	Chlorobenzene		240.		5.	U	5.	U	5.	U	2500.	U	25.	U
100-41-4	Ethylbenzene		5.	U	5.	U	5.	U	5.	U	2500.	U	25.	U
100-42-5	Styrene		5.	U	5.	U	5.	U	5.	U	2500.	U	25.	U
1330-20-7	Xylene (total)		10.	U	5.	U	5.	U	5.	U	2500.	U	25.	U

*** Validation Complete ***

CEDAR CHEMICAL CORPORATION
WEST HELENA, ARKANSAS
PHASE II GROUNDWATER DATA

VOA													
	SHORT ID -------->	4GB-3 (51')		4GB-3 (65')		4GB-3 (80')		4GB-3 (95')		4GB-4 (40')		4GB-4 (60')	
	ORIGINAL ID ----->	004G00G301		004G00G302		004G00G303		004G00G304		004G00G401		004G00G402	
	SAMPLE DATE ----->	12/13/94		12/14/94		12/14/94		12/14/94		01/31/95		01/31/95	
	DATE EXTRACTED -->	12/21/94		12/21/94		12/21/94		12/21/94		02/02/95		02/02/95	
	DATE ANALYZED --->	12/22/94		12/21/94		12/21/94		12/21/94		02/02/95		02/02/95	
	MATRIX ---------->	Water		Water		Water		Water		Water		Water	
	UNITS ---------->	UG/L		UG/L		UG/L		UG/L		UG/L		UG/L	
CAS #	Parameter	11097	VAL	11097	VAL	11097	VAL	11097	VAL	11834	VAL	11834	VAL
74-87-3	Chloromethane	10.	U	10.	U	10.	U	10.	U	10.	U	10.	U
74-83-9	Bromomethane	10.	U	10.	U	10.	U	10.	U	10.	U	10.	U
75-01-4	Vinyl chloride	10.	U	10.	U	10.	U	10.	U	10.	U	10.	U
75-00-3	Chloroethane	10.	U	10.	U	10.	U	10.	U	10.	U	10.	U
75-09-2	Methylene chloride	20.	U	20.	U	20.	U	20.	U	20.	U	20.	U
67-64-1	Acetone	100.	U	100.	U	100.	U	100.	U	100.	U	100.	U
75-15-0	Carbon disulfide	100.	U	100.	U	100.	U	100.	U	100.	U	100.	U
75-35-4	1,1-Dichloroethene	5.	U	5.	U	5.	U	5.	U	5.	U	5.	U
75-34-3	1,1-Dichloroethane	5.	U	5.	U	5.	U	5.	U	5.	U	5.	U
156-60-5	trans-1,2-Dichloroethene	5.	U	5.	U	5.	U	5.	U	5.	U	5.	U
67-66-3	Chloroform	5.	U	5.	U	5.	U	5.	U	5.	U	5.	U
107-06-2	1,2-Dichloroethane	5.	U	5.	U	8.4		7.6		5.	U	190D.	
78-93-3	2-Butanone (MEK)	100.	U	100.	U	100.	U	100.	U	100.	U	100.	U
71-55-6	1,1,1-Trichloroethane	5.	U	5.	U	5.	U	5.	U	5.	U	5.	U
56-23-5	Carbon tetrachloride	5.	U	5.	U	5.	U	5.	U	5.	U	5.	U
108-05-4	Vinyl acetate	50.	U	50.	U	50.	U	50.	U	50.	U	50.	U
75-27-4	Bromodichloromethane	5.	U	5.	U	5.	U	5.	U	5.	U	5.	U
79-34-5	1,1,2,2-Tetrachloroethane	5.	U	5.	U	5.	U	5.	U	5.	U	5.	U
78-87-5	1,2-Dichloropropane	5.	U	5.	U	5.	U	5.	U	5.	U	5.	U
10061-02-6	trans-1,3-Dichloropropene	5.	U	5.	U	5.	U	5.	U	5.	U	5.	U
79-01-6	Trichloroethene	5.	U	5.	U	5.	U	5.	U	5.	U	5.	U
124-48-1	Dibromochloromethane	5.	U	5.	U	5.	U	5.	U	5.	U	5.	U
79-00-5	1,1,2-Trichloroethane	5.	U	5.	U	5.	U	5.	U	5.	U	5.	U
71-43-2	Benzene	5.	U	5.	U	5.	U	5.	U	5.	U	5.	U
10061-01-5	cis-1,3-Dichloropropene	5.	U	5.	U	5.	U	5.	U	5.	U	5.	U
110-75-8	2-Chloroethylvinylether	10.	U	10.	U	10.	U	10.	U	10.	U	10.	U
75-25-2	Bromoform	5.	U	5.	U	5.	U	5.	U	5.	U	5.	U
591-78-6	2-Hexanone	50.	U	50.	U	50.	U	50.	U	50.	U	50.	U
108-10-1	4-Methyl-2-Pentanone (MIBK)	50.	U	50.	U	50.	U	50.	U	50.	U	50.	U
127-18-4	Tetrachloroethene	5.	U	5.	U	5.	U	5.	U	5.	U	5.	U
108-88-3	Toluene	5.	U	5.	U	5.	U	5.	U	5.	U	5.	U
108-90-7	Chlorobenzene	5.	U	5.	U	5.	U	5.	U	5.	U	5.	U
100-41-4	Ethylbenzene	5.	U	5.	U	5.	U	5.	U	5.	U	5.	U
100-42-5	Styrene	5.	U	5.	U	5.	U	5.	U	5.	U	5.	U
1330-20-7	Xylene (total)	5.	U	5.	U	5.	U	5.	U	5.	U	5.	U

*** Validation Complete ***

CEDAR CHEMICAL CORPORATION
WEST HELENA, ARKANSAS
PHASE II GROUNDWATER DATA

VOA																					
	SHORT ID -------->	4GB-4 (80')		4GB-4 (100')		4MW-3		4MW-4		9GB-21 (30')		9GB-21 (45')	
	ORIGINAL ID ----->	004G00G403		004G00G404		004GW00301		004GW00404		009G002101		0D9G002102	
	SAMPLE DATE ----->	01/31/95		01/31/95		01/13/95		01/20/95		12/07/94		12/07/94	
	DATE EXTRACTED -->	02/02/95		02/02/95		01/16/95		01/23/95		12/19/94		12/19/94	
	DATE ANALYZED --->	02/03/95		02/03/95		01/16/95		01/24/95		12/19/94		12/19/94	
	MATRIX ---------->	Water		Water		Water		Water		Water		Water	
	UNITS ---------->	UG/L		UG/L		UG/L		UG/L		UG/L		UG/L	
CAS #	Parameter	11834	VAL	11834	VAL	11513	VAL	11626	VAL	11008	VAL	11008	VAL
74-87-3	Chloromethane	10.	U	10.	U	10.	U	10.	U	400.	U	400.	U
74-83-9	Bromomethane	10.	U	10.	U	10.	U	10.	U	400.	U	400.	U
75-01-4	Vinyl chloride	10.	U	10.	U	10.	U	10.	U	400.	U	400.	U
75-00-3	Chloroethane	10.	U	10.	U	10.	U	10.	U	400.	U	400.	U
75-09-2	Methylene chloride	20.	U	20.	U	150.		20.	U	5000.		800.	U
67-64-1	Acetone	110.		100.	U	100.	U	110.		4000.	U	4000.	U
75-15-0	Carbon disulfide	100.	U	100.	U	100.	U	100.	U	4000.	U	4000.	U
75-35-4	1,1-Dichloroethene	5.	U	5.	U	5.	U	5.	U	200.	U	200.	U
75-34-3	1,1-Dichloroethane	5.	U	5.	U	5.	U	5.	U	200.	U	200.	U
156-60-5	trans-1,2-Dichloroethene	5.	U	5.	U	5.	U	5.	U	200.	U	200.	U
67-66-3	Chloroform	5.	U	5.	U	14.		5.	U	200.	U	200.	U
107-06-2	1,2-Dichloroethane	3300.		1900.		52000.		11.		3900.		5800.	
78-93-3	2-Butanone (MEK)	100.	U	100.	U	100.	U	100.	U	4000.	U	4000.	U
71-55-6	1,1,1-Trichloroethane	5.	U	5.	U	5.	U	5.	U	200.	U	200.	U
56-23-5	Carbon tetrachloride	5.	U	5.	U	5.	U	5.	U	200.	U	200.	U
108-05-4	Vinyl acetate	50.	U	50.	U	50.	U	50.	U	2000.	U	2000.	U
75-27-4	Bromodichloromethane	5.	U	5.	U	5.	U	6.1		200.	U	200.	U
79-34-5	1,1,2,2-Tetrachloroethane	5.	U	5.	U	5.	U	5.	U	200.	U	200.	U
78-87-5	1,2-Dichloropropane	5.	U	5.	U	43.		5.	U	200.	U	200.	U
10061-02-6	trans-1,3-Dichloropropene	5.	U	5.	U	5.	U	5.	U	200.	U	200.	U
79-01-6	Trichloroethene	5.	U	5.	U	5.	U	5.	U	200.	U	200.	U
124-48-1	Dibromochloromethane	5.	U	5.	U	5.	U	13.		200.	U	200.	U
79-00-5	1,1,2-Trichloroethane	5.	U	5.	U	27.		5.	U	200.	U	200.	U
71-43-2	Benzene	5.	U	5.	U	5.	U	5.	U	200.	U	200.	U
10061-01-5	cis-1,3-Dichloropropene	5.	U	5.	U	5.	U	5.	U	200.	U	200.	U
110-75-8	2-Chloroethylvinylether	10.	U	10.	U	10.	U	10.	U	400.	U	400.	U
75-25-2	Bromoform	5.	U	5.	U	5.	U	11.		200.	U	200.	U
591-78-6	2-Hexanone	50.	U	50.	U	50.	U	50.	U	2000.	U	2000.	U
108-10-1	4-Methyl-2-Pentanone (MIBK)	50.	U	50.	U	50.	U	50.	U	2000.	U	2000.	U
127-18-4	Tetrachloroethene	5.	U	5.	U	5.	U	5.	U	200.	U	200.	U
108-88-3	Toluene	5.	U	5.	U	5.	U	5.	U	200.	U	200.	U
108-90-7	Chlorobenzene	5.	U	5.	U	5.	U	5.	U	200.	U	200.	U
100-41-4	Ethylbenzene	5.	U	5.	U	5.	U	5.	U	200.	U	200.	U
100-42-5	Styrene	5.	U	5.	U	5.	U	5.	U	200.	U	200.	U
1330-20-7	Xylene (total)	5.	U	5.	U	5.	U	5.	U	200.	U	200.	U

*** Validation Complete ***

CEDAR CHEMICAL CORPORATION
WEST HELENA, ARKANSAS
PHASE II GROUNDWATER DATA

VOA																					
	SHORT ID -------->	9GB-21 (60')		9GB-21 (75')		9GB-21 (90')		9MW-1		EMW-1		EMW-2	
	ORIGINAL ID ----->	009G002103		009G002104		009G002105		009GW00101		00EG000101		00EG000201	
	SAMPLE DATE ----->	12/08/94		12/09/94		12/16/94		01/13/95		11/30/94		12/01/94	
	DATE EXTRACTED -->	12/19/94		12/19/94		12/23/94		01/16/95		12/04/94		12/06/94	
	DATE ANALYZED --->	12/19/94		12/19/94		12/23/94		01/18/95		12/02/94		12/08/94	
	MATRIX ---------->	Water		Water		Water		Water		Water		Water	
	UNITS ---------->	UG/L		UG/L		UG/L		UG/L		UG/L		UG/L	
CAS #	Parameter	11008	VAL	11008	VAL	11134	VAL	11513	VAL	10834	VAL	10867	VAL
74-87-3	Chloromethane	400.	U	400.	U	10.	U	100.	U	10.	U	10.	U
74-83-9	Bromomethane	400.	U	400.	U	10.	U	100.	U	10.	U	10.	U
75-01-4	Vinyl chloride	400.	U	400.	U	10.	U	100.	U	10.	U	10.	U
75-00-3	Chloroethane	400.	U	400.	U	10.	U	100.	U	10.	U	10.	U
75-09-2	Methylene chloride	800.	U	800.	U	20.	U	4100.		20.	U	20.	U
67-64-1	Acetone	4000.	U	4000.	U	100.	U	1000.	U	100.	U	130.	
75-15-0	Carbon disulfide	4000.	U	4000.	U	100.	U	1000.	U	100.	U	100.	U
75-35-4	1,1-Dichloroethene	200.	U	200.	U	5.	U	50.	U	5.	U	5.	U
75-34-3	1,1-Dichloroethane	200.	U	200.	U	5.	U	50.	U	5.	U	5.	U
156-60-5	trans-1,2-Dichloroethene	200.	U	200.	U	5.	U	50.	U	5.	U	5.	U
67-66-3	Chloroform	200.	U	200.	U	5.	U	50.	U	5.	U	5.	U
107-06-2	1,2-Dichloroethane	6800.		7300.		41.		2300.		62.		5.	U
78-93-3	2-Butanone (MEK)	4000.	U	4000.	U	100.	U	1000.	U	100.	U	100.	U
71-55-6	1,1,1-Trichloroethane	200.	U	200.	U	5.	U	50.	U	5.	U	5.	U
56-23-5	Carbon tetrachloride	200.	U	200.	U	5.	U	50.	U	5.	U	5.	U
108-05-4	Vinyl acetate	2000.	U	2000.	U	50.	U	500.	U	50.	U	50.	U
75-27-4	Bromodichloromethane	200.	U	200.	U	5.	U	50.	U	5.	U	5.	U
79-34-5	1,1,2,2-Tetrachloroethane	200.	U	200.	U	5.	U	50.	U	5.	U	5.	U
78-87-5	1,2-Dichloropropane	200.	U	200.	U	5.	U	50.	U	5.	U	5.	U
10061-02-6	trans-1,3-Dichloropropene	200.	U	200.	U	5.	U	50.	U	5.	U	5.	U
79-01-6	Trichloroethene	200.	U	200.	U	5.	U	50.	U	5.	U	5.	U
124-48-1	Dibromochloromethane	200.	U	200.	U	5.	U	50.	U	5.	U	5.	U
79-00-5	1,1,2-Trichloroethane	200.	U	200.	U	5.	U	50.	U	5.	U	5.	U
71-43-2	Benzene	200.	U	200.	U	5.	U	50.	U	5.	U	5.	U
10061-01-5	cis-1,3-Dichloropropene	200.	U	200.	U	5.	U	50.	U	5.	U	5.	U
110-75-8	2-Chloroethylvinylether	400.	U	400.	U	10.	U	100.	U	10.	U	10.	U
75-25-2	Bromoform	200.	U	200.	U	5.	U	50.	U	5.	U	5.	U
591-78-6	2-Hexanone	2000.	U	2000.	U	50.	U	500.	U	50.	U	50.	U
108-10-1	4-Methyl-2-Pentanone (MIBK)	2000.	U	2000.	U	50.	U	500.	U	50.	U	50.	U
127-18-4	Tetrachloroethene	200.	U	200.	U	5.	U	50.	U	5.	U	5.	U
108-88-3	Toluene	200.	U	200.	U	5.	U	52.		5.	U	5.	U
108-90-7	Chlorobenzene	200.	U	200.	U	5.	U	50.	U	5.	U	5.	U
100-41-4	Ethylbenzene	200.	U	200.	U	5.	U	50.	U	5.	U	5.	U
100-42-5	Styrene	200.	U	200.	U	5.	U	50.	U	5.	U	5.	U
1330-20-7	Xylene (total)	200.	U	200.	U	5.	U	50.	U	5.	U	5.	U

*** Validation Complete ***

CEDAR CHEMICAL CORPORATION
WEST HELENA, ARKANSAS
PHASE II GROUNDWATER DATA

VOA																							
	SHORT ID --------->	EMW-3		EMW-4		EMW-4 Dup		EMW-6		EMW-7		EMW-6A	
	ORIGINAL ID ----->	00EG000301		00EG000401		00EH000401		00EG000601		00EG000701		00EG0006A0	
	SAMPLE DATE ----->	12/01/94		12/01/94		12/01/94		11/30/94		12/01/94		11/30/94	
	DATE EXTRACTED -->	12/06/94		12/06/94		12/09/94		12/06/94		12/09/94		12/09/94	
	DATE ANALYZED --->	12/08/94		12/08/94		12/08/94		12/08/94		12/08/94		12/08/94	
	MATRIX ---------->	Water		Water		Water		Water		Water		Water	
	UNITS ---------->	UG/L		UG/L		UG/L		UG/L		UG/L		UG/L	
CAS #	Parameter	10867	VAL	10867	VAL	10867	VAL	10867	VAL	10867	VAL	10867	VAL
74-87-3	Chloromethane	500.	U	100.	U	100.	U	20.	U	5000.	U	10.	U
74-83-9	Bromomethane	500.	U	100.	U	100.	U	20.	U	5000.	U	10.	U
75-01-4	Vinyl chloride	500.	U	100.	U	100.	U	20.	U	5000.	U	10.	U
75-00-3	Chloroethane	500.	U	100.	U	100.	U	20.	U	5000.	U	10.	U
75-09-2	Methylene chloride	2000.		200.	U	200.	U	40.	U	10000.	U	20.	U
67-64-1	Acetone	5000.	U	1000.	U	1000.	U	200.	U	50000.	U	100.	U
75-15-0	Carbon disulfide	5000.	U	1000.	U	1000.	U	200.	U	50000.	U	100.	U
75-35-4	1,1-Dichloroethene	250.	U	50.	U	50.	U	10.	U	2500.	U	5.	U
75-34-3	1,1-Dichloroethane	250.	U	50.	U	50.	U	10.	U	2500.	U	5.	U
156-60-5	trans-1,2-Dichloroethene	250.	U	50.	U	50.	U	10.	U	2500.	U	5.	U
67-66-3	Chloroform	250.	U	50.	U	50.	U	10.	U	2500.	U	5.	U
107-06-2	1,2-Dichloroethane	10000.		920.		950.		360.		84000.		49.	
78-93-3	2-Butanone (MEK)	5000.	U	1000.	U	1000.	U	200.	U	50000.	U	100.	U
71-55-6	1,1,1-Trichloroethane	250.	U	50.	U	50.	U	10.	U	2500.	U	5.	U
56-23-5	Carbon tetrachloride	250.	U	50.	U	50.	U	10.	U	2500.	U	5.	U
108-05-4	Vinyl acetate	2500.	U	500.	U	500.	U	100.	U	25000.	U	50.	U
75-27-4	Bromodichloromethane	250.	U	50.	U	50.	U	10.	U	2500.	U	5.	U
79-34-5	1,1,2,2-Tetrachloroethane	250.	U	50.	U	50.	U	10.	U	2500.	U	5.	U
78-87-5	1,2-Dichloropropane	250.	U	50.	U	50.	U	10.	U	2500.	U	5.	U
10061-02-6	trans-1,3-Dichloropropene	250.	U	50.	U	50.	U	10.	U	2500.	U	5.	U
79-01-6	Trichloroethene	250.	U	50.	U	50.	U	10.	U	2500.	U	5.	U
124-48-1	Dibromochloromethane	250.	U	50.	U	50.	U	10.	U	2500.	U	5.	U
79-00-5	1,1,2-Trichloroethane	250.	U	50.	U	50.	U	10.	U	2500.	U	5.	U
71-43-2	Benzene	250.	U	50.	U	50.	U	10.	U	2500.	U	5.	U
10061-01-5	cis-1,3-Dichloropropene	250.	U	50.	U	50.	U	10.	U	2500.	U	5.	U
110-75-8	2-Chloroethylvinylether	500.	U	100.	U	100.	U	20.	U	5000.	U	10.	U
75-25-2	Bromoform	250.	U	50.	U	50.	U	10.	U	2500.	U	5.	U
591-78-6	2-Hexanone	2500.	U	500.	U	500.	U	100.	U	25000.	U	50.	U
108-10-1	4-Methyl-2-Pentanone (MIBK)	2500.	U	500.	U	500.	U	100.	U	25000.	U	50.	U
127-18-4	Tetrachloroethene	250.	U	50.	U	50.	U	10.	U	2500.	U	5.	U
108-88-3	Toluene	250.	U	50.	U	50.	U	10.	U	2500.	U	5.	U
108-90-7	Chlorobenzene	250.	U	50.	U	50.	U	10.	U	2500.	U	5.	U
100-41-4	Ethylbenzene	250.	U	50.	U	50.	U	10.	U	2500.	U	5.	U
100-42-5	Styrene	250.	U	50.	U	50.	U	10.	U	2500.	U	5.	U
1330-20-7	Xylene (total)	250.	U	50.	U	50.	U	10.	U	2500.	U	5.	U

*** Validation Complete ***

CEDAR CHEMICAL CORPORATION
WEST HELENA, ARKANSAS
PHASE II GROUNDWATER DATA

VOA

SHORT ID -------->	EMW-6B
ORIGINAL ID ----->	00EG006B01
SAMPLE DATE ----->	11/30/94
DATE EXTRACTED -->	12/04/94
DATE ANALYZED --->	12/03/94
MATRIX ---------->	Water
UNITS ----------->	UG/L

CAS #	Parameter	10834	VAL
74-87-3	Chloromethane	10.	U
74-83-9	Bromomethane	10.	U
75-01-4	Vinyl chloride	10.	U
75-00-3	Chloroethane	10.	U
75-09-2	Methylene chloride	20.	U
67-64-1	Acetone	230.	
75-15-0	Carbon disulfide	100.	U
75-35-4	1,1-Dichloroethene	5.	U
75-34-3	1,1-Dichloroethane	5.	U
156-60-5	trans-1,2-Dichloroethene	5.	U
67-66-3	Chloroform	5.	U
107-06-2	1,2-Dichloroethane	1500.	
78-93-3	2-Butanone (MEK)	100.	U
71-55-6	1,1,1-Trichloroethane	5.	U
56-23-5	Carbon tetrachloride	5.	U
108-05-4	Vinyl acetate	50.	U
75-27-4	Bromodichloromethane	5.	U
79-34-5	1,1,2,2-Tetrachloroethane	5.	U
78-87-5	1,2-Dichloropropane	5.	U
10061-02-6	trans-1,3-Dichloropropene	5.	U
79-01-6	Trichloroethene	5.	U
124-48-1	Dibromochloromethane	5.	U
79-00-5	1,1,2-Trichloroethane	5.	U
71-43-2	Benzene	14.	
10061-01-5	cis-1,3-Dichloropropene	5.	U
110-75-8	2-Chloroethylvinylether	10.	U
75-25-2	Bromoform	5.	U
591-78-6	2-Hexanone	50.	U
108-10-1	4-Methyl-2-Pentanone (MIBK)	50.	U
127-18-4	Tetrachloroethene	5.	U
108-88-3	Toluene	5.	U
108-90-7	Chlorobenzene	48.	
100-41-4	Ethylbenzene	5.	U
100-42-5	Styrene	5.	U
1330-20-7	Xylene (total)	5.	U

*** Validation Complete ***

Appendix C

USEPA Region 4 Guidance for Industrial Tap-Water

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY

REGION IV

345 COURTLAND STREET, N.E.
ATLANTA, GEORGIA 30365

November 22, 1994

4WD-OHA

MEMORANDUM

SUBJECT: Guidance on Preliminary Risk Evaluations (PREs) for the purpose of reaching a Finding of Suitability to Lease (FOSL),

FROM: Ted W. Simon, Ph.D. DABT, Toxicologist
Office of Health Assessment

THROUGH: Elmer W. Akin, Chief
Office of Health Assessment

TO: Michelle Glenn, BRAC Team Leader
BRAC Remedial Project Managers
FFB/BRAC

Introduction

On September 9, 1993, the Department of Defense issued its guidance on the Environmental Review Process to Reach a FOSL. The first objective in this guidance is to "ensure protection of the public health and the environment. USEPA Region IX has the largest number of BRAC sites and has issued draft guidance on the risk evaluation protocol to be used in reaching a FOSL. The purpose of this memorandum is to express the policy of Region IV Office of Health Assessment regarding the risk evaluation required to reach a FOSL.

Tiered Screening Based on the Environmental Condition of the Property

The BRAC Cleanup Plan Guidebook provides seven categories for properties (See sidebar next page). A summary of the requisite risk evaluations for the various property categories is presented below:

- White, Blue — No hazardous substances are present and these properties should be available for lease without any further study.
- Lt. Green, Dk. Green — Follow the PRE procedure below based on the proposed land use under the lease.

- Yellow A FOSL may be issued based on the proposed land use if comparisons to existing Baseline Risk Assessments for the Operable Units/Hazardous Waste Sites on the property indicate that the risks to human health and the environment will not exceed protective levels. In addition, property access easements will be needed for remedial activities.

- Red If environmental sampling has been performed with sufficient DQOs, then a PRE based on the proposed land use under the lease is needed to reach a FOSL.

- Gray These properties require an examination of the history and past disposal practices at the property. Based on this examination, sampling and risk evaluation may be indicated.

BRAC Property Categories

White - Areas where no storage, release or disposal of hazardous substances has occurred.

Blue - Areas where only storage of hazardous substances or petroleum products has occurred without migration of these substances from adjacent areas.

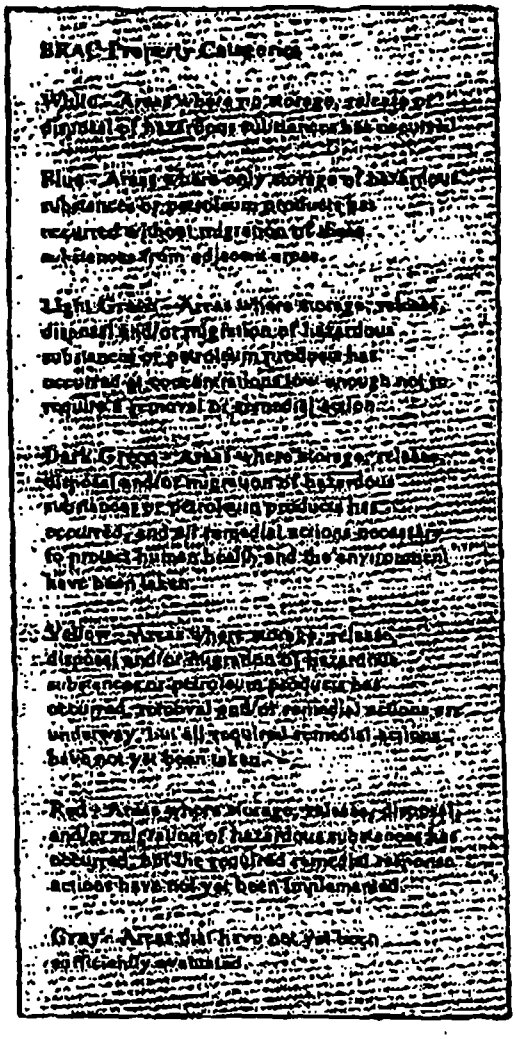
Light Green - Areas where storage, release, disposal and/or migration of hazardous substances or petroleum products has occurred at concentrations low enough not to require a removal or remedial action.

Dark Green - Areas where storage, release, disposal and/or migration of hazardous substances or petroleum products has occurred, and all remedial actions necessary to protect human health and the environment have been taken.

Yellow - Areas where storage, release, disposal and/or migration of hazardous substances or petroleum products has occurred, removal and/or remedial actions are underway, but all required remedial actions have not yet been taken.

Red - Areas where storage, release, disposal and/or migration of hazardous substances has occurred, but the required remedial response actions have not yet been implemented.

Gray - Areas that have not yet been sufficiently evaluated.



When appropriate, the FOSL should clearly specify that a property is not suitable for unrestricted use. For example, a lease restriction preventing the use of certain properties as a daycare center or school may be established to prevent children from having access to a hazardous waste site.

In most cases, it will be sufficient to specify lease restrictions to ensure protection of human health and the environment. However, if the PRE indicates that there may be site risks that exceed those appropriate for the land use under the lease, and if the Base Cleanup Team is unable to identify risk management steps to reduce exposure, it will be necessary to perform a risk assessment that quantifies risks associated with

the property. This risk assessment should be performed by a toxicologist knowledgeable in EPA risk assessment methodology.

Human Health Preliminary Risk Evaluation Protocol

It is necessary to have analytical results that are representative of the most contaminated areas within the property to be leased. In addition, at least several samples from each possible site should receive a full scan TCL/TAL analysis to increase confidence that all hazardous chemicals present are detected.

Performance of the PRE is best accomplished through the use of tables. Separate tables are constructed for carcinogens and systemic toxicants. These tables include columns listing *(i)* individual hazardous chemicals, *(ii)* their maximum detected concentrations, *(iii)* their Region III risk-based concentrations values in groundwater and soil and *(iv)* the ratios between the maximum concentrations and the screening values. For carcinogens these ratios are multiplied by 10^4 giving a risk estimate (Eq. 1, next page); for systemic toxicants, the ratios themselves give an estimate of the non-cancer hazard (Eq. 2, next page. A generic table is shown below.

Chemical	Media Conc.		Screening Value				Risk Ratio			
			Residential		Industrial		Residential		Industrial	
Col. 1	GW col. 2	Soil col. 3	GW col. 4	Soil col. 5	GW col. 6	Soil col. 7	GW col. 8	Soil col. 9	GW col. 10	Soil col. 11
Chemical$_1$										
Chemical$_{i-1}$										
Chemical$_n$										
	next to last row		Risk/Hazard Sums by Medium							
	last row		Risk/Hazard Sums by Use Scenario							

The listing of the chemicals and their maximum concentrations in groundwater and soil (columns 1-3) should be obvious. Screening values for groundwater in a residential use scenario (column 4) are taken from the Risk-Based Concentration Table (RBC), Third Quarter, 1994 from EPA Region III (attached). Screening values for groundwater in an industrial scenario (column 6) are the residential values ~~multiplied~~ divided by 0.25 for VOCs and 0.5 for other chemicals. Screening values for soil in both the residential (column 5) and industrial setting (column 7) are provided in the RBC Table.

The risk ratio values (columns 8-11) are calculated as follows:

$$\textit{Carcinogens: Risk Ratio} = \frac{\textit{Media Concentration}}{\textit{Screening Value}} \times 10^{-6} \qquad (1)$$

$$\textit{Non-carcinogens: Risk Ratio} = \frac{\textit{Media Concentration}}{\textit{Screening Value}} \qquad (2)$$

The risks from all the chemicals are summed to arrive at an aggregate risk for that medium (next to last row). The risk ratios are preliminary estimates of the risks and hazards associated with individual chemicals. Both the NCP (40 CFR 300) and RAGS indicate that individual receptors should be protected. Hence, the sums for each medium are added and the aggregate estimated risk/hazard for each use scenario (last row) is determined. The estimated risk/hazard for the use scenario should provided the basis for decision-making.

Generally, property will be leased with specific uses in mind. If the property will not be used for residential purposes, the aggregate risk for the industrial scenario should provide a preliminary working estimate of the risks at the site.

If the use scenario cancer risk at a given site are greater than 10^{-4} or the non-cancer hazard is greater than 1, this is a general indication that the site will require further investigation. In this case, the results of this PRE should be reviewed by a toxicologist to determine if additional work is warranted.

Ecological Preliminary Risk Evaluation

The Ecological PRE should include a walkover survey to confirm ecological habitat types, flora and fauna on the property to be leased. During the walkover, site-specific exposure pathways should be identified and any effects on biological receptors should be observed. Sensitive ecological receptors should be identified and the presence of rare, threatened or endangered species should be determined.

Analytical results from surface water and sediment should be compared to Region IV Screening Values (attached). Exceedance of these screening values indicates that further study should be performed.

Ecological screening values for soil have not yet been derived. However, the presence of certain chemicals (e.g. PCBs, lead) in analytical results from soil would suggest that toxicity tests should be performed. If this is the case, the ETAG coordinator at USEPA Region IV should be consulted.

Easements for Wetlands and Sensitive Areas

Environmentally sensitive areas may include wetlands, water supply watersheds, groundwater recharge areas, flood plains and river corridors, forests, undevelopable soils, mountains and coastal areas. When property at a BRAC site is leased, it may be advisable to grant a conservation easement, setting aside some of the land in its natural state and preserving it as open space in perpetuity. The granting of a conservation easement does not involve a change in leaseholdership; instead it means giving up development rights to the property. The conservation easement remains with the property during this and future leases or transfers.

Conservation easements may be more efficiently managed by non-profit land conservation organizations such as land trusts. These organizations can provide expertise in drafting conservation easements, coordinating with and soliciting aid from various foundations, and serving as land owners, trustees or managers of the conservation easement.

A sample conservation easement is attached. Should more information be required, Jennifer Derby of USEPA Region IV should be contacted at (800)962-6216 X6510.

Other Easements

Provisions for underground pipelines, sewers, powerlines and other utilities should also be provided in the FOSL. Base records should provide the location of these, and the appropriate utility companies and/or governmental entities should be consulted.

In addition, the DoD, EPA and their respective contractors must have access to properties to conduct investigation or remedial activities where necessary.

Please let me know if I can be of any further help.

Attachments

1. Risk-Based Concentration Table, 7/11/94 USEPA Region III.
2. Fresh Water Quality and Sediment Screening Values, 10/13/93, USEPA Region IV.
3. Sample Conservation Easement

T.W. Simon/tws:4WD-OHA:1586/11/22/94/A:\DISK_5\NOV94\FOSL.MEM

Appendix D

95% Upper Confidence Limits and

Washington Department of Ecology MTCAStat Guidance

TABLE D1
95% UPPER CONFIDENCE LIMIT ESTIMATES FOR ARSENIC IN SITE 1 SUBSURFACE SOIL
MTCAStat VERSION 2.1 CALCULATIONS
CEDAR CHEMICAL CORPORATION, WEST HELENA, ARKANSAS

Number of samples		**Uncensored values**	
Uncensored	18	**Mean**	7.84
Censored		**Lognormal mean**	7.30
Detection limit or PQL		**Std. devn.**	9.573562794
Method detection limit		**Median**	5.75
TOTAL	18	**Min.**	2.5
		Max.	44.6

Lognormal distribution?		**Normal distribution?**	
r-squared is:	0.847	**r-squared is:**	0.461
Recommendations:	Reject BOTH lognormal and normal distributions. See Statistics Guidance.		

UCL (Land's method) is 10.59

Data set used for calculation:

Result	Sample ID
3.2	1HA-5 (0-1')
3.3	1MW-4 (0-5')
4.8	1MW-5 (5-10')
5.1	1HA-1 (0-1')
5.2	1MW-5 (0-5')
5.7	1MW-1 (0-5')
5.8	1HA-3 (0-1')
6.1	1MW-1 (5-10')
6.1	1MW-4 (5-10')
6.8	1MW-3 (0-5')
7	1MW-2 (5-10')
7.3	1HA-4 (0-1')
8.6	1MW-3 (5-10')
14	1MW-2 (0-5')
44.6	1HA-2 (0-1')
2.5	1HA-7 (2-3')
2.5	1SB-1 (0-2')
2.5	1SB-1 (4-6')

Uncensored data = Represents contaminant detections above the quantitation limit.
Censored data = Represents data reported below detection limit or below practical quantitation limits are reported as nondected, "U".

MTCAStat Version 2.1 provided by the State of Washington Department of Ecology Toxics Cleanup Program, MTCAStat, P.O, Box 47600, Olympia, WA 98504-7600.

TABLE D2
95% UPPER CONFIDENCE LIMIT ESTIMATES FOR ARSENIC IN SITE 2 SUBSURFACE SOIL
MTCAStat VERSION 2.1 CALCULATIONS
CEDAR CHEMICAL CORPORATION, WEST HELENA, ARKANSAS

Number of samples		**Uncensored values**	
Uncensored	17	**Mean**	14.95
Censored		**Lognormal mean**	12.93
Detection limit or PQL		**Std. devn.**	25.06850907
Method detection limit		**Median**	7.4
TOTAL	17	**Min.**	2.5
		Max.	98.1

Lognormal distribution?		**Normal distribution?**	
r-squared is:	0.813	**r-squared is:**	0.474

Recommendations: Reject BOTH lognormal and normal distributions. See Statistics Guidance.

UCL (Land's method) is 25.68

Data set used for calculation:

Result	Sample ID
3.4	IMSB-2 (1-5')
7.2	IMSB-5 (5-10')
7.3	IMSB-3 (5-10')
7.4	IMSB-2 (5-10')
7.4	IMSB-3 (1-5')
7.6	2MW-2 (5-10')
8.5	IMSB-4 (5-10')
8.6	IMSB-4 (1-5')
9.3	IMSB-1 (3-8')
9.6	IMSB-5 (1-5')
10.7	2SB-9 (4-5')
59	IMSB-1 (1-3')
98.1	2HA-5 (0-1')
2.5	2MW-7 (0-5')
2.5	2MW-7 (5-10')
2.5	2SB-13 (0-2')
2.5	2SB-13 (8-10')

Uncensored data = Represents contaminant detections above the quantitation limit.
Censored data = Represents data reported below detection limit or below practical quantitation limits are reported as nondected, "U".

MTCAStat Version 2.1 provided by the State of Washington Department of Ecology Toxics Cleanup Program, MTCAStat, P.O, Box 47600, Olympia, WA 98504-7600.

TABLE D3
95% UPPER CONFIDENCE LIMIT ESTIMATES FOR CHROMIUM IN SITE 2 SUBSURFACE SOIL
MTCAStat VERSION 2.1 CALCULATIONS
CEDAR CHEMICAL CORPORATION, WEST HELENA, ARKANSAS

Number of samples		**Uncensored values**	
Uncensored	13	**Mean**	18.65
Censored		**Lognormal mean**	16.96
Detection limit or PQL		**Std. devn.**	23.16015311
Method detection limit		**Median**	12.4
TOTAL	13	**Min.**	8.2
		Max.	95.3

Lognormal distribution?		**Normal distribution?**	
r-squared is:	0.608	**r-squared is:**	0.377

Recommendations: Reject BOTH lognormal and normal distributions. See Statistics Guidance.

UCL (Land's method) is 25.18

Data set used for calculation:

Result	Sample ID
10.9	2SB-9 (4-5')
95.3	2HA-5 (0-1')
15.4	2MW-2 (5-10')
12.4	IMSB-1 (1-3')
9.2	IMSB-1 (3-8')
8.2	IMSB-2 (1-5')
9.9	IMSB-2 (5-10')
12.5	IMSB-3 (1-5')
14.2	IMSB-3 (5-10')
13.8	IMSB-4 (1-5')
16.9	IMSB-4 (5-10')
12	IMSB-5 (1-5')
11.7	IMSB-5 (5-10')

Uncensored data = Represents contaminant detections above the quantitation limit.
Censored data = Represents data reported below detection limit or below practical quantitation limits are reported as nondected, "U".

MTCAStat Version 2.1 provided by the State of Washington Department of Ecology Toxics Cleanup Program, MTCAStat, P.O, Box 47600, Olympia, WA 98504-7600.

TABLE D4

95% UPPER CONFIDENCE LIMIT ESTIMATES FOR 3,4-DICHLOROANILINE IN SITE 4 SUBSURFACE SOIL

MTCAStat VERSION 2.1 CALCULATIONS

CEDAR CHEMICAL CORPORATION, WEST HELENA, ARKANSAS

Number of samples		**Uncensored values**	
Uncensored	14	**Mean**	1071639.78
Censored		**Lognormal mean**	61034432.09
Detection limit or PQL		**Std. devn.**	3214624.637
Method detection limit		**Median**	2350
TOTAL	14	**Min.**	9.9
		Max.	12000000

Lognormal distribution?		**Normal distribution?**	
r-squared is:	0.951	**r-squared is:**	0.361

Recommendations: Use lognormal distribution.

UCL (Land's method) is 11181616716308.1

Data set used for calculation:

Result	Sample ID
9.9	4SB-1 (0-2')
25	4HA-4 (1-2')
26	4HA-7 (7-8')
31	4HA-7 (6-7')
335	4HA-4 (2-3')
530	SAI-11 (2-4'
1900	4HA-1 (1-2')
2800	SAI-5 (2-4')
4900	4HA-1 (2-3')
7400	4HA-2 (1-2')
85000	4HA-5 (0-1')
400000	4HA-5 (2-3')
2500000	4HA-5 (1-2')
12000000	4HA-6 (1-2')

Uncensored data = Represents contaminant detections above the quantitation limit.
Censored data = Represents data reported below detection limit or below practical quantitation limits are reported as nondected, "U".

MTCAStat Version 2.1 provided by the State of Washington Department of Ecology Toxics Cleanup Program, MTCAStat, P.O, Box 47600, Olympia, WA 98504-7600.

TABLE D5

95% UPPER CONFIDENCE LIMIT ESTIMATES FOR ARSENIC IN SITE 4 SUBSURFACE SOIL

MTCAStat VERSION 2.1 CALCULATIONS

CEDAR CHEMICAL CORPORATION, WEST HELENA, ARKANSAS

Number of samples		**Uncensored values**	
Uncensored	22	**Mean**	5.39
Censored		**Lognormal mean**	5.40
Detection limit or PQL		**Std. devn.**	1.665470891
Method detection limit		**Median**	5.1
TOTAL	22	**Min.**	3.1
		Max.	8.65

Lognormal distribution?		**Normal distribution?**	
r-squared is:	0.972	**r-squared is:**	0.953

Recommendations: Use lognormal distribution.

UCL (Land's method) is 6.11

Data set used for calculation:

Result	Sample ID
3.1	4HA-5 (2-3')
3.3	4HA-1 (2-3')
3.4	4HA-3 (0-1')
3.8	4HA-2 (0-1')
3.8	4HA-2 (1-2')
4.1	4HA-4 (0-1')
4.1	4HA-5 (1-2')
4.4	4HA-2 (2-3')
4.4	4HA-6 (0-1')
4.6	4HA-5 (0-1')
5	4HA-1 (1-2')
5.2	4HA-1 (0-1')
5.2	4HA-6 (1-2')
6	4MW-2 (0-5')
6.2	4HA-7 (7-8')
6.6	4HA-8 (7-8')
6.8	4HA-7 (5-6')
7	4HA-8 (5-6')
7.2	4HA-4 (1-2')
7.4	4HA-7 (6-7')
8.3	4HA-8 (6-7')
8.65	4HA-4 (2-3')

Uncensored data = Represents contaminant detections above the quantitation limit.
Censored data = Represents data reported below detection limit or below practical quantitation limits are reported as nondected, "U".

MTCAStat Version 2.1 provided by the State of Washington Department of Ecology Toxics Cleanup Program, MTCAStat, P.O, Box 47600, Olympia, WA 98504-7600.

TABLE D6

95% UPPER CONFIDENCE LIMIT ESTIMATES FOR DINOSEB IN SITE 4 SUBSURFACE SOIL

MTCAStat VERSION 2.1 CALCULATIONS

CEDAR CHEMICAL CORPORATION, WEST HELENA, ARKANSAS

Number of samples		**Uncensored values**	
Uncensored	24	**Mean**	263442.92
Censored		**Lognormal mean**	675284.06
Detection limit or PQL		**Std. devn.**	334654.6987
Method detection limit		**Median**	91750
TOTAL	24	**Min.**	740
		Max.	1100000

Lognormal distribution?		**Normal distribution?**	
r-squared is:	0.915	**r-squared is:**	0.775

Recommendations: Use lognormal distribution.

UCL (Land's method) is 4199320.97

Data set used for calculation:

Result	Sample ID
91000	4HA-8 (5-6')
92500	4MW-4 (0-3')
95000	4SB-3 (0-2')
98000	4HA-7 (6-7')
190000	4HA-6 (0-1')
360000	4SB-1 (4-6')
470000	4HA-2 (2-3')
500000	4HA-2 (0-1')
550000	4SB-1 (0-2')
840000	4HA-7 (5-6')
920000	4HA-5 (2-3')
1100000	4HA-2 (1-2')
700000	4HA-6 (1-2')

Uncensored data = Represents contaminant detections above the quantitation limit.
Censored data = Represents data reported below detection limit or below practical quantitation limits are reported as nondected, "U".

MTCAStat Version 2.1 provided by the State of Washington Department of Ecology Toxics Cleanup Program, MTCAStat, P.O, Box 47600, Olympia, WA 98504-7600.

TABLE D7

95% UPPER CONFIDENCE LIMIT ESTIMATES FOR 3,4-DICHLOROANILINE IN SITE 9 SUBSURFACE SOIL

MTCAStat VERSION 2.1 CALCULATIONS

CEDAR CHEMICAL CORPORATION, WEST HELENA, ARKANSAS

Number of samples		**Uncensored values**	
Uncensored	18	**Mean**	3884865.56
Censored		**Lognormal mean**	185668903.25
Detection limit or PQL		**Std. devn.**	9890160.657
Method detection limit		**Median**	452500
TOTAL	18	**Min.**	130
		Max.	42500000

Lognormal distribution?		**Normal distribution?**	
r-squared is:	0.907	**r-squared is:**	0.390

Recommendations: Use lognormal distribution.

UCL (Land's method) is 142192066868.93

Data set used for calculation:

Result	Sample ID
130	9SB-3 (5-10')
150	9SB-15 (0-5')
1300	9SB-19 (5-10')
16000	9SB-19 (0-5')
19000	9SB-6 (0-5')
76000	9SB-3 (0-5')
450000	9SB-7 (0-5')
405000	9SB-10 (0-5')
405000	9SB-11 (0-5')
455000	9SB-7 (5-10')
800000	9SB-4 (5-10')
1850000	9SB-9 (0-5')
2100000	9SB-8 (0-5')
4200000	9SB-12 (0-5')
4300000	9SB-5 (5-10')
4350000	9SB-5 (0-5')
8000000	9SB-4 (0-5')
42500000	9SB-16 (0-5')

Uncensored data = Represents contaminant detections above the quantitation limit.
Censored data = Represents data reported below detection limit or below practical quantitation limits are reported as nondected, "U".

MTCAStat Version 2.1 provided by the State of Washington Department of Ecology Toxics Cleanup Program, MTCAStat, P.O, Box 47600, Olympia, WA 98504-7600.

TABLE D8
95% UPPER CONFIDENCE LIMIT ESTIMATES FOR DINOSEB IN SITE 9 SUBSURFACE SOIL
MTCAStat VERSION 2.1 CALCULATIONS
CEDAR CHEMICAL CORPORATION, WEST HELENA, ARKANSAS

Number of samples		Uncensored values	
Uncensored	32	Mean	5865315.63
Censored		Lognormal mean	30493462.74
Detection limit or PQL		Std. devn.	10163525.04
Method detection limit		Median	155000
TOTAL	32	Min.	1600
		Max.	30000000

Lognormal distribution?		Normal distribution?	
r-squared is:	0.929	r-squared is:	0.629
Recommendations:	Use lognormal distribution.		

UCL (Land's method) is 578976872.97

Data set used for calculation:

Result	Sample ID
1600	9SB-2 (5-10')
8600	9SB-15 (0-5')
9100	9SB-14 (0-5')
9200	9SB-16 (5-10')
9600	9SB-1 (5-10')
13000	9SB-8 (5-10')
17000	9SB-19 (5-10')
22000	9SB-15 (5-10')
34000	9SB-13 (5-10')
35000	9SB-14 (5-10')
38000	9SB-1 (0-5')
40000	9SB-10 (5-10')
90000	9SB-9 (5-10')
93000	9SB-19 (0-5')
140000	9SB-3 (0-5')
150000	9SB-13 (0-5')
160000	9SB-11 (0-5')
170000	9SB-11 (5-10')
320000	9SB-12 (5-10')
650000	9SB-10 (0-5')
4100000	9SB-5 (5-10')
6400000	9SB-7 (5-10')
8500000	9SB-4 (5-10')
13000000	9SB-12 (0-5')
15000000	9SB-8 (0-5')
24000000	9SB-4 (0-5')
26000000	9SB-7 (0-5')
28000000	9SB-9 (0-5')
29000000	9SB-5 (0-5')
840000	9SB-6 (0-5')
840000	9SB-6 (5-10')
30000000	9SB-16 (0-5')

Uncensored data = Represents contaminant detections above the quantitation limit.
Censored data = Represents data reported below detection limit or below practical quantitation limits are reported as nondected, "U".

MTCAStat Version 2.1 provided by the State of Washington Department of Ecology Toxics Cleanup Program, MTCAStat, P.O. Box 47600, Olympia, WA 98504-7600.

TABLE D9

95% UPPER CONFIDENCE LIMIT ESTIMATES FOR PROPANIL IN SITE 9 SUBSURFACE SOIL

MTCAStat VERSION 2.1 CALCULATIONS

CEDAR CHEMICAL CORPORATION, WEST HELENA, ARKANSAS

Number of samples		**Uncensored values**	
Uncensored	21	**Mean**	3155120.00
Censored		**Lognormal mean**	93077359.98
Detection limit or PQL		**Std. devn.**	9159305.579
Method detection limit		**Median**	405000
TOTAL	21	**Min.**	150
		Max.	42500000

Lognormal distribution?		**Normal distribution?**	
r-squared is:	0.942	**r-squared is:**	0.328
Recommendations:	Use lognormal distribution.		

UCL (Land's method) is 29349484965.48

Data set used for calculation:

Result	Sample ID
150	9SB-2 (5-10')
310	9SB-1 (5-10')
860	9SB-14 (0-5')
1300	9SB-19 (5-10')
3300	9SB-14 (5-10')
8600	9SB-6 (5-10')
11000	9SB-3 (0-5')
41000	9SB-11 (5-10')
56000	9SB-6 (0-5')
770000	9SB-7 (0-5')
4000000	9SB-4 (0-5')
405000	9SB-10 (0-5')
405000	9SB-11 (0-5')
455000	9SB-7 (5-10')
800000	9SB-4 (5-10')
1850000	9SB-9 (0-5')
2100000	9SB-8 (0-5')
4200000	9SB-12 (0-5')
4300000	9SB-5 (5-10')
4350000	9SB-5 (0-5')
42500000	9SB-16 (0-5')

Uncensored data = Represents contaminant detections above the quantitation limit.
Censored data = Represents data reported below detection limit or below practical quantitation limits are reported as nondected, "U".

MTCAStat Version 2.1 provided by the State of Washington Department of Ecology Toxics Cleanup Program, MTCAStat, P.O. Box 47600, Olympia, WA 98504-7600.

TABLE D10

95% UPPER CONFIDENCE LIMIT ESTIMATES FOR 4,4'-DDE IN SITE 4 SURFACE SOIL

MTCAStat VERSION 2.1 CALCULATIONS

CEDAR CHEMICAL CORPORATION, WEST HELENA, ARKANSAS

Number of samples		**Uncensored values**	
Uncensored	9	**Mean**	49.08
Censored	5	**Lognormal mean**	48.25
Detection limit or PQL	5	**Std. devn.**	76.87460208
Method detection limit		**Median**	22
TOTAL	14	**Min.**	5.2
		Max.	250
Lognormal distribution?		**Normal distribution?**	
***r*-squared is:**	0.925	***r*-squared is:**	0.648
Recommendations:	Use lognormal distribution.		
	UCL (Land's method) is 275.03 Cohen's method applied.		

Data set used for calculation:

Result	Sample ID
5.2	004SHA0301
6.5	004SHA0101
19	004SHA0501
22	004S000301
22	004S000401
25	004SHA0401
36	004SHA0601
56	004SHA0201
250	004S000201

Uncensored data = Represents contaminant detections above the quantitation limit.
Censored data = Represents data reported below detection limit or below practical quantitation limits and reported as nondetect, "U."

MTCAStat Version 2.1 provided by the State of Washington Department of Ecology Toxics Cleanup Program, MTCAStat, P.O, Box 47600, Olympia, WA 98504-7600.

TABLE D11

95% UPPER CONFIDENCE LIMIT ESTIMATES FOR DINOSEB IN SITE 4 SURFACE SOIL

MTCAStat VERSION 2.1 CALCULATIONS

CEDAR CHEMICAL CORPORATION, WEST HELENA, ARKANSAS

Number of samples		**Uncensored values**	
Uncensored	9	**Mean**	264211.11
Censored	5	**Lognormal mean**	711609.83
Detection limit or PQL	5	**Std. devn.**	294134.4524
Method detection limit		**Median**	95000
TOTAL	14	**Min.**	1400
		Max.	840000
Lognormal distribution?		**Normal distribution?**	
r-squared is:	0.758	**r-squared is:**	0.919
Recommendations:	Use normal distribution.		
	UCL (based on t-statistic) is 248380.71 Cohen's method applied.		

Data set used for calculation:

Result	Sample ID
1400	004SHA0501
18000	004SMW0201
91000	004SHA0801
92500	004S000401
95000	004SGB0301
190000	004SHA0601
500000	004SHA0201
550000	004S000101
840000	004SHA0701

Uncensored data = Represents contaminant detections above the quantitation limit.
Censored data = Represents data reported below detection limit or below practical quantitation limits and reported as nondetect, "U."

MTCAStat Version 2.1 provided by the State of Washington Department of Ecology Toxics Cleanup Program, MTCAStat, P.O, Box 47600, Olympia, WA 98504-7600.

TABLE D12

95% UPPER CONFIDENCE LIMIT ESTIMATES FOR METHOXYCHLOR IN SITE 4 SURFACE SOIL

MTCAStat VERSION 2.1 CALCULATIONS

CEDAR CHEMICAL CORPORATION, WEST HELENA, ARKANSAS

Number of samples		**Uncensored values**	
Uncensored	10	**Mean**	6799.00
Censored	4	**Lognormal mean**	14648.27
Detection limit or PQL	4	**Std. devn.**	4976.403096
Method detection limit		**Median**	8125
TOTAL	14	**Min.**	120
		Max.	15000
Lognormal distribution?		**Normal distribution?**	
r-squared is:	0.649	**r-squared is:**	0.944

Recommendations: Use normal distribution.

UCL (based on t-statistic) is 6844.86

Cohen's method applied.

Data set used for calculation:

Result	Sample ID
120	004S000201
220	004S000301
3100	004SGB0301
3200	004SHA0501
7850	004S000401
8400	004SHA0301
8700	004S000101
9400	004SHA0601
12000	004SHA0401
15000	004SHA0201

Uncensored data = Represents contaminant detections above the quantitation limit.

Censored data = Represents data reported below detection limit or below practical quantitation limits and reported as nondetect, "U."

MTCAStat Version 2.1 provided by the State of Washington Department of Ecology Toxics Cleanup Program, MTCAStat, P.O, Box 47600, Olympia, WA 98504-7600.

TABLE D13

95% UPPER CONFIDENCE LIMIT ESTIMATES FOR ARSENIC IN SITE 4 SUBSURFACE SOIL

MTCAStat VERSION 2.1 CALCULATIONS

CEDAR CHEMICAL CORPORATION, WEST HELENA, ARKANSAS

Number of samples		**Uncensored values**	
Uncensored	16	**Mean**	6.22
Censored		**Lognormal mean**	6.37
Detection limit or PQL		**Std. devn.**	3.34283905
Method detection limit		**Median**	5.7
TOTAL	16	**Min.**	1.3
		Max.	15.5
Lognormal distribution?		**Normal distribution?**	
r-squared is:	0.943	**r-squared is:**	0.893
Recommendations:	Use lognormal distribution.		

UCL (Land's method) is 8.72

Data set used for calculation:

Result	Sample ID
1.3	004SMW0206
3.1	004SHA0503
3.3	004SHA0103
3.8	004SHA0202
4.1	004SHA0502
4.4	004SHA0203
5	004SHA0102
5.2	004SHA0602
6.2	004SHA0703
6.6	004SHA0803
7.2	004SHA0402
7.4	004SHA0702
8.3	004SHA0802
8.65	004SHA0403
9.4	004SMW0103
15.5	004SMW0106

Uncensored data = Represents contaminant detections above the quantitation limit.
Censored data = Represents data reported below detection limit or below practical quantitation limits and reported as nondetect, "U."

MTCAStat Version 2.1 provided by the State of Washington Department of Ecology Toxics Cleanup Program, MTCAStat, P.O, Box 47600, Olympia, WA 98504-7600.

TABLE D14

95% UPPER CONFIDENCE LIMIT ESTIMATES FOR ARSENIC IN SITE 6 SURFACE SOIL

MTCAStat VERSION 2.1 CALCULATIONS

CEDAR CHEMICAL CORPORATION, WEST HELENA, ARKANSAS

Number of samples		**Uncensored values**	
Uncensored	20	**Mean**	7.36
Censored		**Lognormal mean**	7.36
Detection limit or PQL		**Std. devn.**	1.336324496
Method detection limit		**Median**	6.95
TOTAL	20	**Min.**	5.4
		Max.	10.3
Lognormal distribution?		**Normal distribution?**	
r-squared is:	0.974	**r-squared is:**	0.949
Recommendations:	Use lognormal distribution.		

UCL (Land's method) is 7.9

Data set used for calculation:

Results	Sample ID
5.4	006SB0H101
5.8	006SB0L101
6.1	006SB0F201
6.2	006SB0H201
6.3	006SB0C101
6.3	006SB0L201
6.5	006SB0F101
6.8	006SB0D101
6.8	006SB0D201
6.8	006SB0G101
7.1	006SB0G201
7.4	006SB0A101
7.4	006SB0J301
7.9	006SB0J201
8	006SB0E201
8.5	006SB0K201
8.9	006SB0E101
9	006SB0K101
9.6	006SB0C201
10.3	006SB0A201

Uncensored data = Represents contaminant detections above the quantitation limit.
Censored data = Represents data reported below detection limit or below practical quantitation limits and reported as nondetect, "U."

MTCAStat Version 2.1 provided by the State of Washington Department of Ecology Toxics Cleanup Program, MTCAStat, P.O, Box 47600, Olympia, WA 98504-7600.

TABLE D15
95% UPPER CONFIDENCE LIMIT ESTIMATES FOR DINOSEB IN SITE 6 SURFACE SOIL
MTCAStat VERSION 2.1 CALCULATIONS
CEDAR CHEMICAL CORPORATION, WEST HELENA, ARKANSAS

Number of samples		Uncensored values	
Uncensored	22	Mean	20270.45
Censored	11	Lognormal mean	20121.61
Detection limit or PQL	11	Std. devn.	39132.9668
Method detection limit		Median	6900
TOTAL	33	Min.	430
		Max.	160000

Lognormal distribution?		Normal distribution?	
r-squared is:	0.952	r-squared is:	0.629

Recommendations: Use lognormal distribution.

UCL (Land's method) is 13385214533.91
Cohen's method applied.

Data set used for calculation:

Result	Sample ID
430	006SB0A201
960	006S00K101
1000	006SB0J201
1060	006SB0K201
2200	006S00G201
2900	006S00J101
3800	006S00F101
4100	006SB0K101
5300	006SB0G201
5600	006S00C201
6100	006SB0D101
7700	006SB0H101
9100	006S00D101
9500	006SB0A101
10000	006SB0E201
10200	006SB0H201
14000	006SB0C101
16000	006SB0F101
21000	006SB0F201
45000	006SB0G101
110000	006S00C101
160000	006S00B101

Uncensored data = Represents contaminant detections above the quantitation limit.
Censored data = Represents data reported below detection limit or below practical quantitation limits and reported as nondetect, "U."

MTCAStat Version 2.1 provided by the State of Washington Department of Ecology Toxics Cleanup Program, MTCAStat, P.O, Box 47600, Olympia, WA 98504-7600.

TABLE D16
95% UPPER CONFIDENCE LIMIT ESTIMATES FOR DINOSEB IN SITE 9 SURFACE SOIL
MTCAStat VERSION 2.1 CALCULATIONS
CEDAR CHEMICAL CORPORATION, WEST HELENA, ARKANSAS

Number of samples		**Uncensored values**	
Uncensored	19	**Mean**	7593.22
Censored		**Lognormal mean**	102858.29
Detection limit or PQL		**Std. devn.**	11136.49182
Method detection limit		**Median**	210
TOTAL	19	**Min.**	0.5
		Max.	29000

Lognormal distribution?		**Normal distribution?**	
r-squared is:	0.925	**r-squared is:**	0.710
Recommendations:	Use lognormal distribution.		

UCL (Land's method) is 17181279.09

Data set used for calculation:

Result	Sample ID
0.5	009S002001
8.6	009SB01501
9.1	009SB01401
38	009SB00101
42	009S002101
93	009SB01901
140	009SB00301
150	009SB01301
160	009SB01101
210	009SB00601
270	009S002201
650	009SB01001
7500	009SB01601
13000	009SB01201
15000	009SB00801
24000	009SB00401
26000	009SB00701
28000	009SB00901
29000	009SB00501

Uncensored data = Represents contaminant detections above the quantitation limit.
Censored data = Represents data reported below detection limit or below practical quantitation limits and reported as nondetect, "U."

MTCAStat Version 2.1 provided by the State of Washington Department of Ecology Toxics Cleanup Program, MTCAStat, P.O, Box 47600, Olympia, WA 98504-7600.

TABLE D17

95% UPPER CONFIDENCE LIMIT ESTIMATES FOR DINOSEB IN SITE 9 SUBSURFACE SOIL

MTCAStat VERSION 2.1 CALCULATIONS

CEDAR CHEMICAL CORPORATION, WEST HELENA, ARKANSAS

Number of samples		**Uncensored values**	
Uncensored	22	**Mean**	1017471.36
Censored		**Lognormal mean**	2653348.37
Detection limit or PQL		**Std. devn.**	2296075.522
Method detection limit		**Median**	34500
TOTAL	22	**Min.**	690
		Max.	8500000

Lognormal distribution?		**Normal distribution?**	
r-squared is:	0.970	**r-squared is:**	0.502

Recommendations: Assume lognormal distribution.
W value is 0.958. This exceeds the tabled value of 0.911

UCL (Land's method) is 72760453.21

Data set used for calculation:

Result	Sample ID
690	009S002105
880	009S002202
1600	009SB00202
4000	009S002203
7400	009S002103
9200	009SB01602
9600	009SB00102
13000	009SB00802
17000	009SB01902
22000	009SB01502
34000	009SB01302
35000	009SB01402
40000	009SB01002
90000	009SB00902
170000	009SB01102
320000	009SB01202
360000	009SB00703
550000	009SB00403
1700000	009SB00503
4100000	009SB00502
6400000	009SB00702
8500000	009SB00402

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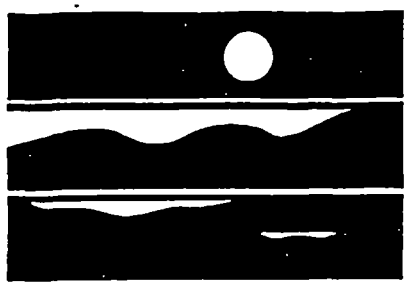
MTCAStat Version 2.1 provided by the State of Washington Department of Ecology Toxics Cleanup Program, MTCAStat, P.O, Box 47600, Olympia, WA 98504-7600.



Washington State Department of Ecology Toxics Cleanup Program

Statistical Guidance for Ecology Site Managers

August, 1992
92-54

STATE OF WASHINGTON

DEPARTMENT OF ECOLOGY

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August 1, 1992

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TO: Interested Parties

FROM: Carol L. Fleskes, Program Manager
Toxics Cleanup Program

Toxics Cleanup Program

SUBJECT: Statistical Guidance for Ecology Site Managers

Attached is the August 1992 edition of Washington State Department of Ecology's (Ecology) "Statistical Guidance for Ecology Site Managers." The document provides guidance on statistical issues relating to the investigation and cleanup of soil- and groundwater contamination under the Model Toxics Control Act Cleanup Regulation. It is not intended for use at sites where routine petroleum leaking underground storage tank (LUST) cleanups are undertaken using Ecology's *Guidance for Remediation of Releases from Underground Storage Tanks*, which includes statistical guidance in an appendix.

Routine statistical procedures are provided in this Guidance that should be applicable to most sites. For statistical situations where site-specific decisions should be made, the Guidance provides Ecology staff with relevant information, but does not establish standard procedures or criteria. Consequently, some statistical methods and procedures are discussed that should not be used without site-specific approval of Ecology. Consult Section 1.2 (Using the Guidance Document) for more information. "Site-specific approval of Ecology" refers only to remedial actions conducted or ordered by Ecology, or to cleanups agreed to by Ecology in an agreed order or decree governing remedial actions at the site. Ecology will respond to questions relating to the Guidance from persons conducting independent cleanups if staff resources permit. However, it may be helpful to consult a statistician regarding sections of the Guidance that provide for site-specific decisions.

Important features of this Guidance include the default assumption of a lognormal distribution for soil and groundwater sampling data. This assumption was adopted on the recommendation of the Model Toxics Control Act Science Advisory Board. For data that do not follow a lognormal distribution, the Guidance provides statistical methods for rejecting the default assumption. Readers should also note that the Guidance provides new procedures relating to the use of background data in establishing a cleanup level. The technical basis for these procedures is explained in the document.

Ecology invites written comments from interested persons regarding this Guidance for consideration in making future revisions. Ecology's experiences in applying the Guidance to specific sites will also be considered in evaluating the need for revisions. More rapid updates will be provided through Guidance Supplements. These may be issued, for example, to cover a subject that is not presently addressed; to clarify a section that users find vague or ambiguous; or to replace a section in the current document.

Written comments on this document should be addressed to:

Nigel Blakley
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Olympia, WA 98504-7600

Requests to be placed on the mailing list for Guidance Supplements and other Guidance mailings should be addressed to:

Sherrie Hanson
Department of Ecology
Toxics Cleanup Program
Statistical Guidance
P.O. Box 47600
Olympia, WA 98504-7600

CLF:NB:cp
Attachment

Washington State Department of Ecology

Statistical Guidance for Ecology Site Managers

Disclaimer

Notice: This document is intended solely for the guidance of Ecology staff. It is not intended, and cannot be relied on, to create rights, substantive or procedural, enforceable by any party in litigation with the State of Washington. Ecology reserves the right to act at variance with this Guidance at any time.

Toxics Cleanup Program
PO Box 47600
Olympia, WA 98504-7600

August 1992

Prepared by the Washington State Department of Ecology with assistance from PTI Environmental Services. Primary authors (in alphabetical order): Nigel Blakley, Greg Glass and Connie Travers.

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LIST OF ACRONYMS

ANOVA	analysis of variance
ARAR	applicable or relevant and appropriate requirement
BDL	below detection limit
CI	confidence interval
EPA	U.S. Environmental Protection Agency
Ecology	Washington Department of Ecology
MLE	maximum likelihood estimator
MTCA	Model Toxics Control Act
PCBs	polychlorinated biphenyls
PLP	potentially liable person
PQL	practical quantitation limit
QA/QC	quality assurance/quality control
RCRA	Resource Conservation and Recovery Act
UCL	upper confidence limit
WAC	Washington Administrative Code

LIST OF NOTATIONS

μ	true mean of population
$\bar{x}$	mean of samples
n	number of samples
y_i	lognormally transformed sample data values
e	exponent (base e)
σ	true standard deviation of population
CV	coefficient of variation
x_i	sample data values
s	standard deviation of samples
X_p	percentile (e.g. X_{90} = 90th percentile)
P	percentile value
M	variable used for calculating 90th percentile of log-transformed data
d	denominator of W test statistic
a_i	coefficients calculated from Table A-1
α	significance level
k	tolerance interval coefficient
γ	significance level for tolerance interval
P_o	1- (percentile/100)
T_u	upper limit of tolerance interval
b_1, b_2	parameters for Conover (1980) nonparametric estimators of confidence intervals and percentiles for $n \leq 20$
$Z_{1-\alpha}$	percentile of normal distribution
v	variable used for calculating 10th percentile
u	upper rank of confidence limit
ln	natural logarithm
Σ	summation
b	tabled entries in Table A-5

1. INTRODUCTION

1.1 PURPOSE AND PHILOSOPHY OF THE STATISTICAL GUIDANCE DOCUMENT

This document is intended to provide Model Toxics Control Act (MTCA) site managers with guidance for sampling and analyzing groundwater and soils to develop background-based cleanup standards, where appropriate, and to determine whether a site or exposure unit meets cleanup standards. The cleanup standard may be listed in the regulation or established under applicable state and federal laws, or it may be set at natural background levels. Cleanup standards may also be established at calculated risk-equivalent concentrations.

We can never know the actual contaminant concentrations at a site unless we sample all the soil or groundwater present. Obviously, this is not feasible. However, we can draw conclusions about the site by sampling and statistically analyzing the results. We can estimate the parameters of the true contaminant concentration distribution based on the sample parameters. For example, we estimate the true average concentration at the site (μ) with the average of the samples ($\bar{x}$). This will always involve some uncertainty, because we can never be certain that the samples represent the true contaminant concentrations at the site. Suppose there is one small area of a site that is highly contaminated, but no samples are taken in that area. The conclusion, based on the samples, might be that the site is clean (uncontaminated). In this case, the samples are not representative of the true contaminant concentrations at a site because they do not reflect the highly contaminated area. Alternatively, suppose all the samples at the site were taken in the small, contaminated area. A conclusion might be reached that the site is very contaminated, when, in fact, only a small area is contaminated and most of the site is clean.

Two methods exist for handling the uncertainty in statistically representing contaminant concentrations at a site. One is to reduce the uncertainty by improving sampling design to include more samples—or more representative samples—because in general, the more samples that are collected, the more certain we can be that we are representing true site conditions. However, there will always be some uncertainty associated with the results. Alternatively, the uncertainty can be quantified by assigning **confidence intervals** (see Section 2.1.9) to the statistical parameters describing the samples [e.g., the **mean** (see Section 2.1.1)]. These intervals describe how confident we are that the true parameters lie within a range of values. For example, if the mean of a particular data set is 10, we could say we are 95 percent confident that the true mean of the data set lies between 3 and 16. This means that 5 percent of the time the true mean lies outside of this range of values.

Statistical methods presented in this manual are designed to permit site managers to make decisions about contamination levels at an entire site, or within an exposure unit, based on a limited number of samples. These methods are designed to take into account the uncertainty inherent in this process. MTCA provides for "other statistical methods" than those discussed

in the rule. This document describes some other methods that may be applicable to a specific situation. *Other generally acceptable statistical methods exist for soil (EPA 1989a) and groundwater (EPA 1988).* References in the Bibliography provide additional statistical data evaluation methods (e.g., Gilbert 1987) which may be acceptable if consistent with MTCA requirements (e.g., see Section 2.1.6).

The philosophy behind the statistical procedures in MTCA includes the following principles:

1. Tests of compliance monitoring data should be such that a low frequency of relatively small-magnitude exceedances of the cleanup standard are allowable within the rules without triggering mandatory cleanup criteria, but that the frequency and magnitude of such exceedances should be limited.

2. In those cases where cleanup standards are based on background, the background distributions should be such that clean (i.e., uncontaminated) sites or exposure units have a high probability of being recognized as such.

An effort was made to make this document as applicable as possible to actual situations faced at sites. However, it is not possible to address every case that may occur in application to real-world situations. If a statistical interpretation of site data appears to be more complex than the examples provided in this document, it is recommended that the assistance of the Washington State Department of Ecology (Ecology) or a statistician be sought.

1.2 USING THE GUIDANCE DOCUMENT

Users other than Ecology staff:

Although this guidance should be used by all parties involved in the investigation and cleanup of hazardous waste sites under MTCA, the document was primarily written to assist Ecology staff. Thus while the guidance provides statistical procedures which may be used routinely at most sites, the document also provides information for Ecology staff on alternative approaches available under special circumstances (e.g. contaminant data are neither lognormally or normally distributed). **Decisions regarding the use of these alternatives are made by Ecology on a site-specific basis and therefore require consultation with the department.**

Information on alternative approaches requiring Ecology's approval is identified in this document in one of two ways. First, section headings are marked "*Requires consultation with Ecology*" where information is provided to Ecology staff for their use in making site-specific decisions. For example, the nonparametric method for estimating percentiles (Section 2.1.2.3) is only acceptable if Ecology has agreed to its use for a particular data set. Second, in other sections it is clearly indicated where consultation with Ecology is required before a specific statistical decision may be made (e.g. Section 4.3.5).

The requirement to consult with Ecology regarding sections of this guidance refers only to remedial actions conducted or ordered by Ecology, or to cleanups agreed to by Ecology in an

agreed order or decree governing remedial actions at the site. The department will respond to questions relating to the guidance from persons conducting independent cleanups if staff resources permit. However, it may be helpful to consult a statistician regarding sections of the guidance which provide for site-specific decisions.

Overview for all users:

Basic statistical parameters and definitions, and methods for calculating these parameters, are described in Section 2. Section 2 should be read in its entirety by those unfamiliar with statistics, or it can be used as a reference and reminder for those more familiar with the material. However, guidance on distributions (2.1.4.2 - 2.1.4.3) is of key importance and should be read by all users of this document. Other important guidance also occurs at the end of this section (2.2 - 2.3). Section 3 describes issues to be considered in sampling. This is an extensive topic and will be addressed more fully in the future. Thus, this section is reserved in the current version of the guidance document. Section 4 describes the methods for answering the question, "What is the cleanup standard, and how is it related to background concentrations?" Both soils and groundwater are discussed. Section 5 describes the methodology for answering the question, "Does the site or exposure unit meet the identified cleanup standards?" Section 6 (Geostatistics) is reserved at this time. Section 7 contains general statistical references that provide additional information on topics covered in this guidance document. Numbered examples, mentioned throughout the text, are found in Section 8. Tables A-1 through A-7, along with other relevant material, are included in Appendix A.

Important terms are in bold face where they are introduced for the first time. If applicable, this will be followed by a reference to the section where this concept is discussed.

2. GENERAL STATISTICAL ISSUES

2.1 BASIC DEFINITIONS

The objective of this section is to describe basic statistical concepts and to act as a framework on which data interpretation and decisions may be based.

2.1.1 Mean

2.1.1.1 Arithmetic Mean (Example 1)—The arithmetic mean is the same as the average value of a data set. The mean value may not equal any of the data values. The mean, $\bar{x}$, may be calculated by summing the values in a data set and dividing by the total number of values in the set:

$$\bar{x} = \frac{(x_1 + x_2 + \ldots + x_n)}{n}$$

where

x_i = values of samples

n = number of samples.

The mean of the sampled values, $\bar{x}$, is likely to differ from the mean of the true **population** (see Section 2.1.4), μ, which could only be obtained by sampling all of the soils or groundwater at the site. Thus, we try to estimate the true mean, based on the sampled values. The mean of the sampled values may be influenced by **outlier** values (see Section 2.3) or by unrepresentative sampling of values within the distribution, which may give a biased view of the true overall statistical population. In the case of contaminant concentrations, samples below the detection limit must be handled carefully, so as not to bias the mean. Below-detection-limit data (known as **censored** data sets) are discussed in Section 2.2. In general, the arithmetic mean should be used for the statistical methods described in this document.

2.1.1.2 Geometric Mean (Example 2)—Environmental data are often analyzed using the geometric mean rather than the arithmetic mean, particularly for **lognormal** or other skewed data sets (discussed in Section 2.1.4.2). In this document, the mean is the arithmetic mean, unless it is specified otherwise. However, the geometric mean is mentioned here because it is often encountered in technical literature relating to lognormally distributed data.

The geometric mean is the nth root of the product of n numbers. For examples, the geometric mean of 6, 10, and 20 is the cube root of 6 x 10 x 20, or 10.63. In practice, the geometric mean may be estimated by the following method:

1. Transform the data by taking the natural logarithm (base e) of each value. Note that other transformations are acceptable (e.g., base 10 logarithms), but in this document the natural logarithm will be used. Most calculators have both logarithms, so care should be taken that the natural logarithm is used. Note that it is possible and acceptable to obtain negative values after transforming the data.

$$y_i = \ln x_i$$

2. Calculate the arithmetic mean of the transformed values:

$$\bar{y} = \frac{(y_1 + y_2 + \ldots + y_n)}{n}$$

where

y_i = lognormally transformed sample values

n = number of samples.

3. The sample geometric mean (for a base e logarithmic transformation only) is then:

$$e^{\bar{y}}$$

2.1.2 Median and Other Percentiles

Percentiles, also known as quantiles, describe a location in the distribution of data. For example, the 50th percentile is the value at which half the data lie above the value, and half lie below. For the 90th percentile value, 10 percent of the data lie above the value and 90 percent lie below. The 10th percentile is the point at which 90 percent of the data lie above the point, and 10 percent below.

2.1.2.1 Estimating the Median (Examples 3 and 4)—The median, like the mean, is a statistic that describes typical (central) values of the data set. The median is the 50th percentile of the data set: half the data values lie above the median and half below. As a measure of central tendency of the data set, the median is not influenced by extreme (very high or very low)

values, as is the mean, but for this same reason, it also does not utilize all the information contained in the data set. The median can be estimated directly from the sample data using the following method:

1. Sort the data from smallest to largest, and rank them from 1 to n, where n is the total number of data points in the data set (sample size). If there is more than one data point with the same value (i.e., a "tie"), order the data points consecutively, and give each its own rank. For example, if the 5th and 6th lowest data points are both 28, assign one 28 a rank of 5 and the other a rank of 6. This will not affect the calculation of the median.
2. If the sample size, n, is odd: the sample median estimate is the (n+1)/2th value. For example, if the sample size is 19, the sample median is the (19+1)/2 = 10th value.
3. If the sample size, n, is even: the sample median estimate is the average of the n/2th and the (n+2)/2th values. For example, if the sample size is 20, the sample median estimate is the average of the 20/2 = 10th and the [(20+2)/2] = 11th values.

This method is illustrated in Example 3.

Alternatively, the median can be estimated from a **probability plot.** If the data are normally distributed (Section 2.1.4.1), plot the points on normal probability paper (included in Appendix A) and fit a line by eye to the points on a probability plot. Some statistical computer software packages can do this. Use the line to estimate the value corresponding to 50 percent on the cumulative percent scale. This value is the median. This method is demonstrated in Example 4. If the data are lognormally distributed, use a probability plot of the log-transformed data. Note that for the $\log_e$-transformed data, the value corresponding to 50 percent is the log of the median; you will have to convert it by taking the exponent (base e) of the transformed values. Alternatively, plot the points on **log-probability paper** and read off the median directly.

2.1.2.2 Estimating the 90th Percentile— Several methods are available for estimating the 90th percentile of a data set:

- If the data are lognormally distributed, calculate $\bar{x}$ and s for the $\log_e$-transformed data. Then calculate M, where $M = \bar{x} + (1.28)(s)$. The 90th percentile can then be approximated by:

$$X_{90} = e^M$$

(Note: the value of 1.28 is Z_{90}, which was obtained from Table A-6).

- If the data are normally distributed, the 90th percentile X_{90}, may be estimated from a probability plot. The procedure is basically the same as that for the

median, but 90 percent on the cumulative percent scale is used. This method is recommended for censored data sets.

- If the data are normally distributed, calculate the sample mean ($\bar{x}$) and the sample standard deviation (s) (described in Section 2.1.3 below). The 90th percentile is approximated by:

$$X_{90} = \text{90th percentile} = \bar{x} + (1.28)(s)$$

- This method is preferable for uncensored data sets. (Note: again, the value of 1.28 is Z_{90}, obtained from Table A-6).

2.1.2.3 General Nonparametric Method for Estimating the pth Percentile (Example 5)—[*Requires consultation with Ecology.*]. If the data are neither normally nor lognormally distributed, a **nonparametric** method (Section 2.1.5), which does not require the data to fit any particular distribution, should be used. A normal or lognormal distribution should not be assumed if the statistical test indicates significant departure from either of these distributions. If a normal or lognormal distribution cannot be rejected, the best-fit distribution should be assumed, and the methods described in Section 2.1.2.2 should be used rather than a nonparametric method. A nonparametric (distribution free) method can be used to estimate any percentile, X_p, and is shown in Example 5.

1. Sort the data from smallest to largest, and rank them from 1 to n, where n is the total number of data points in the data set (sample size). Data points with the same value should be ordered consecutively, and each point assigned its own rank.

2. Estimate v

$$v = \frac{p}{100}(n+1)$$

where v = the rank of the pth percentile data.

3. If v is an integer, then the pth percentile is simply the vth ranked datum in the data set.

4. If v is not an integer, then the pth percentile must be linearly interpolated between the two closest order statistics (see Example 5).

The nonparametric estimation of the median (50th percentile) value is seen to be a special case of this general method for estimating percentiles.

2.1.3 Standard Deviation, Variance (Example 6), and Coefficient of Variation

The standard deviation of the population, σ, represents the spread of the population around the mean. The standard deviation of the sampling data, s, which is an estimator of σ, can be calculated as the positive square root of the sample variance, s^2, which is defined by:

$$s^2 = \frac{\Sigma(x_i - \bar{x})^2}{n-1}$$

Calculation of s^2 and s is demonstrated in Example 6.

The coefficient of variation (CV), which is affected by the degree of skew (Section 2.1.4.2) is calculated as the standard deviation divided by the mean:

$$CV = s/\bar{x}$$

Most scientific calculators will calculate standard deviations. However, it is important to note whether the calculator divides by n or $n-1$ when performing the calculation. Some calculators will allow you to select the divisor. In general, the $n-1$ divisor should be used for calculating the standard deviation of a data set.

Note: do not use the standard deviation and mean of the sampling data when calculating the CV for compliance decisions (see Sections 4.3.3-4.3.5). Instead, use the standard deviation and mean of the best-fit distribution (Supplement S-5). For example, the CV of 3.65 calculated in Example 12 is for the best-fit lognormal distribution, not the raw data.

2.1.4 Probability Distribution

The probability distribution is a plot of the probability of a variable attaining a value. It is a curve, usually continuous, that shows all possible values and describes the true distribution of the population. In order to be valid, many statistical tests require that the data approximate a normal (or Gaussian) probability distribution (e.g., bell-shaped curve). For this document, a population can be thought of as the entire set of contaminant concentrations that could be measured at a site if all the soil or groundwater at the site could be sampled. Thus, it is not possible to know the true probability distribution of a population unless we sample all the soil or groundwater at a site, which, of course, is not feasible. Instead, we estimate the probability distribution based on only a sample of the population. The sampled data can then be plotted on a histogram. A histogram is a bar plot that shows ranges of discrete measured values, and the frequency with which these values occur in a data set. The probability distribution of the overall population can be inferred from the histogram (Figure 1).

2.1.4.1 Normal Distribution (Example 7)— A normally distributed population will form the familiar "bell-shaped," symmetric curve (Figure 2). Many statistical tests require that data be normally distributed. Several methods can be used to determine whether data follow a

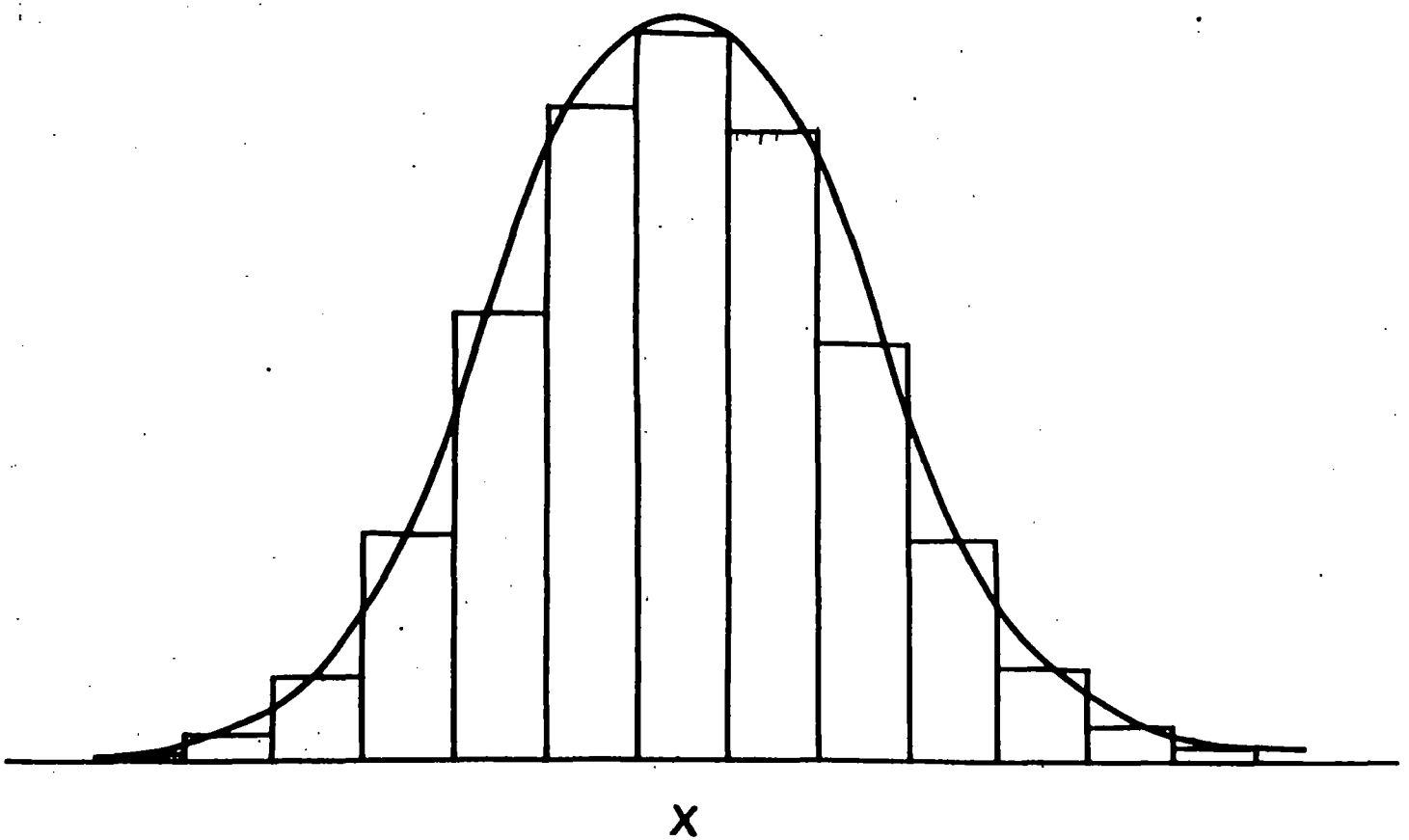

Figure 1. Relation between histogram and probability distribution.

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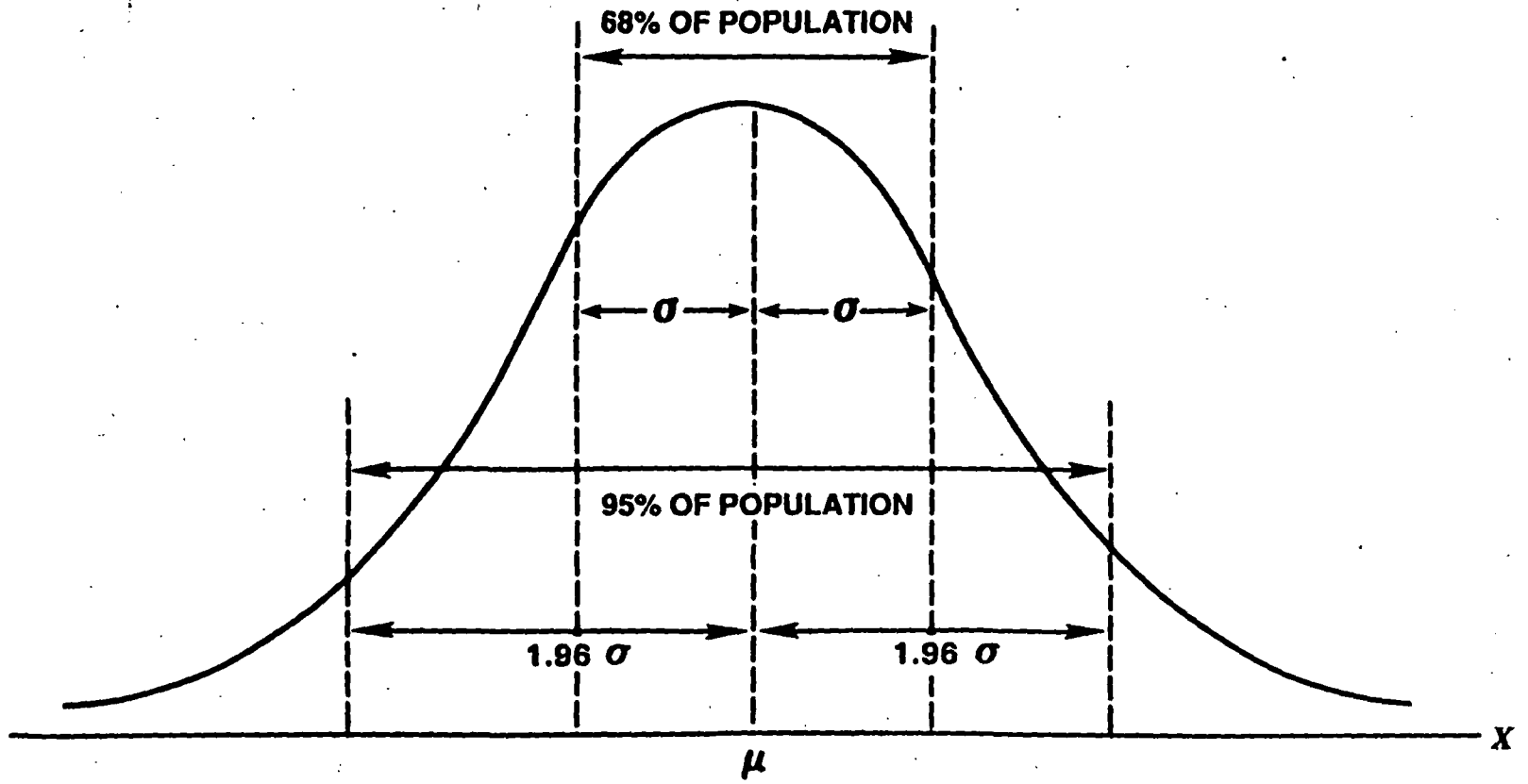

Figure 2. Normal distribution showing location of mean (μ) and standard deviation (σ) of underlying population.

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normal distribution. The data for each contaminant at a site must be tested individually for normality.

Normality testing using probability plot—The simplest approach is to graph the data on a probability plot. Statistical computer software packages such as STATGRAPHICS® or SYSTAT® will do this for you; otherwise you will need probability plot graph paper if you do it by hand (linear [normal] probability plot paper is included in the appendix to this document). The measured data should be plotted on a normal probability plot. Then, a line should be overlaid that describes the data expected from a normal distribution with the same mean and variance as the measured data (Figure 3). The measured data points will not fall exactly on the line, but if they lie approximately on the line, the data are normally distributed. This is a somewhat subjective test. Several references are available that describe the development of normal probability plots (Neter and Wasserman 1974; Shapiro 1980).

Normality testing using the W test—The W test (Shapiro and Wilk 1965) can be used to test whether the data differ significantly from a normal distribution, but cannot be used to determine whether the data are normally distributed. If the W test does not show that the data differ from normal, a normal distribution can be assumed.

The W test, as described below, is appropriate for fewer than 50 samples. The W test is recommended by the U.S. Environmental Protection Agency (U.S. EPA 1986) because it performs well for small sample sizes (which are likely at MTCA sites). For larger sample sizes, D'Agostino's test should be used (D'Agostino 1971). Both tests are described in Gilbert (1987).

The W method tests the hypothesis: The data have been drawn from a normally distributed population. This is the **"null hypothesis"** for the test (the null hypothesis is discussed in Section 2.1.6). The alternative is that the underlying population is not normally distributed. The method for performing the W test is as follows (Gilbert 1987):

1. Compute the denominator, d, of the W test statistic. This is done by calculating the mean of the data set, $\bar{x}$, and subtracting the mean from each of the data values (some resulting values will be negative). The difference between the mean and each value should be squared, and the results should be summed. This is expressed by the following equation:

$$d = \sum_{i=1}^{n} (x_i - \bar{x})^2$$

where

n = the total number of samples

x_i = the individual data values.

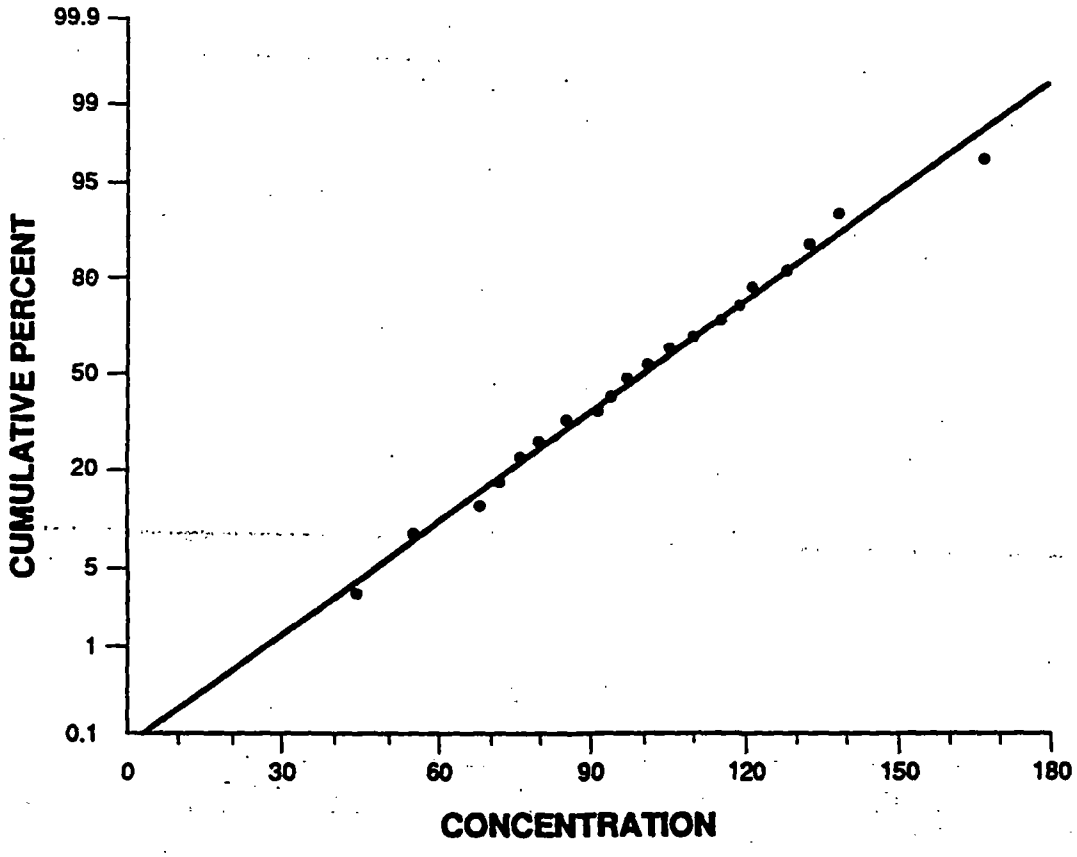

Figure 3. Data from Example 1 plotted on a probability plot. These data appear to be normally distributed.

2. Order the data from smallest to largest, and assign a rank to each value.

3. Compute r where

$$r = n/2 \quad \text{if n is even}$$

and

$$r = (n-1)/2 \quad \text{if n is odd.}$$

4. Use Table A-1 for the number of samples n to determine coefficients a_1, a_2, ... a_r.

5. Next compute W using the equation:

$$W = \left(\frac{1}{d}\right)\left[\sum_{i=1}^{r} a_i\left(x_{[n-i+1]} - x_{[i]}\right)\right]^2$$

where

$x_{[i]}$ = the value of ith ranked data

a_i = coefficients calculated from Table A-1.

6. Using Table A-2, find the value of W for a particular significance level, α, and sample size, n. A significance level of 0.05 (confidence level of 95 percent) is consistent with the significance level required by the regulations for other statistical tests. If the value for W calculated in Step 5 above is less than the value in Table A-2, the null hypothesis—that the population is normally distributed—should be rejected. If the W from Step 5 is greater than the tabled value for W, we can assume that the data are normally distributed. Example 7 demonstrates an application of the W test to the data in Example 4. Detailed instructions for examining data for departures from normality using the W test are given in Worksheet W-1a.

Normality testing by alternative methods—[*Requires consultation with Ecology.*]. Alternatively, the chi-square (χ^2) goodness-of-fit test at some specified significance level (e.g., 0.01) can be applied to test the normality of the data. The chi-square test is used to quantitatively evaluate the difference between the observed and expected frequency value for each variable. This test can be applied using computer software such as STATGRAPHICS®. Another available procedure, the nonparametric Kolmogorov-Smirnov test (Conover 1980), is considered to be more powerful than the chi-square test for evaluating the fit of a hypothesized distribution, particularly for small sample sizes (e.g., $n<20$). Several other methods for testing the normality of a data set are described in Shapiro (1980). Alternatives to the W test should not be used unless there is a valid statistical reason for doing so.

2.1.4.2 **Lognormal Distribution (Example 8)**—A probability distribution is symmetric if a vertical line can be drawn through the distribution such that the two sides are mirror images of each other (Figure 2). If a distribution is not symmetric with respect to the vertical line, it is skewed. Distributions may be skewed to the right or left. A distribution skewed to the left (also known as negatively skewed) will have a long tail on the left and a shorter tail on the right, while distributions skewed to the right (positively skewed) have a long tail on the right (Figure 4) and a greater proportion of the population on the left. Water quality data, and other environmental data, are often positively (sometimes highly) skewed (Gilliom and Helsel 1986; Gilbert 1987; Helsel 1990).

In this document, **the default assumption is that the data are lognormally distributed.** Data should first be tested to determine if a lognormal distribution is appropriate. If there is evidence that the data are normally distributed (e.g., visual fit or statistical test), or if the data do not appear to be lognormally distributed, they should be tested for normality. Rejection or acceptance of a lognormal or normal distribution can be made visually, but if there is any doubt, a statistical test should be performed to eliminate the subjectiveness of the visual methods. If both normal and lognormal distributions are rejected, the advice in the guidance document should be followed.

To test the assumption of lognormality, the data should be logarithmically transformed and tested for normality as described in Section 2.1.4.1. This involves calculating the natural logarithm (base e) of each of the data points. If the transformed data appear to be normally distributed (using the W test or D'Agostino's test) when they have been logarithmically transformed, the data set can be assumed to be lognormally distributed. Many of the statistical estimation methods and tests described in the following sections may then be performed on the transformed data. Detailed instructions for testing the assumption of lognormality using the W test are provided in Worksheet W-1. Supplement S-3 provides an overview of the procedure to follow in making a decision on the distribution of site or background data.

A histogram of a data set drawn from a lognormally distributed population is shown in Figure 5a. This data set was logarithmically transformed, and the transformed data appear to be normally distributed (Figure 5b). Logarithmic transformations are demonstrated in Example 8. In Figure 6, an untransformed data set is plotted on a probability plot, and the points do not plot on a straight line. However, the plotted, logarithmically transformed data approximate a straight line (Figure 7), indicating that the data set is approximately lognormally distributed (log [lognormal] probability plotting paper is included in the Appendix of this document). A comparison of normal and lognormal distributions is shown in Figure 8.

Lognormally transformed data should never be used to obtain summary statistics (e.g., mean, standard deviation) for the untransformed data, due to the transformation bias inherent in determining summary statistics for a transformed data set and then transforming the data back to original units. Thus, the mean of the log-transformed data is <u>not</u> the same as the logarithm of the mean of the raw (untransformed) data. However, transformation of percentiles (e.g., 90th percentile, median) does not exhibit this bias. In other words, the 90th percentile of the log-transformed data will be the same as the logarithm of the 90th percentile of the raw (untransformed) data.

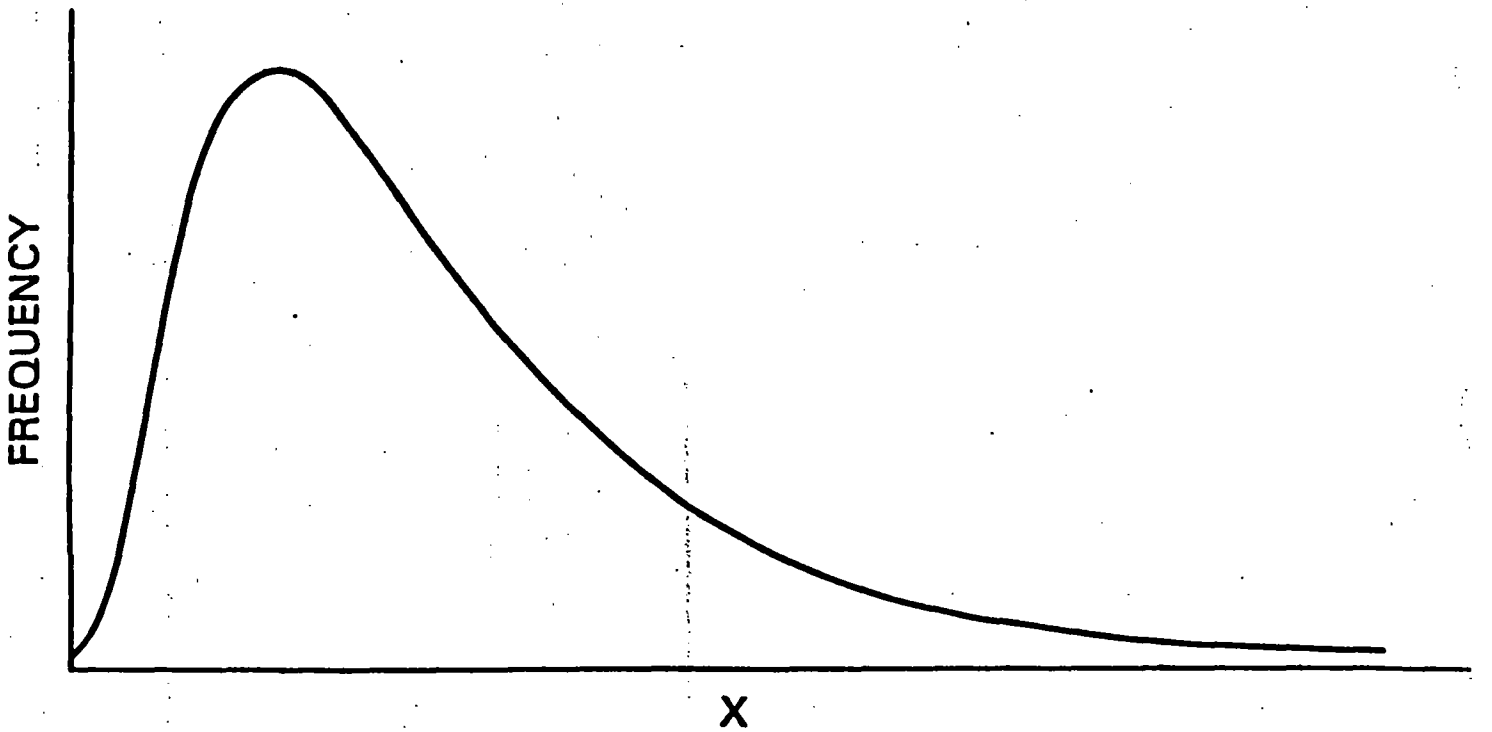

Figure 4. Positively skewed distribution.

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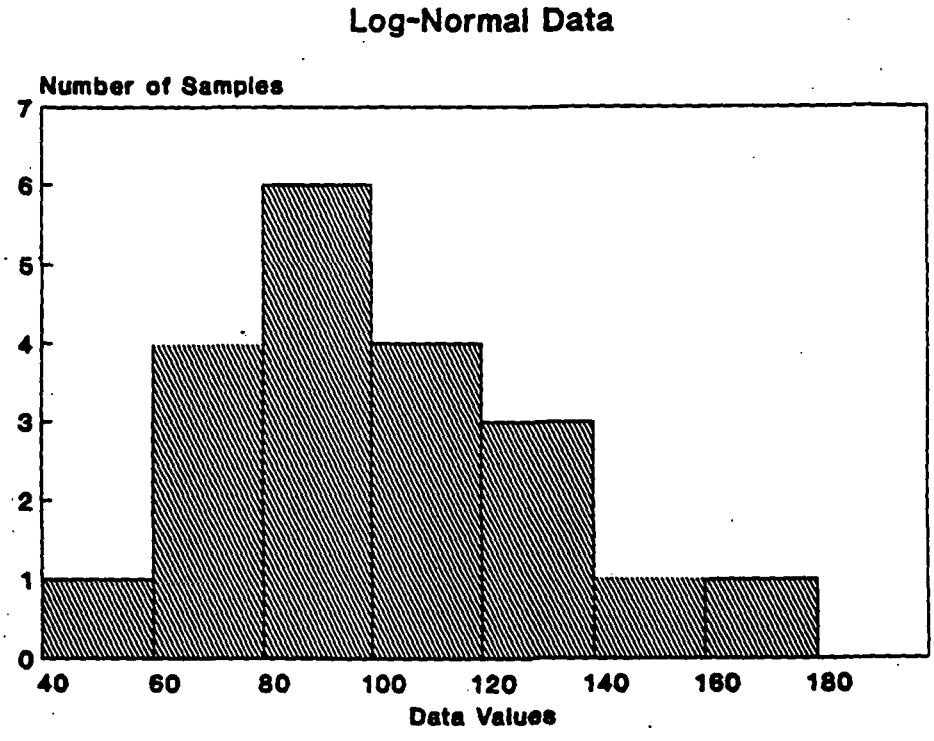

Figure 5a. Histogram of data from Example 8. These data appear to be lognormally distributed.

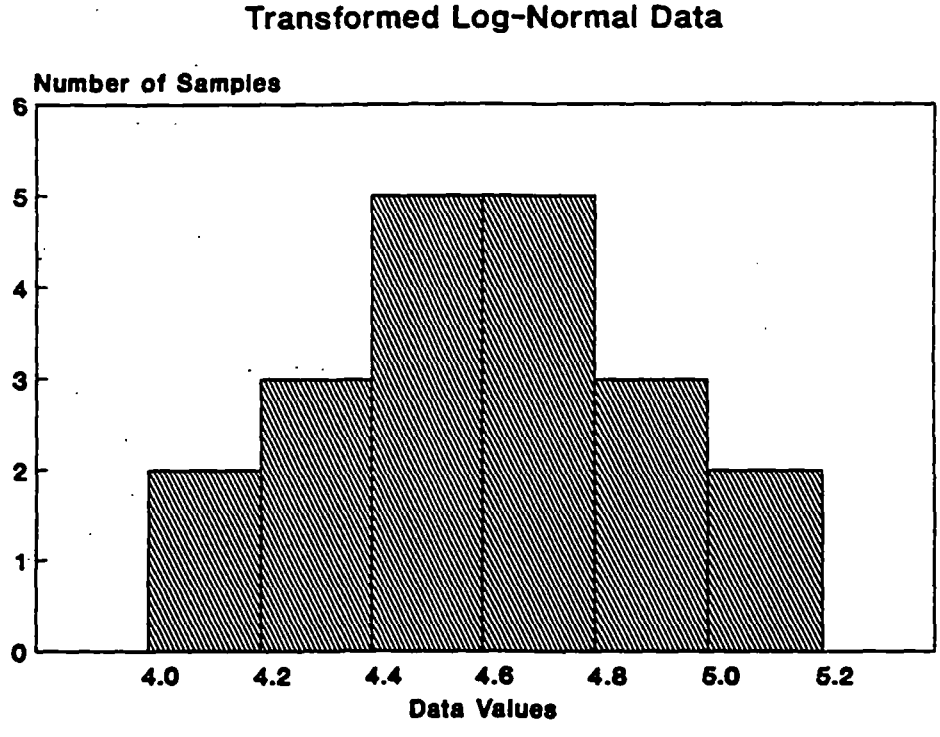

Figure 5b. Histogram of logarithmically ($\log_e$) transformed data from Figure 5a. These data appear to be normally distributed which suggests the original data are lognormal.

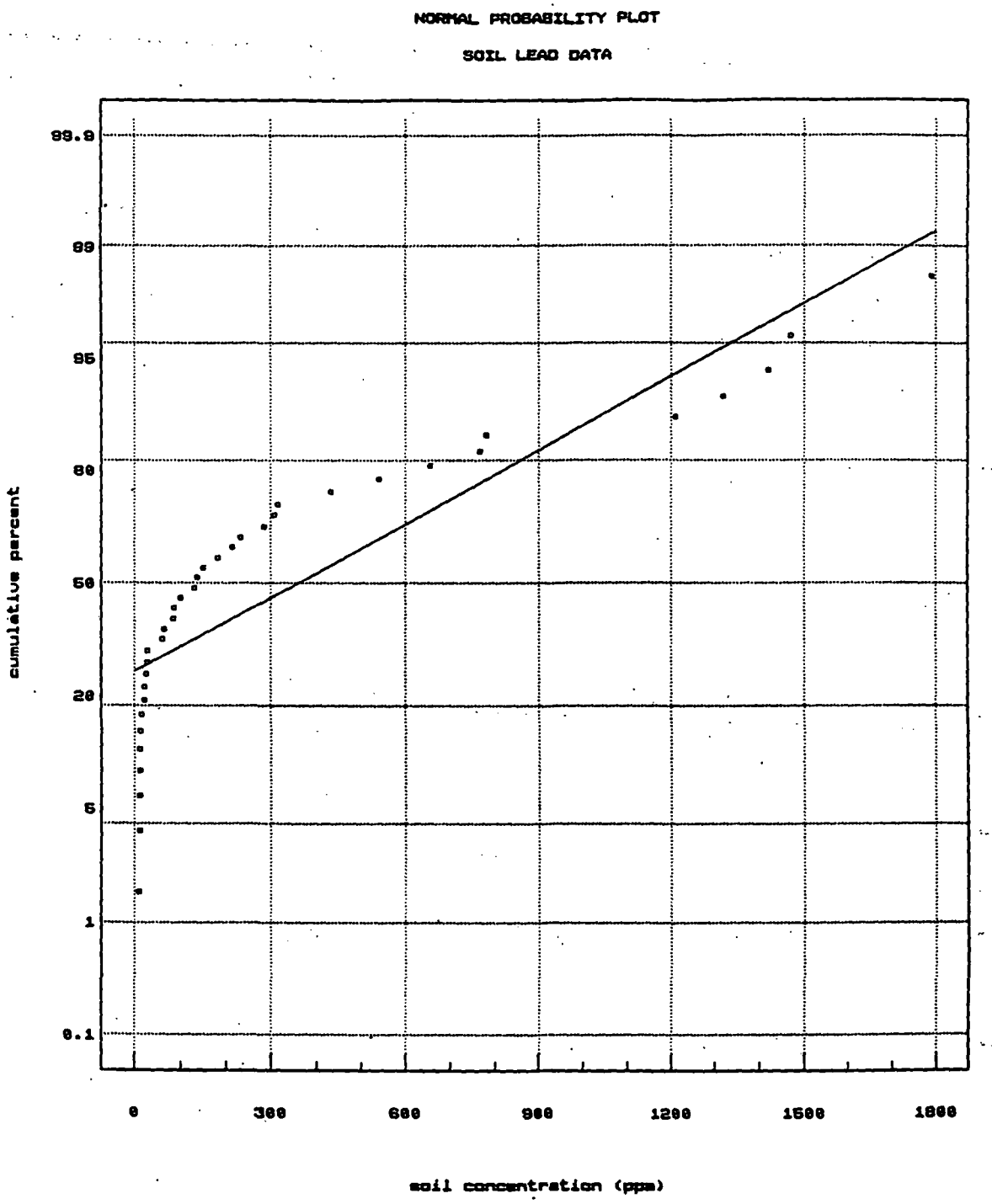

Figure 6. Soil lead data plotted on a probability plot. These data do not appear to be normally distributed (do not fall on the straight line).

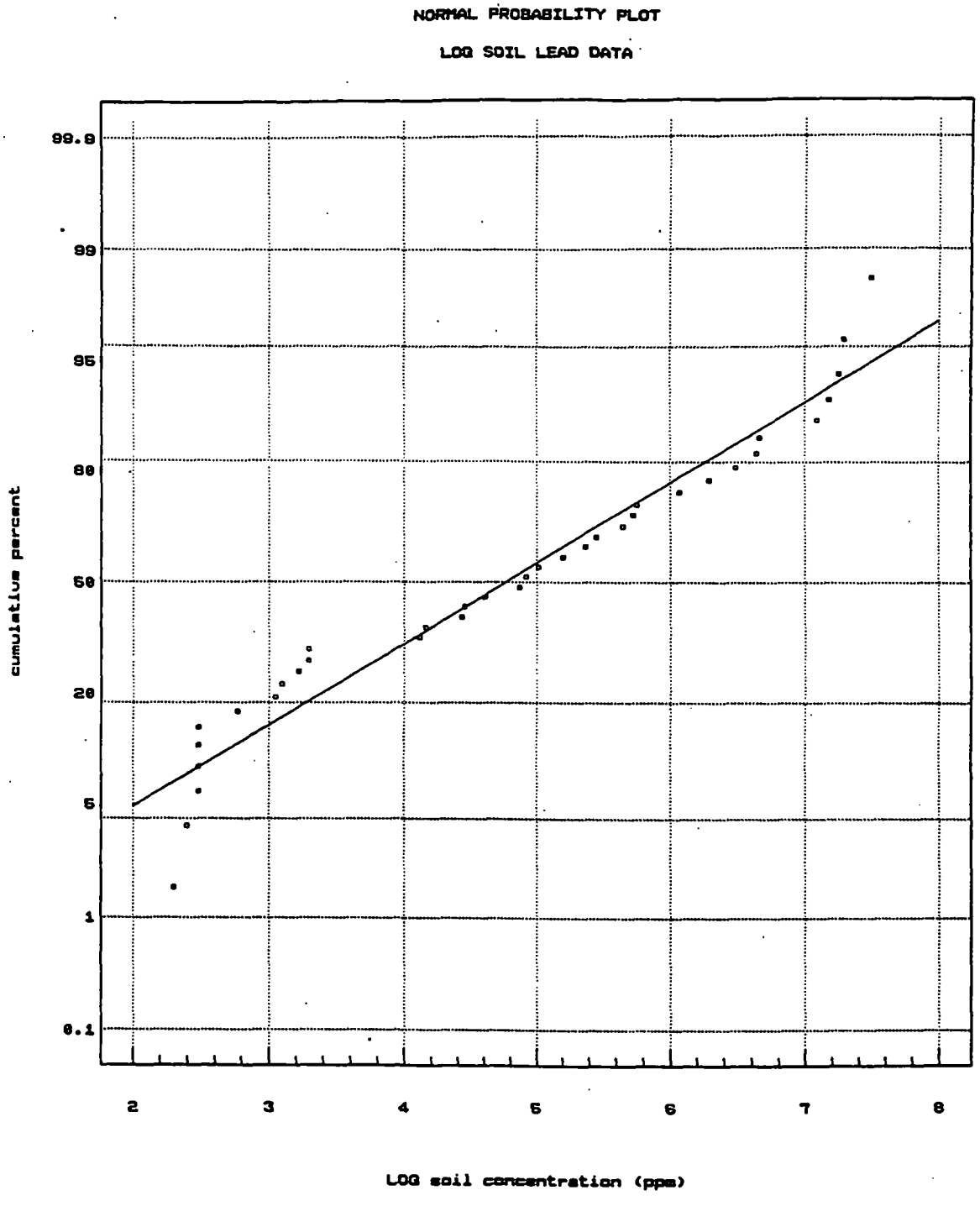

Figure 7. Log_e-transformed data from Figure 6 plotted on a probability plot. The log-transformed data appear to be normally distributed, indicating that the original data are lognormally distributed.

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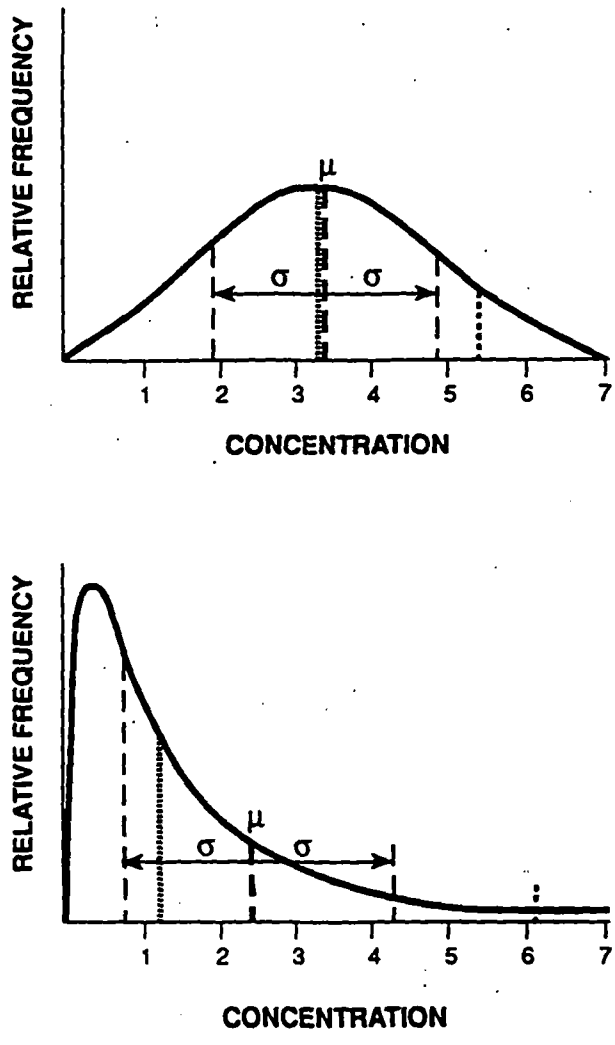


LEGEND

σ = Standard deviation of population distribution

| = One standard deviation from the mean of the population distribution

μ | = Mean of population distribution

X_{50} ⋮ = Median (50th percentile)

X_{90} ⋮ = 90th percentile

Figure 8. Relative position of mean, standard deviation and percentiles for a normally distributed population (upper figure) and a lognormally distributed population (lower figure).

2.1.4.3 **Other Distributions**—For small data sets (e.g., n < 20), it may not be possible to "reject" either the normal or lognormal distribution; both distributions may appear to fit the data. In this case, the lognormal distribution should be used. Alternatively, additional samples can be taken to better determine the distribution. This is demonstrated in Figure 9. Normal and lognormal distributions are sufficient to model many real-world statistical situations. However, some data sets may be neither normally nor lognormally distributed. Several other distributions have been used to model environmental data, including Weibull, gamma, and beta distributions. The three-parameter Weibull distribution can assume a wide variety of shapes and can be used to model both right and left-skewed data. These distributions are discussed briefly in Gilbert (1987), and are mentioned here because they may be encountered in statistical texts. However, for the statistical methods described in this document, if the data set does not appear to be normally or lognormally distributed, a nonparametric (distribution-free) statistical method should be used, if available and appropriate.

2.1.5 Parametric vs. Nonparametric Methods

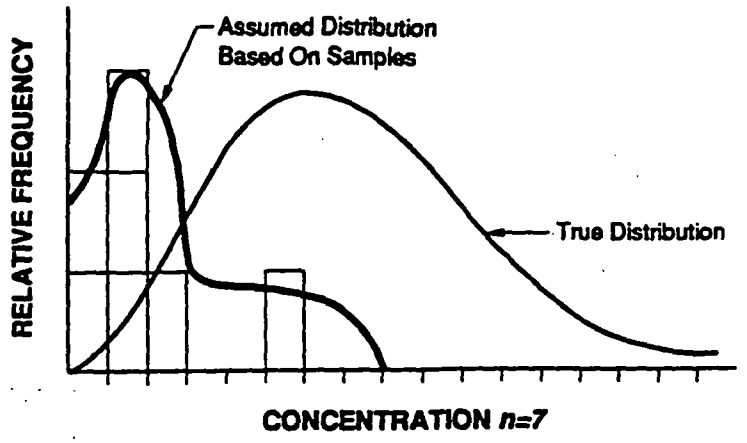
Parametric estimation methods and tests require that the data be drawn from a population with a specific probability distribution (e.g., normal). When the distributional assumptions hold, parametric tests are usually more powerful than nonparametric (distribution-free) tests, although this is dependent on the type of test performed. However, parametric tests can lose statistical power or introduce bias if their distributional assumptions are incorrect. In this case, **statistical power** can be thought of as the ability of a method to detect site contamination if it is present, and to decide that remediation is unnecessary at a clean site. The loss of statistical power or introduction of bias when distributional assumptions are not met can render parametric statistical procedures ineffective in reaching decisions on site contamination.

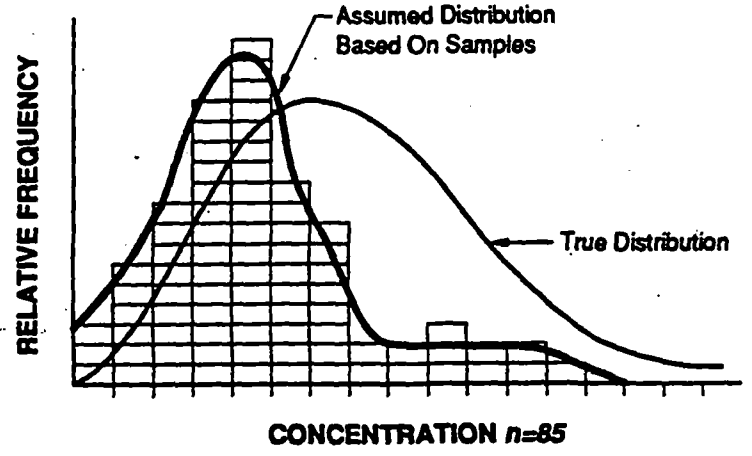
Nonparametric estimation methods and tests, also called "distribution-free," do not require that the data be drawn from a specific distribution (e.g., normal). These methods and tests are valid for all data distributions. However, because parametric methods are generally more powerful if distributional assumptions hold, parametric methods are preferred unless data deviate significantly from normal and lognormal distributions. Thus, in order to use a nonparametric method, the distributional assumptions must be tested, and both the normal and lognormal distributions rejected.

2.1.6 Null Hypothesis

In MTCA (WAC 173-340-200), the null hypothesis (the "working assumption") is that contaminant concentrations at the site exceed the cleanup level (unless the cleanup level is based on background concentrations). The alternative is that they do not exceed the cleanup level. Since there is only one possibility for the alternative hypothesis, the appropriate statistical analysis is known as a **one-tailed test**. If there were two possibilities for alternative hypotheses, the test would be a **two-tailed test**.

The MTCA null hypothesis ("site exceeds cleanup level") is environmentally conservative but creates some statistical problems. This is because the conventional null hypothesis in





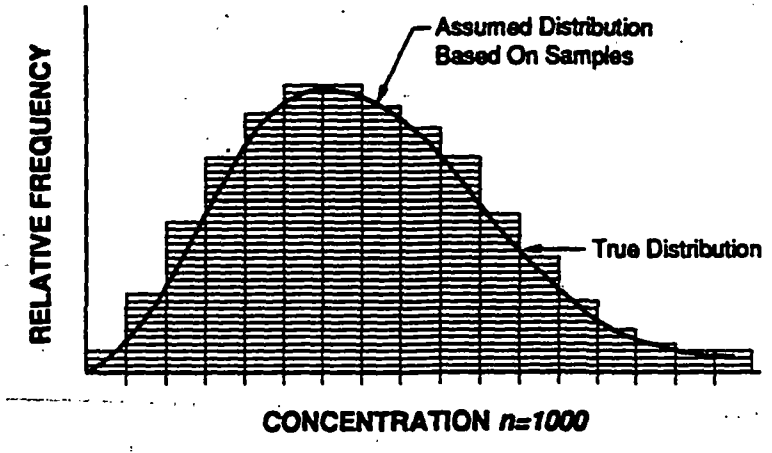


Figure 9. Larger sample sizes provide better estimates of the true population distribution.

statistics is the "no difference" hypothesis ("site is not different from cleanup level"). Most statistical tests are designed to test the "no difference" null hypothesis, and any introductory statistical textbook will be written from this perspective. Consequently, many commonly used statistical tests, such as the *t*-test or analysis of variance (ANOVA), are generally inappropriate for MTCA cleanups and are therefore not described in MTCA or this document. In addition, much of the information in statistics texts is also inappropriate. Statistical guidance published for the Resource Conservation and Recovery Act (RCRA) program is generally inapplicable to MTCA because the "no difference" null hypothesis is used in statistical analysis for RCRA facilities. However, U.S. EPA (1988, 1989a) has published statistical guidance for Superfund cleanups that is based on the same null hypothesis as MTCA, and may therefore be used for statistical analysis of data from MTCA sites. If in doubt, consult these sources or a statistician.

2.1.7 Type I and Type II Errors

Two types of errors can occur when a statistical test is applied to test a null hypothesis. If a statistical test shows that the null hypothesis is very unlikely, then we can accept the alternative, which in this case is that the site is clean. Since we are dealing with probabilities and not certainties in statistics, we could be wrong. If we are wrong—we assume that the site is clean and it is in fact contaminated—we have committed a Type I error. A Type I error means that the null hypothesis ("site exceeds cleanup level") is incorrectly rejected; a site that is actually contaminated will not be cleaned up. Statistics can't prevent Type I errors, but it does allow us to control the likelihood of committing such an error. In general, this likelihood is set at 0.05 (5 percent, or 1 time in 20) in the regulation [e.g., WAC 173-340-720(8)(e)(i)]. This defines what we mean by the null hypothesis being "very unlikely" and is an attempt to minimize mistakes. The statistical test must show that the chances of the null hypothesis being right are no greater than 0.05, or 1 in 20 in order to reject the null hypothesis.

The probabilistic nature of statistical decisions can also lead to a Type II error. When a Type II error occurs, the null hypothesis ("site exceeds cleanup levels") is incorrectly accepted. A statistical test on a particular data set may indicate that the null hypothesis is not sufficiently unlikely to justify its being rejected (i.e., it is more likely than 1 in 20), and the null hypothesis is therefore accepted. In this case, however, if the site actually is clean, we have committed a Type II error. If a Type II error occurs, cleanup will be required on a site that actually doesn't need it. In general, the likelihood of committing a Type II error can be reduced by collecting more samples or by using a more powerful statistical test. When deciding the number of samples needed at a site, it is worth considering that a Type II error may be a more expensive mistake than collecting too many samples. These issues are discussed further in the EPA guidance documents cited above.

2.1.8 Estimation Procedures vs. Statistical Tests

The procedures described in Sections 2.1.1–2.1.3 above are procedures for estimating summary statistics for the underlying population. Summary statistics include the mean, standard deviation, and median or other percentiles. Summary statistics describe basic facets of the data but do not provide interpretive or decision-making power.

In many cases, the purpose of statistical analysis is not only to estimate the statistical parameters for the underlying population, but also to make some conclusion about those data. Statistical tests have been developed for this purpose. In its simplest form, a statistical test deals with hypotheses and estimating the likelihood that they are correct. The following sections describe methods to reach conclusions about the site contaminant concentration data.

The concepts behind a statistical test of a null hypothesis will be illustrated by an example:

> Samples are collected from two orchard fields to measure soil arsenic levels. There are two hypotheses. One is that the soil arsenic level is the same in both fields. The alternative hypothesis is that the soil arsenic levels are different. Normally in statistics the first hypothesis ("no difference") is the null hypothesis. A statistical test can then be used to estimate the likelihood that the null hypothesis is correct. If it is "very unlikely," then the alternative, that the orchard fields are different, is probably correct. This example illustrates several important points. First, we can only test the null hypothesis, we cannot prove it. Second, statistics doesn't provide certainty (although it does let you specify what you mean by "very unlikely"). A more subtle point is that if the null hypothesis is probably wrong, and there is a difference between the fields, then there are actually two possibilities: field #1 has higher arsenic levels than field #2, or vice versa (either way, the fields are different). Where the alternative to the null hypothesis contains two possibilities, the appropriate analysis is a two-tailed statistical test.
>
> If field #1 had been sprayed with an arsenic pesticide, there is good reason to set up different hypotheses. Now the alternative hypothesis could be that the soil in field #1 has more arsenic than the soil in field #2, and the null hypothesis is that it doesn't. If a statistical test shows that the null hypothesis is very unlikely, there is only one possibility left: arsenic levels in field #1 are higher than in field #2. Here the appropriate analysis is a one-tailed statistical test.

In general, estimation methods are not influenced by the null hypothesis, whereas statistical tests are. The procedures discussed in this document are estimation procedures, and therefore are not influenced by the null hypothesis to be tested (the null hypothesis does not influence the confidence interval or tolerance interval "tests" described in this document). However, "alternate statistical procedures" are allowed by MTCA. If methods other than those described in the regulations are used, they must be consistent with the MTCA null hypothesis that the site exceeds the cleanup level. As mentioned above, many of the common statistical tests (e.g., *t*-test) are not appropriate for this null hypothesis.

2.1.9 Confidence Interval

Estimation procedures do not provide population parameters (e.g., mean) with absolute certainty. The confidence interval for statistical parameters can be used to describe the likelihood that the parameters will fall within a specific interval.

Suppose that a specific number of samples are taken at a site, the $100(1-\alpha)$ percent confidence interval is calculated, and this process is repeated many times. The $100(1-\alpha)$ percent confidence interval (CI) on a percentile (e.g., the median) means that $100(1-\alpha)$ percent of those intervals will include the percentile. The level of significance, α, is calculated from the selected CI by the following equation:

$$\alpha = 1 - CI/100.$$

Thus, for a 95-percent confidence interval, α is 0.05. For a significance level $\alpha = 0.05$, the 95-percent CI on the median means that the true population median will be within the interval 95 percent of the time.

2.1.10 Tolerance Interval

A **tolerance interval** is based on determining the confidence interval on a fixed proportion of the measurements, rather than on a particular parameter (e.g., the median). A confidence interval describes the likelihood that the particular parameter (e.g., the median) will fall within the interval. The tolerance interval describes the likelihood that a portion of the measurements (e.g., 95 percent) will fall within a specific interval. For example, the value obtained from the upper 95-percent tolerance interval around the 90th percentile means that we are 95 percent confident that at least 90 percent of the distribution is less than the value.

The tolerance limits are given by

$$\bar{x} \pm ks$$

The k value is essentially a factor that reflects the percentile of interest and the sample size. It increases the standard deviation by an amount related to the number of samples and the confidence level desired.

The tolerance interval approach assumes that the sampled data are drawn from a normally distributed population. This approach is more sensitive to the normality assumption than the confidence interval approach. It should not be used for data where a statistical test indicates that the normal distribution is inappropriate. For lognormally distributed data, see Section 5.2.2.2. Methods for data that are neither normally or lognormally distributed are described in Sections 5.2.2.3 and 5.2.2.4.

2.2 SAMPLES WITH VALUES BELOW THE DETECTION LIMIT OR PRACTICAL QUANTITATION LIMIT

Environmental data sets commonly contain data that are reported as "less than" the detection limit, or "not detected." This is particularly common for contaminants such as volatile organics, which are not normally present in the environment. In addition, due to conditions such as matrix interference, a laboratory measurement may be above the method detection limit, but

below the practical quantitation limit (PQL), and these measurements will commonly be reported as "less than" the PQL. Data sets that contain below-detection-limit (BDL) or below-PQL data are known as censored data sets. Censored data sets present difficulties for many standard estimation procedures and statistical tests. For example, the mean cannot be estimated by the method described in Section 2.1.1 unless numerical values are assigned to the BDL or below-PQL data. Thus, the values assigned to BDL and below-PQL data could have a significant impact on the calculated mean for the data set. Censored data are less influential, however, when we are interested in upper-percentile estimates (e.g., defining background concentrations).

The method described in MTCA for handling censored data sets is the same as that used for estimating background concentrations, and for demonstrating compliance with groundwater, surface water, and soil cleanup levels. The regulation requires that all concentrations below the detection limit be assigned a value equal to one-half the detection limit of the method being used. Measurements above the method detection limit, but below the PQL shall be assigned a value equal to the method detection limit [WAC 173-340-708(11)(e), 173-340-720(8)(g), 173-340-730(7)(f), 173-340-740(7)(g)]. However, "alternate statistical procedures" for handling censored data may be approved by the department.

2.2.1 Additional Information

Three basic methods are available for estimating summary statistics for censored data sets: 1) simple substitution, 2) distributional methods, and 3) robust methods (Helsel 1990). These methods range from simple to complex. The method described in MTCA is an example of simple substitution, which involves substituting a single value for each BDL or below-PQL value. Many studies have found that simple substitution methods do not estimate summary statistics of the underlying population as well as more complicated methods for handling censored data (Helsel 1990). [*Use of methods 2) or 3) requires consultation with Ecology.*]

Distributional methods estimate a distribution for the data and use the characteristics of the distribution to estimate summary statistics. Helsel (1990) states that the best estimation method in this category is the maximum likelihood estimator (MLE). MLEs have performed well for percentile estimation, but not as well for estimating the mean and standard deviation of a data set. This method is accurate only if the data fit the assumed distribution well, and the sample sizes are large (e.g., >30) (Helsel 1990). Due to the small sample sizes likely to be available at MTCA sites, however, these methods may not be appropriate.

Helsel (1990) recommends the use of robust methods for estimating the mean and standard deviation. These methods use the observed data above the detection limit to assume a distribution, and then extrapolate the distribution below the detection limit to calculate summary statistics. If the data above the detection limit fit a normal or lognormal distribution, this can be done with a probability plot. Robust methods are recommended when data do not appear to fit the assumed distribution well.

The percentage of data below the detection limit will influence which methods are applicable for a particular data set. If the data set contains only a small percentage of censored data (e.g.,

no more than 15 percent), simple substitution methods will be satisfactory for estimating parameters. However, for estimation of summary statistics such as the mean and standard deviation, the presence of a substantial number of BDL or below-PQL data poses a significant problem from a statistical standpoint, unless more robust methods—discussed above—are used. However, some statistical estimation methods are not influenced by censored data. For example, the nonparametric confidence intervals about upper percentiles (Sections 5.2.2.3 and 5.2.2.4) will not be influenced by some censored data.

2.2.2 Multiple Detection Limits [*Alternative methods require consultation with Ecology.*]

Data sets may contain data with more than one detection limit. This may occur when data sets from multiple laboratories are combined, or data are analyzed at different times with variations in the reporting limit (usually the limit becomes lower over time). Using the simple substitution method (one-half the detection limit) described in the MTCA, multiple detection limits will not pose a problem. However, if alternative methods for handling BDL data are used, multiple reporting limits may cause some difficulties. Helsel (1990) recommends using robust methods for estimating the mean and standard deviation, and MLEs for percentiles.

2.3 OUTLIERS

The EPA groundwater guidance (U.S. EPA 1988) states:

> *In many statistical texts, measurements that are very large or small relative to the rest of the data, or are suspected of being unrepresentative of the true concentration at the sample location are often called "outliers." Observations which appear to be unusual may correctly represent unusual concentrations in the field, or may result from unrecognized handling problems, such as contamination, lab measurement, or data recording errors. If a particular observation is suspected to be in error, the error should be identified and corrected, and the corrected value used in the analysis. If no such verification is possible, a statistician should be consulted to provide modifications to the statistical analysis that account for the suspected "outlier" ... The handling of outliers is a controversial topic. In this document, all data not known to be in error are considered valid because:*
>
> - *The expected distribution of concentration values may be skewed (i.e., non-symmetric) so that large concentrations that look like "outliers" to some analysts may be legitimate;*
> - *The procedures recommended in this document are less sensitive to extremely low concentrations than to extremely high concentrations; and*
> - *High concentrations are of particular concern for their potential health and environmental impact.*

There are no provisions in MTCA for excluding "outliers" that cannot be demonstrated to be in error.

3. SAMPLING

A wide variety exists in sampling designs. Each describes the number of samples, locations for sampling, type of samples, and time frame for sampling. The sampling plan should be considered carefully prior to performing any sampling or performing statistical analysis on data, because a poorly designed sampling plan can greatly reduce the usefulness of the collected data. The sampling method used can influence the effectiveness of the remedial action in protecting human health and the environment. Sampling should be continued until the complete, preplanned sampling workplan has been carried out. It is unacceptable to terminate a sampling plan prematurely because the data collected to date indicate the results desired by the sampler (e.g., the cleanup level has been met).

Many factors should be considered in sampling, including the objectives of the study, the sampling method (e.g., random vs. systematic sampling), cost effectiveness of the sampling program, statistical analysis to be performed on the data, and the expected type and distribution of contaminants. In addition, several practical factors exist, such as legal and political considerations (e.g., sampling on private property), site accessibility and availability, and required equipment, which may affect sampling design. These factors influence sampling locations as well as the number and type of samples required. Sampling design is an extensive topic, and is beyond the scope of this document. However, its importance should not be underestimated. In this document, it is assumed that sampling design issues have been considered prior to performing statistical analyses of data.

Gilbert (1987) presents concepts and considerations for several sampling methods (e.g., simple random, stratified random, systematic). Soil sampling locations are discussed in McBratney et al. (1981); McBratney and Webster (1981) and U.S. EPA (1989a). Design of groundwater monitoring systems is described in Nelson and Ward (1981) and Sophocleous et al. (1982).

Special Comment on Hot Spots: No discussion of "hot spots" (highly contaminated local areas) is presented in MTCA. Gilbert (1987) presents a method for locating single hot spots by sampling on a square, rectangular, or triangular systematic sampling grid. Methods for locating multiple hot spots are presented in Gilbert (1982) and Holoway et al. (1981).

Special Comment on Compositing: Compositing of soil, or occasionally groundwater, samples refers to taking several samples and combining them into a single sample for analysis. This is commonly done to reduce analytical costs. There are two common methods used for compositing samples. The first method entails sampling segments of the soil core at random or at systematic locations. The sampled portions are homogenized and then subsampled. The second method requires retaining the entire soil core, homogenizing all the material, and then subsampling. The second method is preferable from a statistical standpoint, because the subsampling variance will be lower (U.S. EPA 1989a).

Compositing may be useful in screening a large area for contamination (e.g., screening for hot spots) in a cost-effective manner. In addition, compositing has been used successfully to evaluate the risk associated with an "exposure unit," the area over which people are expected to be exposed at a site and where cleanup actions are being considered (Ryti and Neptune 1991). In this case, the average concentration of contaminants over an exposure unit is a meaningful basis for assessing risk, and thus, compositing is a useful sampling technique (Neptune et al. 1990).

Despite the advantages associated with compositing, there are several problems that should be considered prior to sampling.

- A contaminated sample may be overlooked due to the effects of dilution. For example, suppose the detection limit for a particular contaminant is 1 mg/kg, and the action level is 3 mg/kg. Ten samples are taken and composited into one sample. If one sample has a concentration of 9 mg/kg, and all of the other samples are uncontaminated, the dilution effect of mixing the single contaminated sample with all the clean soil will cause the overall concentration measured in the soil to be below the detection limit of 1 mg/kg, and the soil will be considered clean. However, the local, hotspot concentration of 9 mg/kg is greater than the 3 mg/kg action level, and the site actually should be considered contaminated.
- Compositing methods may be inappropriate unless the statistical parameter of interest is the mean concentration. This is because the variance of the mean contributed by differences in location across the site from composited samples will be lower than the same variance associated with the mean from noncomposited samples (U.S. EPA 1989a).
- For contaminants such as volatile organics, compositing may cause the loss of material from the soil sample, and will thus reduce the measured contaminant concentration.

Due to these problems, compositing should be used only when it is supported by defined sampling objectives and its use can be shown to be appropriate for those objectives. Unless there is a well-defined reason for compositing, it should not be performed.

Several references are available that describe compositing of soil samples, including Duncan (1962), Rohde (1976), Schaeffer and Janardan (1978), Elder et al. (1980), U.S. EPA (1983, 1984, 1989b), Neptune et al. (1990), and Ryti and Neptune (1991).

Special Comment on Variability and Error in Data: Variability in environmental data can be attributed to two primary factors: 1) true variability in the population and 2) analytical or statistical uncertainty or error. True variability in contaminant concentrations in soils and groundwater may be due to a wide variety of factors, including:

- Natural variations in the geologic media (e.g., composition, permeability, and grain size)
- Distance from the source of contamination and variations in the source over space and time

- Differences in vegetation and in activity of microorganisms
- Temporal and spatial variations in background levels
- Chemical reactions of contaminants (e.g., degradation and transformation)
- Seasonal variation (e.g., in precipitation or temperature).

In addition, several sources of error and uncertainty exist that can result in observed variability in sampled data:

- Measurement bias (constant factor by which measurements are too high or low)
- Uncertainty in measurements (random sampling error)
- Quality assurance and quality control (QA/QC) problems. It is critical that the data available at the time of statistical evaluations have been through a QA/QC or data validation step and that they are deemed useful as reported for further decision-making at the site.

4. DETERMINATION OF CLEANUP STANDARDS AND BACKGROUND CONCENTRATIONS

4.1 DECISION-MAKING PROCESS

This chapter addresses three issues:

1. In general, how are cleanup standards determined?
2. What are the criteria for using background concentrations to determine a cleanup level?
3. How should the background data be used to set a cleanup level?

Prior to evaluating onsite data, the cleanup standard should be determined for the contaminants present at the site. This standard may be based on appropriate applicable state and federal laws, risk, ecological factors, and analytical considerations (e.g., BDL data, PQL), or may be related to background levels of the contaminant near the site. The process involved in choosing a method for determining a cleanup level is shown in Figure 10.

4.2 WASHINGTON ADMINISTRATIVE CODE DEFINITIONS

4.2.1 Establishing Cleanup Levels: Methods A, B, and C

Establishing cleanup standards (WAC 173-340-610) requires the specification of:

1. Cleanup levels
2. Points of compliance (locations where cleanup levels must be met) and time of compliance (for groundwater)
3. Additional regulatory requirements that apply to a cleanup action because of the type of action and/or the location of the site.

MTCA provides three basic methods for establishing cleanup levels in groundwater, surface water, soil, and air (WAC 173-340-700). Cleanup levels resulting from these methods may be broadly defined as:

- Method A—numerical standards (routine cleanup method)
- Method B—site-specific method that includes risk-assessment-based standards, standards based on applicable state and federal laws, or background concentrations

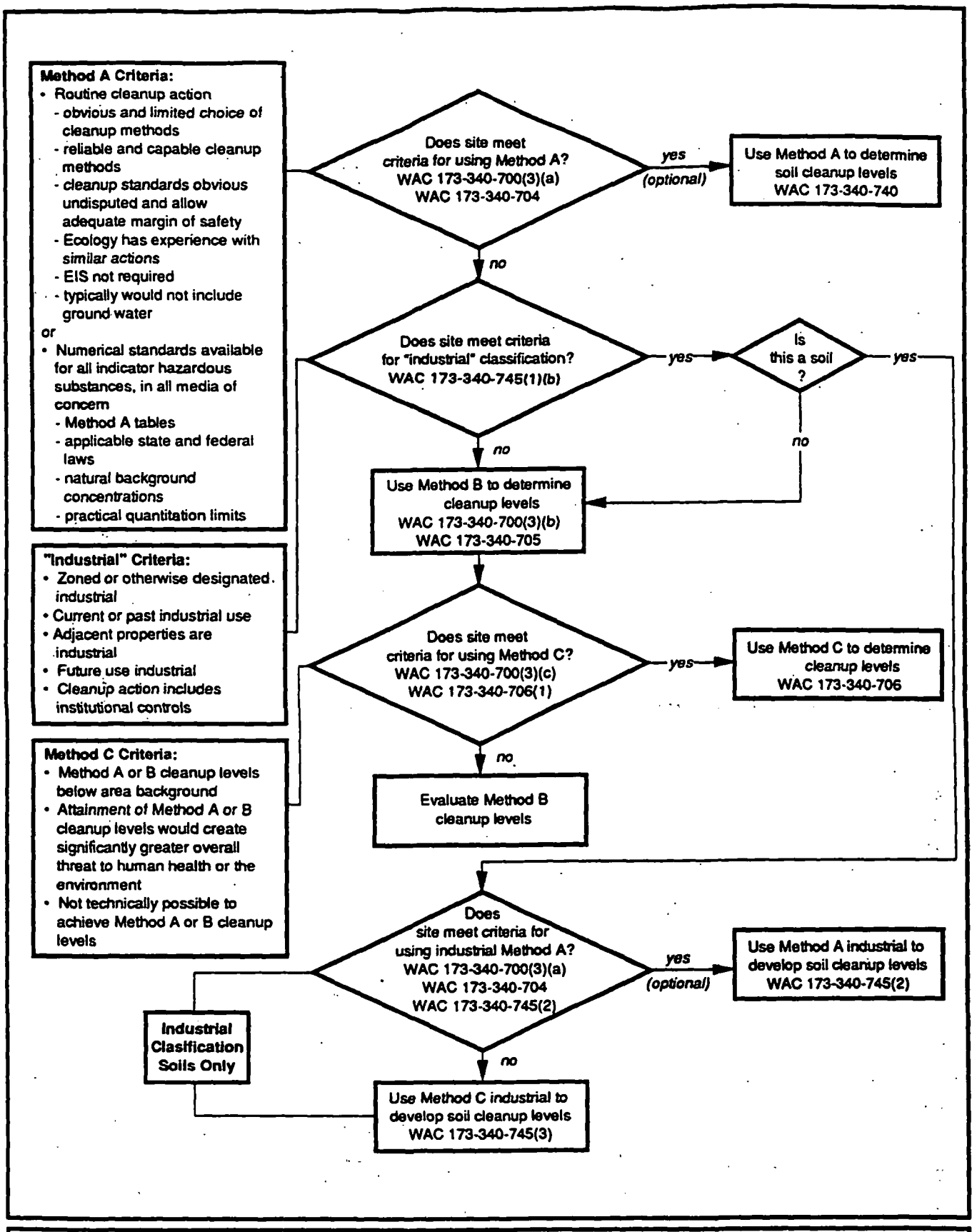


Figure 10. Flowchart for determining whether Method A,B, or C should be used for establishing cleanup levels.

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(standard method)

- Method C—when compliance with Method A or B cleanup levels is impossible or may cause greater environmental harm or if site is an industrial site (conditional method).

4.2.1.1 **Method A: Tables**—Method A can be applied if either of the following conditions are met (WAC 173-340-704):

1. The site qualifies for a routine cleanup action. A cleanup action can be considered "routine" if all of the following criteria are met [WAC 173-340-130(7)]:
   - It involves an obvious and limited choice of cleanup methods
   - It uses a cleanup method that is reliable and has been proven capable of achieving cleanup standards
   - Cleanup standards for each hazardous substance addressed by the cleanup are obvious and undisputed, and allow an adequate margin of safety for protection of human health and the environment
   - Ecology has experience with similar actions
   - An environmental impact statement is not required.

   Cleanup of groundwater will not normally be considered a routine cleanup action [WAC 173-340-130(7)(c)].
2. Numerical standards are available for all indicator hazardous substances in all media of concern. Numerical standards may be available in the regulations (Tables 1, 2, and 3 of WAC), or applicable state and federal laws. Under Method A, cleanup levels must be at least as stringent as concentrations specified in these sources. If they are not available from these sources, cleanup standards can be set at natural background concentrations or the PQL for the substance in question. Ecology may set more stringent standards if needed to protect human health and the environment.

4.2.1.2 **Method B: Standard Method**—The regulations [WAC 173-340-700(3)(b)] state that under Method B:

> ...cleanup levels for individual hazardous substances are established using applicable state and federal laws or the risk equations specified in WAC 173-340-720 through 173-340-750. For carcinogenic compounds, cleanup levels are based upon the upper bound of the estimated excess lifetime cancer risk of one in one million. For individual noncarcinogenic substances, cleanup levels are set at concentrations which are anticipated to result in no acute or chronic toxic effects on human health and the environment. Where a hazardous waste site involves multiple hazardous substances

and/or multiple pathways of exposure, Method B cleanup levels for individual substances must be modified in accordance with the procedures in WAC 173-340-708. Under this method, the total excess lifetime cancer risk for a site shall not exceed one in one hundred thousand and the hazard index for substances with similar noncarcinogenic toxic effects shall not exceed one (1).

4.2.1.3 **Method C: Conditional Method**—Method C cleanup levels may be established based on applicable state and federal laws and a site-specific risk assessment if any of the following conditions are met (WAC 173-340-706):

1. Cleanup levels established using Method A or B are below area background concentrations.
2. Attainment of Method A or Method B cleanup levels has the potential for creating a significantly greater overall threat to human health or the environment than attainment of Method C cleanup levels.
3. Method A or Method B cleanup levels are below technically possible concentrations. "Technically possible" means that remedial measures are capable of being designed, constructed, and implemented in a reliable and effective manner, regardless of cost (WAC 173-340-200).
4. The site is defined as an industrial site (see WAC 173-340-745) and meets the criteria for establishing soil cleanup levels under WAC 173-340-745:

   - The site is zoned for industrial use
   - The site is currently used for industrial purposes
   - Adjacent properties are currently used for industrial purposes
   - The site is expected to be used for industrial purposes in the foreseeable future
   - Institutional controls will be implemented as part of the remedial action.

Additional criteria for using Method C include:

- All ARARs will be met
- All practicable methods of treatment will be used
- Institutional controls will be implemented

A flowchart for use in determining whether Method A, B, or C is appropriate for establishing cleanup levels at a site is shown in Figure 10.

4.2.2 Natural vs. Area Background

The MTCA regulation makes a distinction between natural and area background concentrations.

4.2.2.1 Natural Background—Natural background refers to the concentration of a constituent that occurs naturally in the environment and has not been influenced by localized human activities. An example presented in MTCA (WAC 173-340-200) is that several metals occur naturally in the bedrock and soils of Washington State due solely to the geologic processes that formed these materials; therefore, the concentrations of these metals would be considered natural background. In addition, some constituents have been used globally, and low concentrations of these contaminants can be found in soils and groundwater throughout much of the state. These concentrations are the result of widespread use of the constituents and not localized human activity. Examples presented of constituents for which low concentrations would be considered natural background include polychlorinated biphenyls (PCBs) and radionuclides (due to fallout from bomb testing and nuclear accidents).

For comparison of onsite constituent concentrations with natural background levels, data should be obtained from a suitable reference area that is comparable to the site (e.g., similar geology and soil characteristics).

4.2.2.2 Area Background—Area background is defined as the concentration of hazardous substances that are consistently present in the environment in the vicinity of a site, and are the result of human activities unrelated to releases from that site. The size of the area affected by a particular contaminant is smaller for area background levels than for natural background. For example, lead levels in Seattle might be higher than lead levels in Bellevue; area background concentrations would therefore be different in these two cities.

4.3 SOIL CLEANUP STANDARDS BASED ON BACKGROUND DATA

MTCA regulations allow background concentrations to be considered in establishing cleanup standards. The role of background concentrations within the regulation and the procedures for background data evaluations are discussed in the sections below. Details of the statistical methods used for background data evaluations are provided in Sections 2 and 5.

4.3.1 Characteristics of Background Data Sets

Several characteristics of background data should be recognized:

- Background data are variable, and samples will typically reflect a range of values, not a single value. Therefore it is appropriate to consider the distribution of background values (see Section 2.1.4).
- The distribution for background data may vary from one site to another, one environmental medium (e.g., soil, groundwater) to another, and one constituent to another. Background data may occur in the form of normal, lognormal, or other distributions, although it is expected that many background distributions will be (approximately) lognormal. The form of the data distribution should be considered in evaluating background values for each constituent, in each medium, at each site.
- BDL results are common for many constituents in background samples, and the frequency of BDL results may be much higher than for most compliance monitoring data sets. Therefore, specific methods for dealing statistically with BDL values (i.e., the regulation's default approach, assigning one-half of the detection limit to BDL values, or an alternative approach) should be identified (see Section 2.2).

4.3.2 Uses of Background in the Cleanup Standards Regulation

The distinction between natural background and area background values is important with respect to the uses of background data in the cleanup standards regulation (see the discussion in Section 4.2.2 above). Background data can generally be used in three ways to establish cleanup standards:

1. Natural background can be used to establish a cleanup standard for a hazardous substance for which no applicable or relevant and appropriate requirement (ARAR) or cleanup standard regulation value exists [WAC 173-340-704(2)(c)].

2. Natural background can be used to replace an existing Method A, Method B, or Method C cleanup standard when that standard is below the natural background level [WAC 173-340-700(4)(d)].

3. When Method A or Method B cleanup standards are below area background levels, Method C can be used to establish the cleanup standard. That cleanup standard may be equal to the area background value if it is within the allowable range for Method C standards, but the standard may not be greater than the maximum concentration allowable under Method C calculations [WAC 173-340-706(1)(a)].

Situations in which either natural or area background values will result in cleanup standards higher than those derived in Methods A, B, or C, based on ARARs or risk-equivalent

calculations, may be infrequent. For many cleanup standard decisions, background values will not affect the cleanup standards. However, in cases where background values lead to the adoption of higher cleanup standards, this decision can be of great importance for reaching decisions on site cleanup. A flowchart presenting the role of background values in determining cleanup levels is shown in Figure 11.

4.3.3 Calculation of Background Values

4.3.3.1 General Issues—The uses of background data specified in MTCA regulations require that the distribution of background values (i.e., the varying concentrations reported within a set of background samples) be represented by a single selected value. That value will determine, for example, whether or not a numerical cleanup standard established under Method A, B, or C is below background.

The regulation states the following requirements [WAC 173-340-708(c),(d), and (e)]:

1. The statistical method used to evaluate available data shall be appropriate for the statistical distribution (e.g., lognormal) of each hazardous substance.

2. The lower tolerance limit may be used to compare a cleanup standard with background. That lower tolerance limit shall be based on a coverage of 95 percent and a tolerance coefficient of 95 percent (i.e., the background value shall be the lower 95 percent confidence limit on the 95th percentile of the background distribution).

3. Other statistical methods may be used if approved by Ecology.

4. Values below the method detection limit shall be assigned a value equal to one-half of the method detection limit. Values above the method detection limit but below the practical quantitation limit shall be assigned a value equal to the method detection limit. Alternative procedures for addressing not-detected values may be used if approved by Ecology.

Ecology has determined that the statistical procedures included in the regulation, including the use of lower tolerance limits, do not provide an appropriate method for evaluating background data and comparing cleanup standards to background. Therefore, alternative procedures are described in this guidance document. They are discussed in Section 4.3.3.2 below.

The same statistical methods are used for both natural and area background data, regardless of the intended uses of the data. The main features distinguishing natural and area background data sets under MTCA are the location and number of samples. The same locations are not equally representative of natural and area background conditions; therefore, any sampling plan for collecting background data should be carefully designed and reviewed with respect to the

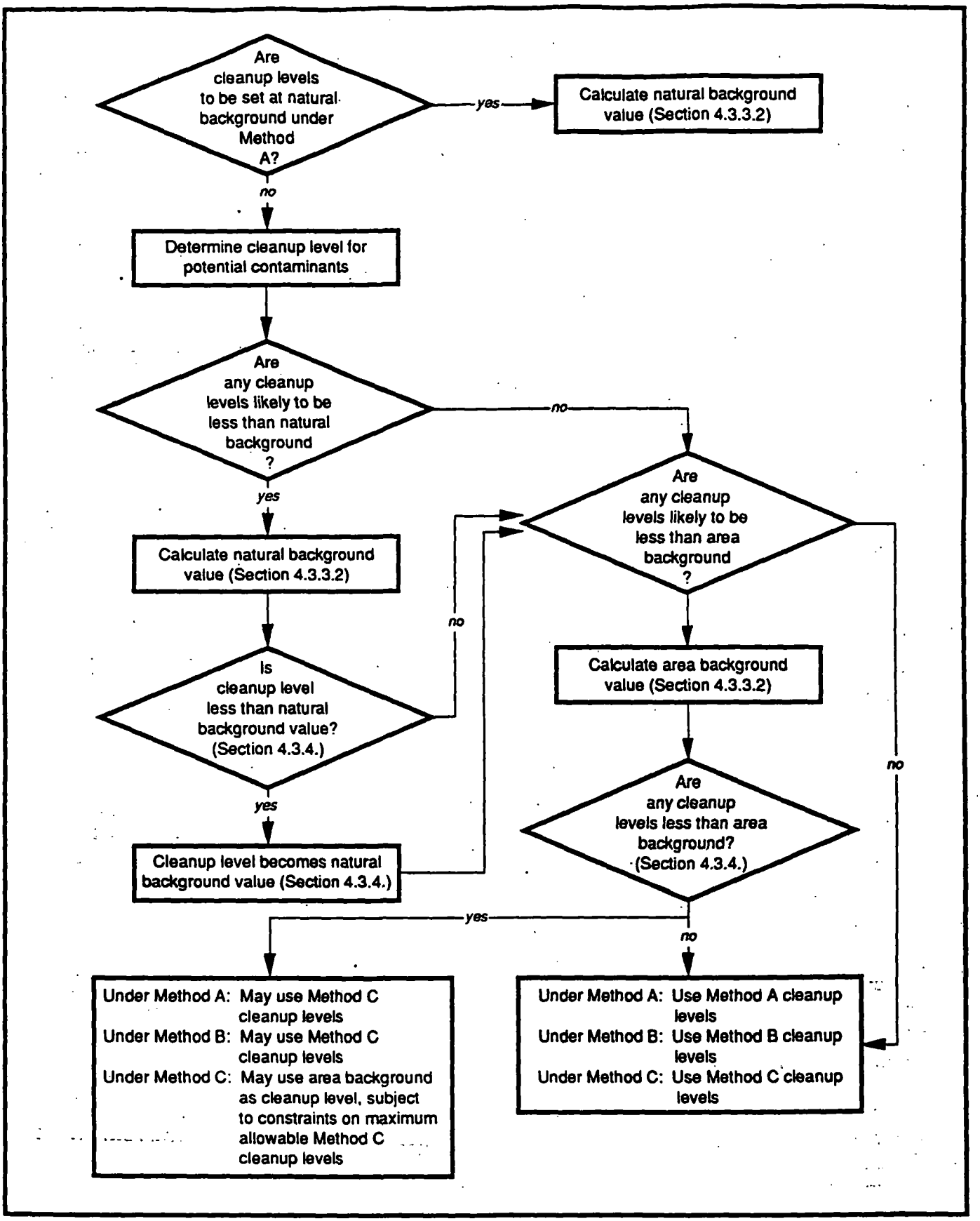

Figure 11. Flowchart demonstrating the role of background values in determining cleanup levels.

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representativeness of those locations for the type of background data being sought. Area and natural background samples cannot be combined meaningfully in a single data set.

For soils data, the regulation specifies minimum numbers of background samples [WAC 173-340-708(11)(d)]. At least 10 soil samples are required to determine natural background levels, and at least 20 are required to determine area background levels. The minimum number of samples required for other media is not defined in the regulation and needs to be determined on a case-by-case basis. The minimum sample sizes of 10 or 20 samples may not result in data sets that provide accurate and representative estimates of background values (i.e., sampling errors may be relatively large). Estimates of upper percentile values of the background distribution may be particularly affected by small sample sizes. In many cases, it may be appropriate to collect a larger number of background samples to reduce possible sampling error effects and reach a better decision on cleanup standards.

The flowchart in Figure 12 provides an overview of the data evaluation procedures for determining possible cleanup standards based on background. Default procedures are shown in the left-hand column of Figure 12. The right-hand column provides for alternative methods. A numerical cleanup standard is still established, but it may be based on different data evaluation procedures. This could be as the result of site-specific characteristics, such as the form of the background data distribution, its coefficient of variation (CV) or degree of skew, the number of samples available, or other such factors.

The use of alternative procedures rather than the default procedures of Figure 12 for evaluations at MTCA sites will require submittal of adequate supporting information on the performance of the proposed tests (e.g., Type I and Type II error rates). Alternative procedures cannot be used unless they are reviewed and approved by Ecology.

4.3.3.2 Calculation Methods (Examples 9 and 10)—The default procedures for determining a cleanup standard based on background data are illustrated in Figure 12 and are discussed in this section. An abbreviated summary of the procedures shown in Figure 12 is provided in Supplement S-4. Statistical methods referred to in these default procedures are described in Sections 2, 5.2, and 5.3.

The default procedures result in a numerical value, calculated from site background data, that is used to represent background for evaluations of cleanup standards and compliance with background-based cleanup standards. Background data are assumed to be lognormally distributed; contrary assumptions shall not be made unless a lognormal distribution is statistically rejected at the 0.05 level. Lognormal distributions have a positive skew; this is often representative of data from environmental measurements, which are constrained on the low side by zero or the limits of analytical detection. Ecology performed computer analyses (called "Monte Carlo" simulations) to examine the performance (Type II error rates and power to detect residual contamination) of various percentiles of lognormal distributions as candidates for defining background cleanup standards. Those simulations included lognormal distributions with varying coefficients of variation (i.e., varying degrees of skew). Similar simulation evaluations were also performed for normal distributions. Based on the results of the Monte Carlo simulations, Ecology has selected the 90th percentile value as the default background value for cleanup

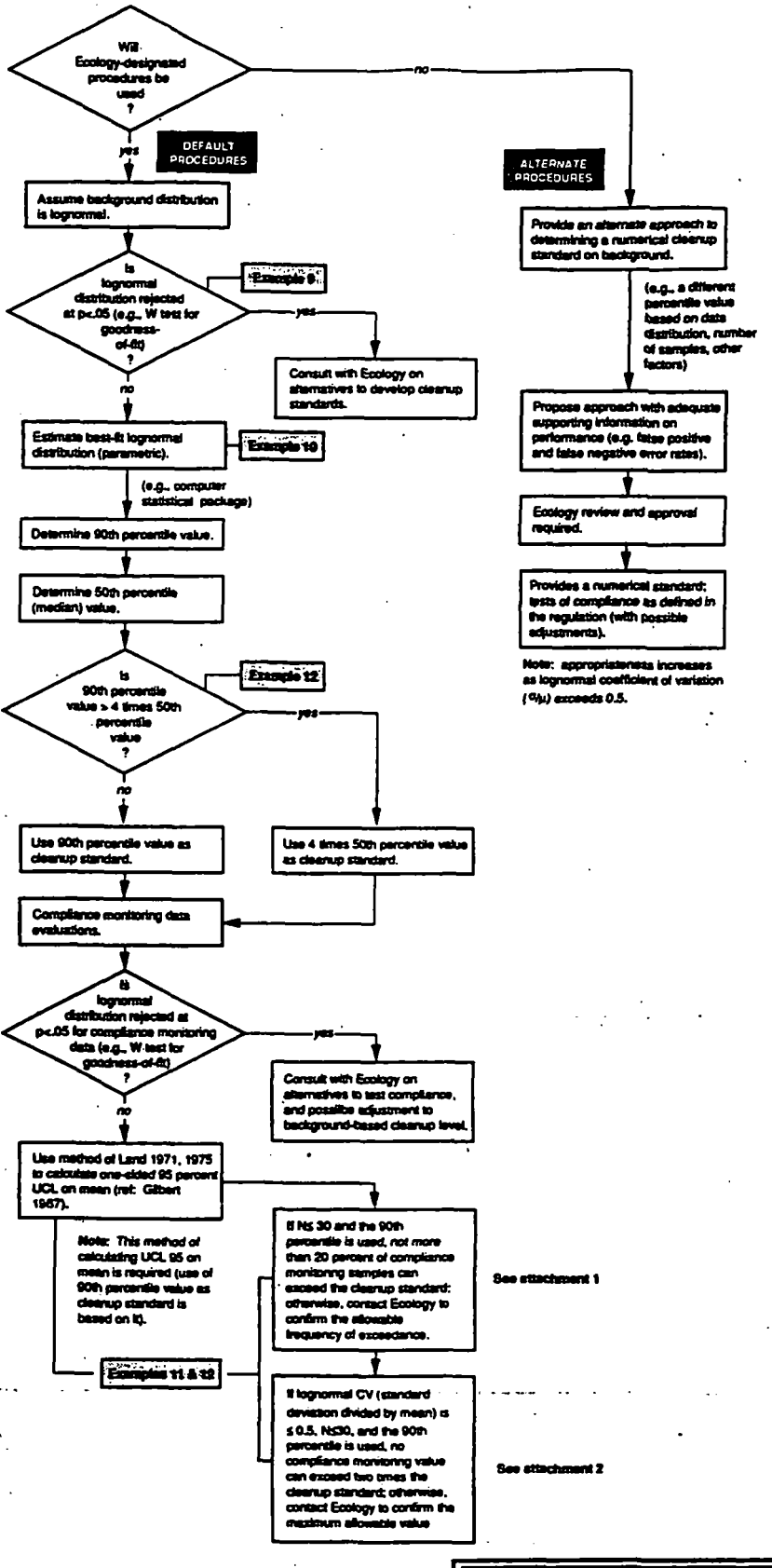

Figure 12. Flowchart for determination of cleanup standards based on background data.

TECHNICAL ATTACHMENT 1
TO FIGURE 12

ALLOWABLE FREQUENCY OF EXCEEDANCE OF CLEANUP STANDARDS BASED ON BACKGROUND
[Requires consultation with Ecology]

The cleanup regulations under MTCA include provisions for limiting the frequency of exceedances of a cleanup standard to no more than 10 percent. Where a cleanup standard is established based on risk estimates, ARARs, or other approaches at a level above background, the possibility of a "false positive" result does not arise. However, for a cleanup standard based on background, the possibility that exceedances of the standard occur as a result of chance alone (false positives) should be considered explicitly. This results in an adjustment to the allowable frequency of exceedances for background-based cleanup standards only.

A cleanup standard selected at a given percentile of the background distribution defines the probabilities of any single random sample from that background distribution being above or below the cleanup level. For example, a cleanup standard established as the 90th percentile (using the default procedures) of a background distribution results in a probability of 0.10 for a single sample exceeding the cleanup level, and 0.90 for that sample being less than the cleanup level. This "binomial" outcome leads directly to use of the binomial theorem to calculate probabilities of any frequency of exceedance of the cleanup level. Probabilities of exceedance depend only on the percentile chosen for background, the number of compliance monitoring samples, and the exceedance frequency.

Based on the percentile of background that the cleanup standard represents, let p and q represent the probabilities of a single random sample being greater than and less than (or equal to) the cleanup standard, respectively. For the default procedures where the cleanup standard is at the 90th percentile, as discussed above, $p = 0.10$ and $q = 0.90$. Let n be the number of compliance monitoring samples. Then, by the binomial theorem, the probability of exactly k out of the n compliance monitoring samples exceeding the cleanup standard is:

$$\text{probability} = p^k q^{(n-k)} \binom{n}{k}$$

where

$$\binom{n}{k} = [n(n-1)\ (n-2)\ldots(n-k+1)/k!$$

The last term on the right in the probability equation gives the number of different ways of selecting the k out of n samples that exceed the cleanup level (order of sampling not considered). Each such result has the same probability, namely $p^k q^{(n-k)}$. Using this equation to calculate the results for individual k values, the probability of k or more exceedances can easily be determined.

It should be recognized that there is a non-zero probability that none of the n samples exceeds the cleanup standard. For example, the probability that 0 of 10 compliance monitoring samples exceeds a cleanup standard based on the 90th percentile of background is just $(0.9)^{10} = 0.349$. Since some outcome must be observed, the sum of the probabilities from $k = 0$ to $k = n$ must equal 1. Table A-5 provides binomial distribution results for selected values of p and n.

A 0.05-level false positive error probability is considered in the following analysis. With a discrete, rather than continuous, set of outcomes (only integral values are possible for k, the number of compliance monitoring results above the cleanup standard), an exact 0.05-level criterion is not available. The table below provides some illustrative results assuming that the cleanup standard is established at the 90th percentile of background:

Probability of k or more exceedances

	number of samples:						
k	10	15	20	25	30	40	50
3	.070	.184					
4	.013	.056	.133				
5		.013	.043	.098			
6			.011	.033	.073		
7				.010	.026	.100	
8						.042	
9						.016	.058
10							.025

An appropriate criterion for the allowable exceedances of a cleanup standard based on the 90th percentile of background can be determined from information on the probability of k or more exceedances out of n compliance monitoring samples. For example, with 20 compliance monitoring samples, the probability of 5 or more exceedances is 0.043 (approximately 0.05), and the maximum allowable number of exceedances is 4, or 20 percent.

Table A-5 may provide the information necessary for calculation of the probabilities of k or more exceedances in specific cases. To illustrate how to perform the necessary calculations, consider a case where the cleanup standard is established at the 80.22nd percentile of background, and 10 compliance monitoring samples are collected. Using the basic probability equation given above for the probability of exactly k out of n exceedances, a table of values can be simply computed. The values for p, q, and n are (1 - 0.8022), 0.8022, and 10, respectively. The initial values in such a table are:

Probability of exactly k out of 10 exceedances

k	probability	
0	0.1104	p^0q^{10}
1	0.2721	$p^1q^9(10)$
2	0.3019	$[p^2q^8(10)(9)]/2$
3	0.1985	$[p^3q^7(10)(9)(8)]/(3)(2)$
4	0.0857	$[p^4q^6(10)(9)(8)(7)]/(4)(3)(2)$

The probability of 5 or more out of 10 compliance monitoring samples exceeding a cleanup standard based on the 80.22nd percentile of background is 1 minus the sum of the tabled probabilities for k = 0, 1, 2, 3, or 4, or a probability of (1 - 0.9686) = 0.031. Thus, a maximum allowable number of exceedances would be 4 based on a 0.031-level false positive error rate.

NOTE: These tables are for illustrative purposes only. Contact Ecology for site-specific allowable exceedance.

TECHNICAL ATTACHMENT 2
TO FIGURE 12

ALLOWABLE MAGNITUDE OF EXCEEDANCE OF CLEANUP STANDARD BASED ON BACKGROUND
[Requires consultation with Ecology]

The cleanup regulations under MTCA include provisions for limiting the maximum magnitude of exceedance of a cleanup standard in a compliance monitoring data set to no more than two times the cleanup level. Where a cleanup standard is based on risk estimates, ARARs, or other approaches at a level above background, the possibility of a "false positive" result does not arise. However, for a cleanup standard based on background, the possibility that the maximum compliance monitoring value exceeds twice the cleanup level by chance alone (false positive) should be considered explicitly. This may result in an adjustment for the maximum allowable exceedance factor for background-based cleanup standards only.

The maximum allowable exceedance factor can be calculated to achieve a desired false positive error rate, for example 0.05, assuming that the background distribution is known. Under the standard default procedures, the background distribution is lognormal; the calculations illustrated here are for that distribution. The adjustment in the maximum factor of exceedance of a cleanup standard depends on the number of compliance monitoring samples, the shape of the lognormal distribution (determined by its coefficient of variation [CV], the standard deviation divided by the mean value for the distribution), and the percentile of background at which the cleanup standard is established.

For a given compliance monitoring sample size, n, a percentile of the distribution at which the probability of 1 or more exceedances is equal to 0.05 is calculated first. That probability is equal to 1 minus the probability of no exceedances. Let the percentile be denoted as (100 x q), so that q represents the probability of a single random sample being less than (or equal to) the percentile (see Attachment 1). Then

$$1 - q^n = 0.05$$

$$0.95 = q^n$$

and

$$(\log_e 0.95)/n = \log_e q$$

$$q = e^{(\log_e 0.95/n)}$$

The percentile of the distribution is then equal to 100q. For example, the value of 100q when there are 10 compliance monitoring samples is

$$100q = 100 \times e^{(\log_e 0.95/10)}$$

$$= 100 \times e^{(-0.0051)}$$

$$= 99.49$$

so there is a 5 percent chance of 1 or more out of 10 random samples from background exceeding the 99.49th percentile of the background distribution. The percentiles for 15, 20, and 30 compliance monitoring samples are the 99.66th, 99.74th, and 99.83rd, respectively.

Using information on the background distribution (i.e., the best-fit lognormal distribution under standard default procedures), the value at the percentile corresponding to this 0.05 false positive error rate can be estimated. This can be done using a computer statistical package such as STATGRAPHICS®, or by calculating percentiles using $\log_e$-transformed values and back-transforming to original units (e.g., see Example 10). The resulting value defines a criterion for limiting the maximum exceedance of the cleanup standard at a 0.05 false positive error rate.

A table of exceedance factors can be developed by calculating percentile values as described above and comparing them to cleanup standard values. Assuming a lognormal background distribution, default cleanup

standard values will be at the 90th percentile up to a CV of about 1.5, and at 4 times the 50th percentile for CV values at or above 1.5. The results are as follows:

Maximum exceedance factor of cleanup standard (selected false positive rate = 0.05)

	number of samples:		
CV	10	20	30
0.1	1.14	1.16	1.18
0.2	1.29	1.35	1.39
0.3	1.46	1.56	1.62
0.4	1.65	1.79	1.89
0.5	1.84	2.04	2.18
0.6	2.05	2.31	2.49
0.7	2.26	2.60	2.83
0.8	2.49	2.90	3.19
0.9	2.71	3.21	3.56
1.0	2.94	3.52	3.94
1.5	4.10	5.19	6.01
2.0	6.56	8.66	10.27

These results illustrate that the maximum exceedance factor at a 0.05-level false positive error rate increases as either the number of compliance monitoring samples or the background distribution CV increases. At CV values above 1.5, the cleanup standard based on 4 times the 50th percentile value will also be lower than the 90th percentile; that difference in cleanup levels also increases the maximum exceedance factor.

Similar procedures can be used to determine a maximum exceedance factor for compliance monitoring samples in cases of other sample sizes, other CV values for a lognormal background distribution, cleanup standards at other than the default percentiles, or other types of known background distributions. For example, with 15 compliance monitoring samples, a lognormal background distribution with a CV = 0.7, and a cleanup standard at the 90th percentile, an exceedance factor of 2.46 results. For 10 compliance monitoring samples, a lognormal background distribution with a CV of about 3.65, and a cleanup standard at 4 times the 50th percentile (approximate 80.22nd percentile), an exceedance factor of about 16.5 results.

NOTE: This table is for illustrative purposes only; contact Ecology for site-specific allowable exceedance factor.

standard and site evaluations, subject to certain constraints discussed below. Section 2.1.2 discusses the estimation of percentile values.

The performance of the 90th percentile, especially with respect to Type II error rates (finding a site to be contaminated when it is really at background; Section 2.1.7), declines as the coefficient of variation (CV) of a background lognormal distribution increases. It is not known what CV values will characterize actual background data sets; many of them are expected to be only modestly skewed. It is noted that alternative procedures may become increasingly appropriate as the CV increases above about 0.5.

To address the possible significant increases in exposures and human health risks at 90th percentile background values, especially for strongly positively skewed background distributions, an additional evaluation measure is applied. Typical background values may be defined as at or near the 50th percentile value. The ratio of the 90th to the 50th percentile values for background is a measure of how far the potential cleanup standard value at the 90th percentile is above typical background levels. This ratio will be larger when the positive skew in the distribution is larger. As a matter of policy, Ecology constrains possible background cleanup standards to no greater than 4 times the 50th percentile concentrations. (This assumes that a risk-based cleanup standard based on Method A, B, or C is below the 50th percentile of background; if it is in fact above the 50th percentile, the limiting value for a background-based standard would be 4 times the Method A, B, or C cleanup level). Therefore, after a 90th percentile background concentration is determined, it is compared to a 50th percentile value and this ratio test is applied. In cases where 4 times the 50th percentile value is less than the 90th percentile value, this results in a lower background cleanup standard and a somewhat higher clean-site failure rate, balanced by lower potential exposures and human health risks.

The choice of the 90th percentile concentration of background for evaluation of cleanup standards and compliance actually depends on <u>both</u> the background and compliance monitoring data sets. If the background data are tested and rejected as lognormal (e.g., using the W test; see Section 2.1.4.1), the 90th percentile should <u>not</u> be used. A different percentile will be appropriate depending on the distribution of the background data. For example, Ecology simulations of background data sets drawn from a normal distribution indicate that the 80th percentile would be suitable in that case. The same percentile value does not result in the same performance (error rates and power to detect residual contamination) for different data distributions. If the background data are not lognormally distributed, Ecology should be consulted for alternative procedures. Example 9 illustrates a case where the background data appear to be normally rather than lognormally distributed. Example 10 addresses lognormal background data.

The choice of the 90th percentile when the background data <u>are</u> lognormally distributed is also contingent on the use of the method of Land (1971, 1975) for estimating an upper confidence limit on the mean of the compliance monitoring data distribution. That method is described in Section 5.2.1.2 and is only appropriate when the data are lognormally distributed. Therefore, if the compliance monitoring data are tested and rejected as lognormal, the 90th percentile may no longer be appropriate to use for background evaluations. Ecology should be consulted if background data are lognormally distributed but compliance monitoring data are not

lognormal before proceeding with site compliance evaluations. The percentile defining background under MTCA could change in such cases from the default 90th percentile value.

In some cases, it may be appropriate to consider collecting additional background data to determine if the background distribution is really as skewed as suggested by an initial, small background data set. Any such additional background sampling should be carefully reviewed with Ecology before assuming that the data will be used in background evaluations. Higher background values should always be carefully reviewed to establish whether they could be influenced by a localized contaminant source (i.e., whether they are really representative of background).

Worksheet W-3 provides detailed instructions for calculating a background value for lognormally distributed data. Examples 9 and 10 provide comparisons of parametric and nonparametric methods for estimating percentiles of a distribution. When a specific distribution (e.g., lognormal or normal) is assumed for background, appropriate parametric methods should be used.

4.3.4 Establishing a Cleanup Standard from Background Data

After calculating an appropriate background value from a background data set, using the methods described in Section 4.3.3.2 above, the comparison of that value with a Method A, B, or C cleanup standard is straightforward. *It simply involves the comparison of two numbers.*

In the case of natural background comparisons, the higher of the two values will become the cleanup standard.

In the case of area background comparisons, a Method A or Method B cleanup standard that is greater than area background will still be used as the cleanup standard. If, on the other hand, area background is greater than the standard, then a Method C cleanup standard can be derived and used. The resulting standard may or may not be as large as the area background value.

For any comparison based on a given background data set, the results of the comparison may be accepted or additional background data may be collected, the background value recalculated based on a larger (pooled) data set, and the comparison re-evaluated. Collection of additional background data (sampling design, access agreements, sample collection, laboratory analysis, QA/QC review, and data validation) would normally require additional time. This should not be allowed to unnecessarily delay making site decisions. Schedule allowances for the possibility of a second round of background data collection should be considered early in the project.

The pooling of data collected in different time frames, and possibly involving different sampling procedures or analytical laboratories, also should be considered carefully prior to a second round of sampling. Sampling locations and sampling plans to be used for background characterization should be approved by Ecology. While the enhancement of a site background data set offers an opportunity for better characterization of background, and thereby better decision making, there are also statistical issues involving the post-hoc selection of a most-

favorable data set for evaluation (continuing sampling until a favorable result is obtained and then stopping, introducing bias into the characterization process). Therefore, all background sampling should be carefully reviewed with Ecology.

4.3.5 Evaluating Compliance Monitoring Data When a Cleanup Standard is Based on Background (Example 11)

Once a numerical cleanup standard has been selected, whether based on risk-equivalent concentrations, ARARs, ecologically protective levels, natural or area backgrounds, or other criteria, the evaluation of compliance monitoring data with respect to the cleanup standard proceeds in exactly the same way. The fact that a numerical cleanup standard has been derived based on background data does not affect the types of evaluations of compliance monitoring data. However, some adjustments are required in the criteria based on the allowable frequency and magnitude of exceedance of a cleanup standard (see Section 5) when that standard is based on background. Those adjustments are discussed in this section, and are applicable only in the case of background-based standards.

The computer analysis performed by Ecology indicates that, for both the frequency and magnitude-of-exceedance criteria, evaluation of Type II error rates indicates that the criteria defined in the MTCA regulation should be adjusted when the cleanup standard is based on background. The probability of having more than 10 percent of the compliance monitoring samples above the 90th percentile of background is relatively high if the compliance monitoring data are from the background distribution (i.e., if the site is clean). Therefore, the criterion based on frequency of exceedance of the cleanup standard should be adjusted to a somewhat higher percentage. Attachment 1 to Figure 12 describes an adjustment procedure that should be used. For example, for relatively small compliance monitoring sample sizes ($n < 30$), not more than 20 percent of the samples should exceed a standard based on the 90th percentile background value. Consult Ecology for other cases (see Attachment 1).

An adjusted maximum allowable exceedance factor of the cleanup standard will depend on the number of compliance monitoring samples, the percentile used for a cleanup standard, and the CV of the lognormal distribution. Attachment 2 to Figure 12 describes how to determine a 0.05-level exceedance factor. For relatively small sample sizes and CV values, the usual criterion of no sample values more than two times the cleanup standard is still suitable. In other cases, a higher factor of exceedance is required. Attachment 2 provides details of the procedures for determining an appropriate factor for evaluating background-based standards (requires consultation with Ecology).

Evaluation of compliance monitoring data is the subject of Section 5.0. An illustration of such an evaluation based on a background cleanup standard is provided in Example 11. Appropriate adjustments to the frequency and magnitude-of-exceedance criteria are illustrated in Example 11. (See also Example 12).

4.4 GROUNDWATER CLEANUP STANDARDS BASED ON BACKGROUND DATA (Example 12)

Except for the requirement to assess compliance at each well or monitoring point [WAC 173-340-720(8)(c)(iv)], cleanup standards for groundwater are evaluated in almost exactly the same manner as those for soils or any other medium under MTCA. Therefore, the discussion for soils in section 4.3 above is equally applicable to groundwater. The only other issue for which the regulation treats soils and groundwater differently is the minimum number of background samples, which is specified for soils but left to a case-by-case determination for groundwater. Costs for collecting groundwater samples are typically much higher than for soil samples, often resulting in fewer groundwater samples being collected and smaller data sets being available for evaluation. The importance of the background data for site decisions should always be considered in addition to cost; the need for an adequate database may justify collecting more groundwater data, even at substantially increased costs.

The spatial and temporal aspects of groundwater variability are somewhat different than for soils and should be carefully considered in designing any background data collection program (see Section 5.3.5). Groundwater samples collected within reasonably small areas (i.e., close to the site) may not reflect the same groundwater population. Hydrogeologic and statistical information should be considered in evaluating the representativeness of groundwater samples for defining a background value related to site conditions. It is not necessary that samples be from hydraulically connected locations, but it is necessary that they be from representative locations.

Background groundwater concentrations, as well as onsite concentrations, may also vary substantially over time (e.g., seasonally). This may be particularly important for comparing compliance monitoring data and background-based cleanup standards. Seasonal variation—for example as influenced by different precipitation and infiltration rates throughout the year—should not be confounded with differences between site and background concentrations.

Both spatial and temporal components of variation in groundwater concentrations should be carefully evaluated as part of the design of any sampling program, but especially for background sampling where the data will be used for cleanup standards decisions. In general, multiple samplings from the same well cannot be used to increase sample size unless a demonstration can be made that repeat measurements at individual wells are not significantly correlated temporally. Any such demonstration should address temporal and spatial variability independently.

An example of the development of a groundwater cleanup standard based on background data is provided as Example 12. Additional considerations for groundwater are discussed in Section 5.3.5.

4.5 SURFACE WATER CLEANUP STANDARDS [RESERVED]

4.6 AIR QUALITY STANDARDS [RESERVED]

4.7 SEDIMENT STANDARDS [RESERVED]

5. ASSESSMENT OF COMPLIANCE MONITORING DATA FOR MEETING CLEANUP STANDARDS

5.1 DECISION-MAKING PROCESS

After the cleanup standard has been determined (see Section 4), the data from the site must be evaluated to determine whether the exposure unit meets the cleanup standard. This decision is independent of the approach used to define the numerical cleanup standard. As described in Section 4, the cleanup standard may be based on applicable state and federal laws, risk, ecological factors, or analytical considerations (e.g., BDL data, PQL), or may be related to background levels of the contaminant near the site. In all cases, a single numerical value is obtained for the cleanup standard, to which site data can be compared. The process involved in making the decision as to whether the exposure unit meets cleanup standards for soils and groundwater is shown in Figures 13 and 14, respectively. Note that the criteria for allowable frequency and maximum magnitude of exceedance of cleanup standards may be adjusted in consultation with Ecology if the cleanup standard is based on background, as described in Section 4, and covered in Figure 12.

If issues at a particular site become more complex than those covered in this document, additional assistance should be sought from a statistician or Ecology.

5.2 COMPARING SITE DATA TO SOIL CLEANUP STANDARDS

Two methods for demonstrating that the site meets the cleanup standards are recognized: a method using a confidence interval, and a parametric method for percentiles. The MTCA regulations state:

> For cleanup levels based on short-term or acute toxic effects on human health or the environment, an upper percentile soil concentration shall be used to evaluate compliance with cleanup levels [WAC 173-340-740(5)(c)(iv)(A)].

and

> For cleanup levels based on chronic or carcinogenic threats, the mean soil concentration shall be used to evaluate compliance with cleanup levels... [WAC 173-340-740(5)(c)(iv)(B)]

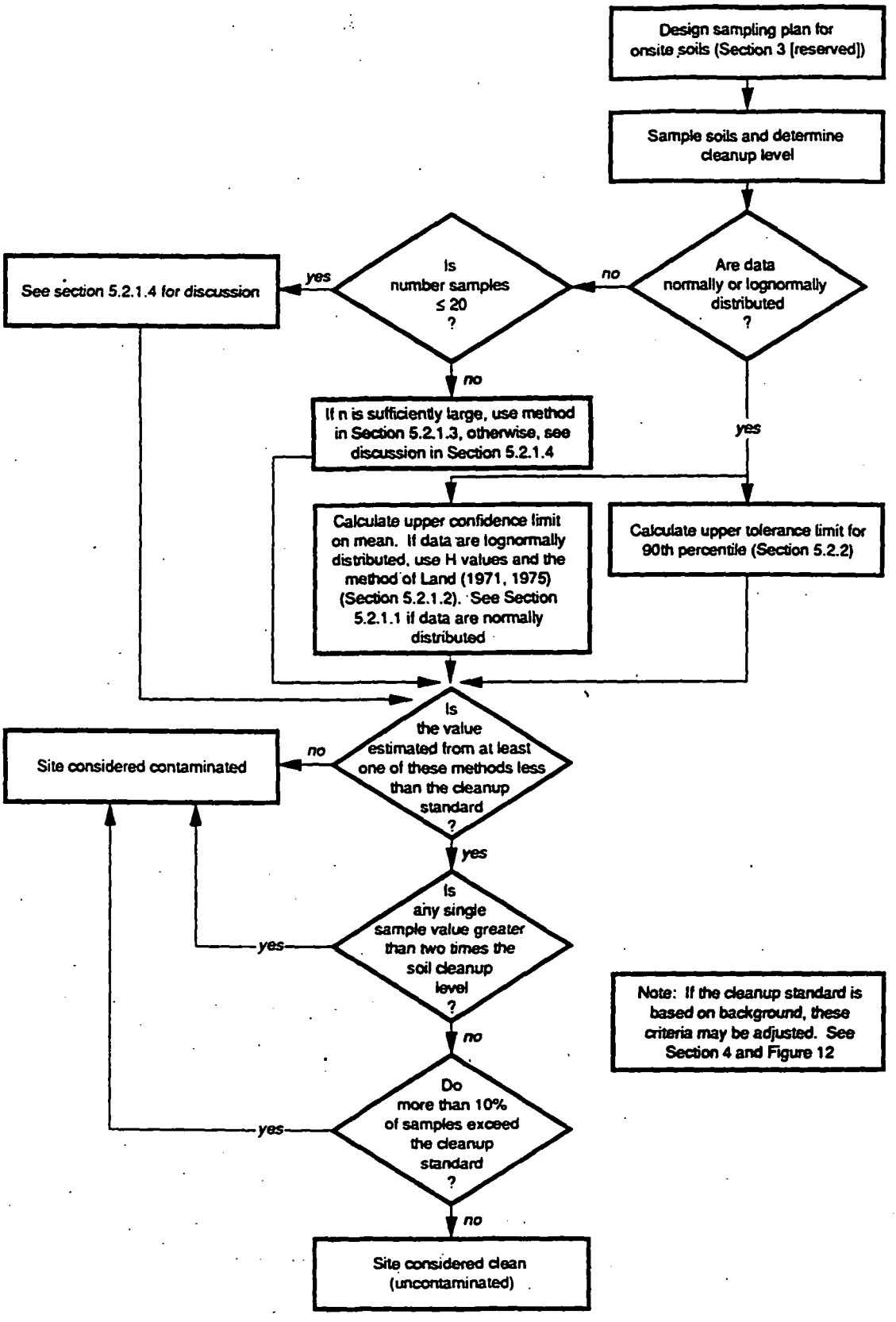

Figure 13. Flowchart for determining if soils at a site meet a cleanup standard.

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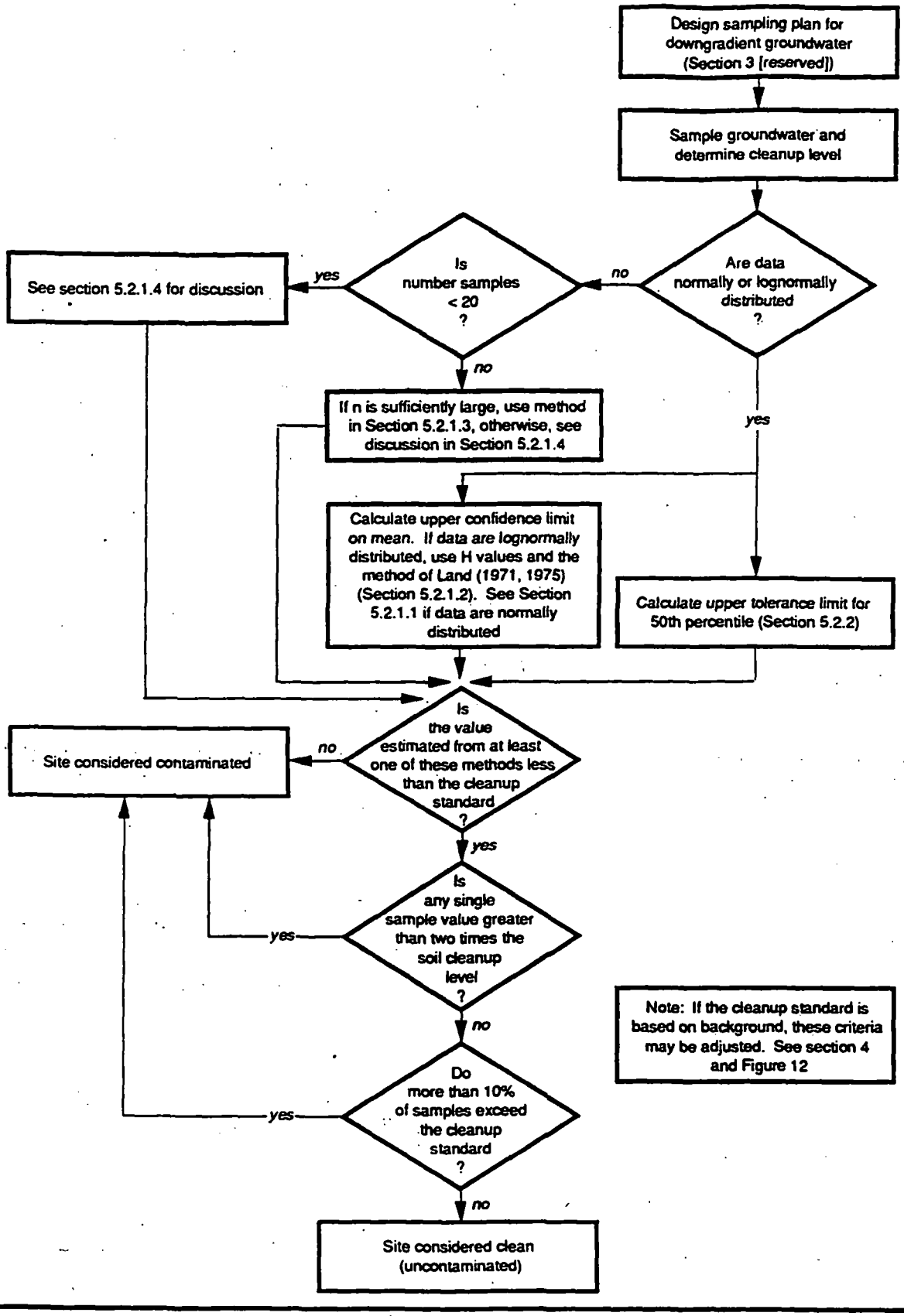

Figure 14. Flowchart for determining if groundwater at a site meets a cleanup standard.

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Thus, the confidence interval approach (Section 5.2.1) should be used for cleanup levels based on chronic or carcinogenic effects, and the tolerance interval approach (Section 5.2.2) should be used for cleanup levels based on short-term or acute toxic effects. Also acceptable are "other statistical methods approved by the department" [WAC 173-340-740(7)(d)].

The confidence interval and tolerance interval methods should not be performed on data that cannot be approximated by a normal or lognormal distribution. A distribution-free (nonparametric) method should be used for this type of data. Nonparametric confidence interval estimates are described in Section 5.2.1.3 and 5.2.1.4 below.

5.2.1 Evaluation of Compliance Monitoring Data Based on Upper Confidence Limit on the Mean

The MTCA soil compliance monitoring regulations state that an appropriate statistical method for evaluating compliance (for cleanup levels based on chronic or carcinogenic effects) is "a procedure in which a confidence interval for each hazardous substance is established from site sampling data and the soil cleanup level is compared to the upper confidence level [WAC 173-340-740(7)(d)(i)], and "statistical tests should be performed at a Type I error level of 0.05" [WAC 173-340-740(7)(e)(i)]. Thus, for soils, compliance monitoring requires estimating the 95-percent confidence interval about the mean, and comparing this value to the cleanup level.

The method for determining whether an exposure unit meets the cleanup level is to compare the upper confidence limit (UCL) of the site data with the cleanup level. This method should be used for most cleanups; the tolerance interval method (Section 5.2.2) should be used when the cleanup level is based on short-term or acute toxic effects on human health or the environment. The procedure for calculating the UCL is discussed below.

5.2.1.1 Normally Distributed Data—The sample mean determined from a set of samples from a normal distribution provides a point estimate of the population mean. Different compliance monitoring data sets from the same site would usually result in somewhat different sample mean values. This indicates that the sample mean itself has a probability distribution. Confidence intervals for the mean are based on the distribution of the sample mean. The sample mean follows a Student's t distribution.

One-sided confidence interval values for the Student's t parameter are provided in Table A-4. The procedure for calculating a one-sided upper confidence limit for the mean for data from a normal distribution is as follows:

1. Calculate the mean ($\bar{x}$) and standard deviation (s) of the compliance monitoring data.

2. In Table A-4, look up the appropriate t value. For a one-sided 95-percent confidence interval ($\alpha = 0.05$), the column headed .05 is used. The t value is determined by finding the row corresponding to the degrees of freedom (df), which is one less than the number of samples, n.

$df = n - 1$

3. The upper confidence limit (UCL) for the mean is

$$UCL = \bar{x} + t_{1-\alpha,n-1}\frac{s}{\sqrt{n}}$$

where

$\bar{x}$ = sample mean

s = sample standard deviation

n = number of compliance monitoring samples

t = value of the t parameter from Table A-4, based on a one-sided α of 0.05 and n-1 degrees of freedom.

5.2.1.2 Lognormally Distributed Data—A method for calculating the upper one-sided confidence limit for the mean of a lognormal distribution is provided by Land (1971, 1975). This method is also described in Gilbert (1987). The procedure uses statistics calculated from the $\log_e$-transformed sample data from a lognormal distribution, as well as a parameter, H, determined from tabled values.

For a 95-percent one-sided confidence interval ($\alpha = 0.05$), the upper confidence limit is calculated by

$$UCL = \exp(\bar{y} + 0.5s_y^2 + \frac{s_y H_{1-\alpha}}{\sqrt{n-1}})$$

where

exp = e raised to the indicated power

$\bar{y}$ = mean of the $\log_e$-transformed data

s_y = standard deviation of the $\log_e$-transformed data

n = number of compliance monitoring samples

α = significance level (0.05)

H = tabled H value from Figure A-1 (in the Appendix).

The value of the parameter H depends on the number of compliance monitoring samples, n, and on the variability of the sample data, measured by the standard deviation of the $\log_e$-transformed data, s_y. Land (1971, 1975) provides tabled H values.

Figure A-1 in Appendix A and Supplement S-2 give nomographs of selected H values for calculating one-sided 95-percent upper confidence limits for the lognormal mean. The approximate values that can be read off that nomographs will often support a determination of whether the UCL on the lognormal mean is greater than or less than the cleanup standard. For more accurate H values, tabled values (Land 1971, 1975) should be consulted. Land (1975) indicates that cubic interpolation (four-point Lagrangian interpolation) should be used to interpolate additional H values from the tables; however, this is complex, and in practice, the simpler linear interpolation will often suffice.

Detailed instructions for calculating the one-sided 95-percent upper confidence limits for the lognormal mean using Land's method are provided in Worksheet W-2.

5.2.1.3 Other Distributions with Large Sample Size—[*Requires consultation with Ecology.*] If compliance monitoring data indicate that both the normal and lognormal distributions should be rejected (e.g., by the W test), it may be possible to find another known distribution that is not rejected by an appropriate goodness-of-fit test. There may be procedures in the statistical literature for estimating upper confidence limits for the mean of those other known distributions, or for defined transformations of the distributions. If such methods exist, they may allow calculation of a UCL for the mean of the compliance monitoring data. Generally, however, compliance monitoring data that are neither normal nor lognormal will not have explicit methods for calculating a UCL for the mean. In most cases, the distribution of the data may be unknown.

A method providing approximate one-sided upper confidence limits for the mean for "sufficiently large sample sizes," n, from any distribution is based on the normal distribution and is described in Gilbert (1987; see p.139). As Gilbert (1987, p. 140) states, "There appears to be no simple rule for determining how large n should be for [this equation] to be used. It depends on the amount of bias in the confidence limits that can be tolerated and also on the shape of the distribution from which the data have been drawn. If the distribution is highly skewed, an n of 50 or more may be required."

The approximate one-sided upper 95 percent confidence limit for the mean is calculated by

$$UCL = \bar{x} + Z_{1-\alpha}\frac{s}{\sqrt{n}}$$

where

$\bar{x}$ = sample mean

s = sample standard deviation

n = number of compliance monitoring samples

$Z_{1-\alpha}$ = value of the Z parameter from the normal distribution for a defined α level. For a one-sided upper 95 percent confidence limit, a value for Z_{95} determined from Table A-6 is 1.645.

5.2.1.4 Other Distributions with Small Sample Size —[*Requires consultation with Ecology.*] In some cases, it may be apparent even from a small data set that neither the lognormal nor normal distribution is appropriate. For example, the data may be strongly bimodal due to the inclusion of values from a hot spot. For most sites, the number of compliance monitoring samples per exposure unit or exposure unit for which a cleanup decision is required will be relatively small compared to the sample size that might support use of the approximate method described in Section 5.2.1.3 above for calculating a UCL for the mean. Reliable statistical methods do not exist for estimating a UCL for the mean from unknown distributions where only a small number of samples are available.

In some cases, a different statistical test (e.g., upper tolerance limit test for a percentile of the distribution) may also be appropriate for use under the MTCA regulations, and that test could be used in place of one based on the UCL for the mean. Procedural options if a UCL for the mean is needed include the following:

1. Use the approximate procedure described in Section 5.2.1.3 even though the sample size is small. The likelihood that a substantial bias is introduced in the UCL estimate because of sampling error will increase as the number of samples decreases.

2. Develop a larger compliance monitoring data set for evaluation. The larger data set would have to be collected and evaluated based on a sampling plan reviewed and approved by Ecology. The larger compliance monitoring data set could support an assumption of a normal or lognormal distribution where the smaller initial data set did not; failing that, it would still result in a better approximation using the methods of Section 5.2.1.3. The cost of additional compliance monitoring data collection should be considered in comparison to the potential consequences of a poor site cleanup decision based on a small sample size.

3. Evaluate an upper tolerance limit for a percentile selected on a site-specific basis by Ecology instead of an upper confidence limit for the mean. The percentile would be

selected to reflect the approximate estimated location of the mean based on the sample results.

Small sample sizes with single, uncomposited samples will unavoidably result in difficulties for statistical evaluations of the likely true mean of a constituent at a site. For alternatives using an approach with a relatively small number of composited samples, see Neptune et al. (1990) and Ryti and Neptune (1991).

5.2.2 Evaluation of Compliance Monitoring Data Based on Upper Tolerance Limit for the 90th Percentile

For cleanup levels based on short-term or acute threats, an appropriate statistical method is "a parametric test for percentiles based on tolerance intervals to test the proportion of soil samples having concentrations less than the soil cleanup level" [WAC 173-340-740-(7)(d)(ii)]. In addition, "the true proportion of samples that do not exceed the soil cleanup level shall not be less than ninety percent. Statistical tests shall be performed with a type I error level of 0.05" [WAC 173-340-740-(7)(f)(ii)]. Thus, for soils, MTCA requires a 95-percent confidence interval (Type I error level of 0.05) around the 90th percentile [WAC 173-340-740-(7)(f)(iii)].

5.2.2.1 Normally Distributed Data—Tolerance limits are defined in Section 2.1.10. An upper tolerance limit for a percentile is much like a one-sided confidence interval for that percentile, and tolerance limits are used within MTCA as a method of taking possible sampling error into account (the point estimates derived from the data may not accurately reflect the underlying population value for the percentile).

An upper tolerance limit is calculated using sample statistics for the mean ($\bar{x}$) and standard deviation (s) and tabled values for a parameter, k. That parameter depends on the percentile of interest; the number of samples, n; and the "coverage" of the tolerance interval (equivalently, the α level for the one-sided confidence interval). Values for k for calculating 95 percent upper tolerance limits ($\alpha = 0.05$) for selected percentiles of a normal distribution are given in Table A-3. In that table, percentiles are identified by the value of P_o = (1 - percentile/100). Thus, the 90th percentile is represented by a P_o value of 0.10.

An upper 95 percent tolerance limit (T_U) for the 90th percentile of the compliance monitoring distribution is determined by

$$T_U = \bar{x} + ks$$

where

$\bar{x}$ = sample mean

s = sample standard deviation

k = value determined from table A-3 for the tolerance limit parameter, k, with $\alpha = 0.05$, n equal to the number of compliance monitoring samples, and P_o equal to 0.10 for the 90th percentile

This method can be used only when the data are normally distributed.

5.2.2.2 Lognormally Distributed Data—Both percentiles and upper tolerance limits for percentiles from a lognormal distribution can be estimated by first transforming the data (using $\log_e$), calculating values on the normally distributed transformed data, and then back-transforming to original units (raising e to the power of the result calculated from the transformed data).

An upper tolerance limit for the 90th percentile of a lognormally distributed compliance monitoring distribution is calculated as follows:

1. Transform the raw compliance monitoring data using a $\log_e$ transformation.

2. Using the method described in Section 5.2.2.1 above for normally distributed data, calculate an upper tolerance limit for the transformed data. Let the result be designated as T_y.

3. The upper tolerance limit for the 90th percentile of the lognormal distribution is then

$$T_U = \exp(T_y)$$

where

exp = e raised to the indicated power

T_y = upper tolerance limit calculated for the $\log_e$-transformed data.

5.2.2.3 **Nonparametric Methods for Upper Confidence Limit with 20 or Fewer Samples**—[*Requires consultation with Ecology.*] Regardless of the form of the distribution, nonparametric methods can be used to estimate an upper confidence limit for percentiles of the distribution. For sample sizes of 20 or fewer, a method described in Conover (1980) can be used. That method is discussed in this section. For sample sizes greater than 20, a method described in Gilbert (1987) can be used. It is described in the next section.

For sample sizes less than 20:

1. Use Table A-5 to find tabled values for b at approximately $\alpha/2$ and $1-\alpha/2$. The method for using Table A-5 is to read across the table for the percentile of interest (in this case, p = 0.90), and down the left-hand column for the value of n. Then move down the entries corresponding to different y values (which refer to the number of

occurrences of a binomial variable in N trials) until the entry in the table (b) is approximately equal to $\alpha/2$. find the corresponding value of y in the far left column. Add 1 to this value to get r.

2. Continue down the column until you reach an entry approximately equal to $1-\alpha/2$. Find the corresponding value of y in the far left column. Add 1 to this *y* value to get s.

3. Order the data from smallest to largest, and assign a rank (y value) to each value. If two or more data points have the same value, order them consecutively, and assign each its own rank. Determine the data value corresponding to s and r. These values represent the upper and lower confidence limits about the percentile of interest.

4. Compare the upper confidence interval with the cleanup standard. If the upper confidence limit is greater than the cleanup standard, the site is considered to be contaminated.

Example 15 provides a numerical demonstration.

5.2.2.4 Nonparametric Methods for Upper Confidence Limit with More Than 20 Samples—[*Requires consulation with Ecology*] For sample sizes greater than 20, a nonparametric method described by Gilbert (1987, p. 142) can be used to estimate one-sided upper confidence limits:

1. Find the value for $Z_{1-\alpha}$ in Table A-6, where $Z_{1-\alpha}$ = percentile of normal distribution.

2. Calculate

$$u = p(n+1) + Z_{1-\alpha}[np(1 - p)]^{1/2}$$

where

u = rank of upper confidence limit

p = percentile

n = number of samples.

3. Order the data from smallest to largest, and assign a rank to each value.

4. If u is an integer, then the data value corresponding to that rank is the upper confidence limit. If u is not an integer, the limit must be obtained by linear interpolation

between the two closest values. See Example 5 for a demonstration of linear interpolation.

5. Compare the upper confidence interval with the cleanup standard. If u is greater than the cleanup standard, the site is still considered to be contaminated.

5.2.3 Additional Requirements for Determining if a Site is Clean

In addition to comparing site data to the cleanup standard, there are two other requirements that must be met before a site can be determined to be "clean" [WAC 173-340-740(7)(e) and (f)]:

1. No single sample concentration shall be greater than two times the soil cleanup level.

2. Less than 10 percent of the sample concentrations shall exceed the soil cleanup level.

For background-based cleanup standards, the adjustments to these criteria (discussed in Section 4.3) should be considered.

5.3 COMPARING SITE DATA TO GROUNDWATER CLEANUP STANDARDS (EXAMPLE 17)

Statistical requirements for groundwater [WAC 173-340-720(8)] are similar to those for soil, except that the parametric method for percentiles requires a 95 percent confidence interval on the 50th percentile (i.e., the median). Note also that compliance with a cleanup standard must be determined for each well or monitoring point [WAC 173-340-720(8)(c)(iv)], while compliance decisions for soil are normally based on combined data from different sampling points.

5.3.1 Normally Distributed Data

For a normal distribution, the median is equal to the mean. Therefore, the methods described in Section 5.2.1.1 for estimating a one-sided upper confidence limit of the mean can be used to evaluate compliance monitoring data based on the median.

5.3.2 Lognormally Distributed Data [*Requires consultation with Ecology.*]

A method for estimating the approximate two-sided confidence interval for the true median of a lognormal distribution is given by Gilbert (1987; see p. 173).

An upper confidence limit for the 100(1-α) percent two-sided confidence interval for the median of a lognormal distribution is calculated using the $\log_e$-transformed compliance monitoring data. First calculate the arithmetic average and standard deviation of these transformed data, y and s_y, respectively. The one-sided upper 95-percent confidence limit is then estimated, using $\alpha = 0.10$ for the two-sided equation given in Gilbert (1987), by:

$$UCL = \exp(\bar{y})\exp(t_{1-\alpha,n-1}\frac{s_y}{\sqrt{n}})$$

where

exp = e raised to the indicated power

y = mean of the $\log_e$-transformed data

s_y = standard deviation of the $\log_e$-transformed data

t = tabled value of the t distribution from Table A-4 (note that since this is a one-sided table, the column heading at α 0.05 level is used)

n = number of samples.

As discussed in Gilbert, this estimate is biased high, but the amount of bias decreases with increasing sample size and is generally small unless the skew of the lognormal distribution (i.e., its coefficient of variation) is very large.

5.3.3 Nonparametric Method for Upper Confidence Limit [*Requires consultation with Ecology.*]

A nonparametric method for providing confidence limits for the median of any continuous distribution is provided by Van der Parren (1970; see Appendix A). This method can be used regardless of the distribution of the compliance monitoring data. It provides confidence intervals that are equal to selected ranked data values; the confidence interval coverage is approximate rather than exact.

To determine an upper confidence limit for the two-sided confidence interval for the population median, the following procedure is used:

1. Sort the data from lowest to highest values and assign ranks, increasing with concentration.

2. From Table A-7 (extracted from the original Van der Parren reference for α equal to 0.05) find the value of j, the rank corresponding to the estimated upper confidence limit, for the sample size n.

3. Determine the concentration for the jth-ranked compliance monitoring data value.

4. That concentration is an estimated upper confidence limit for an approximate α level of 0.05. The actual α level can be determined from tabled values given in the Van der Parren reference (attached in Appendix A).

Other tests are discussed Gilbert (1987, Chapters 11, 16, and 17) and may be appropriate for confirmatory analysis.

5.3.4 Additional Requirements for Determining if a Site is Clean

There are two other requirements that must be met before groundwater at a site can be determined to be "clean" [WAC 173-340-740(7)(e) and (f)]:

1. No single sample concentration shall be greater than two times the groundwater cleanup level.
2. Less than 10 percent of the sample concentrations shall exceed the groundwater cleanup level during the representative sampling period.

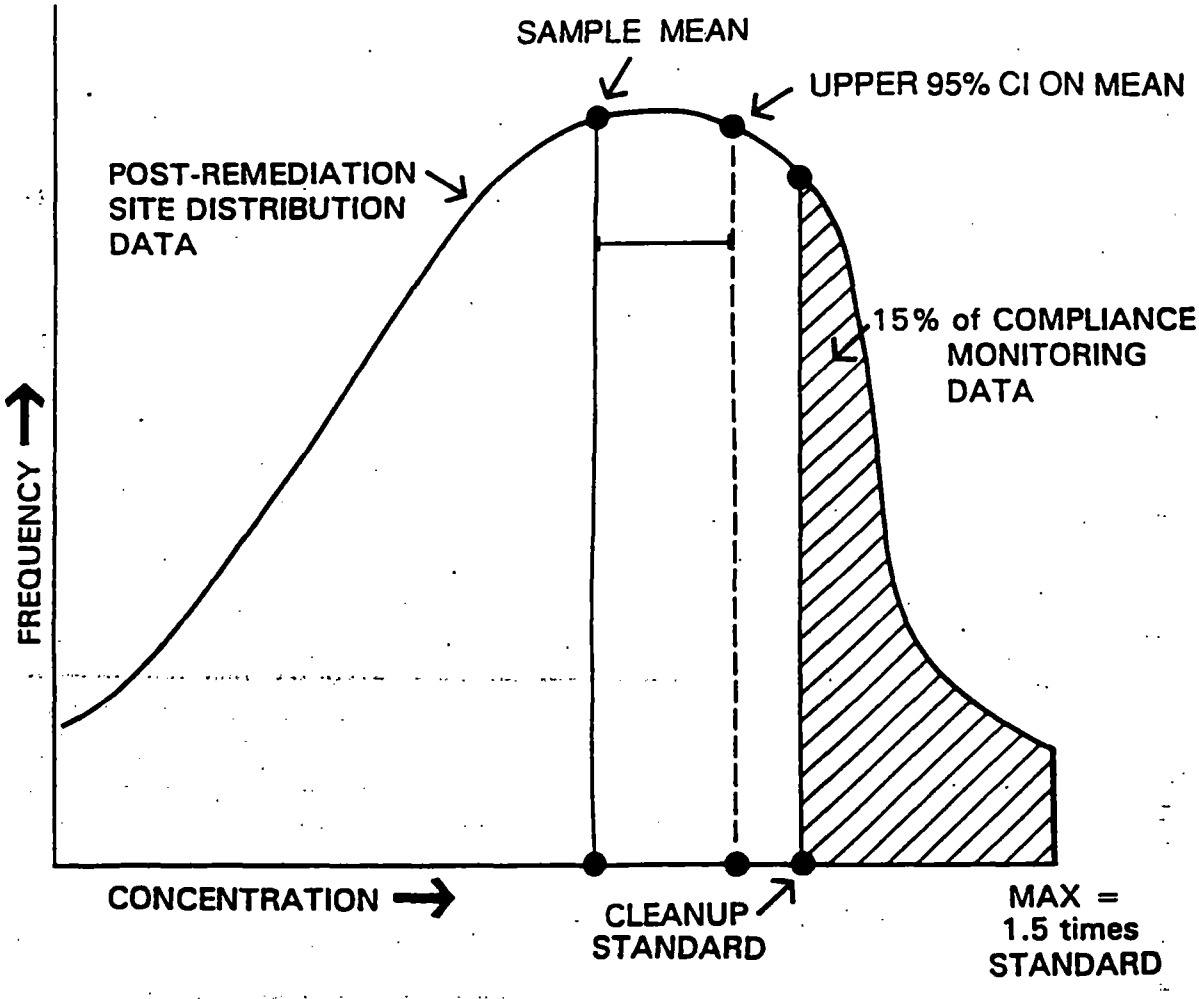
For background-based cleanup standards, the adjustments to these criteria (discussed in Section 4.3) should be considered.

Figure 15 shows the relation between these requirements using a hypothetical probability distribution from a site. This figure shows that the site data meet two of the three requirements for the site to be considered clean: the 95-percent CI on the median is below the cleanup standard, and no single sample concentration is greater than two times the cleanup level. However, 15 percent of the sample concentrations exceed the cleanup standard. Therefore, the site does not meet all three criteria and must be considered contaminated.

5.3.5 Additional Considerations for Groundwater

The following topics are not described in MTCA, but are discussed here because they may be significant issues at some sites. If it appears that these issues are relevant to a site, and the discussion here is not sufficient, additional assistance should be obtained from references listed, a statistician, or Ecology.

5.3.5.1 **Trends**—Groundwater is typically monitored for two purposes: 1) to determine contaminant concentrations of potentially impacted groundwaters relative to non-impacted (background) groundwater, and 2) to determine trends in concentrations with time or location, or both. Statistical methods must be applied to determine if temporal or spatial variability in contaminant concentrations is significant. If significant variations are detected, statistical methods can be applied to determine if the variations indicate verifiable trends.



In this example, the site meets only two of three criteria.

1) Is the upper CI on the mean less that the cleanup standard? Yes.
2) Is the maximum compliance monitoring value less than 2x standard? Yes.
3) Are 10 percent of the data above standard? No. 15 percent of the data are above standard. The site is not clean enough.

Figure 15. Conceptual basis for answering the question "Is the groundwater at the site clean enough?"

Contaminant concentrations measured at one location may vary naturally with time. This variation may be entirely random, it may follow a predictable trend or cycle, or it may have a random distribution superimposed upon a predictable trend or cycle. Variability in contaminant concentrations may be due to cyclic or non-cyclic changes in water-table elevations (tides, river stage changes, precipitation, and seasonal changes in infiltration rates and temperatures). Changes in concentrations may indicate effects of an onsite release, or they may reflect natural or anthropogenic regional changes.

To evaluate temporal trends (steady increases or decreases in contaminant concentrations), upgradient monitoring should be performed over a period of at least one year, because regression methods can yield misleading data when only a portion of an annual cycle is considered. Therefore, it is important for data to be collected over a period sufficient to establish cyclical trends. Occurrence of trends can be determined by plotting analyte concentrations vs. time and visually inspecting the plot to determine whether seasonal fluctuations are apparent. In addition, a linear regression can be fitted to contaminant concentrations vs. time, and a *t*-test performed to determine if the slope of the regression line is significantly different than zero (Gilbert 1987). Although it was previously stated that the *t*-test is not usually applicable at MTCA sites because it is inconsistent with the null hypothesis that the "site exceeds cleanup levels," it is applicable in this instance because the null hypothesis is that the slope of the line is <u>not different</u> from zero. This null hypothesis can be tested using conventional statistical methods. The *t*-test is described in many introductory statistical textbooks.

If seasonal trends are present in the data, it is critical that background contaminant concentrations measured during a particular period are compared to downgradient data from the same period. For example, suppose concentrations of a particular contaminant tend to decrease in the summer and increase in the winter. If the background concentrations are measured in the summer, and then compared to onsite concentrations measured in the winter, it may appear that the site is contaminated when the data really reflect only seasonal variation. Clearly this is not desirable, because remediation could be required on a site that is, in fact, "clean."

5.3.5.2 **Serial Correlation**—Most standard statistical tests assume that the data are independent. This means that there is no correlation between the data: that the chance of measuring a high or low concentration in a well is the same for each well at all times. However, if a well is sampled one day and then sampled again the next day, it is likely the concentration will be similar for each day. This is known as serial correlation—the linear dependence between observations in time. Even wells sampled on a quarterly basis can exhibit serial correlation (Montgomery et al. 1987). Such data violate the assumption of independence, without which the use of many statistical techniques may be precluded. A thorough discussion of serial correlation is beyond the scope of this document. However, Montgomery et al. (1987) suggest using statistical techniques that are insensitive to serial correlation or averaging the data over time periods sufficiently large that the serial correlation is insignificant. They also describe methods for determining whether data are serially correlated, which would indicate the length of a "sufficiently large" time period. If serial correlation appears to be a problem at a particular site, further statistical assistance should be sought.

5.3.5.3 **Period of Time for Determining Background Concentrations**—The period of time must be defined during which upgradient (background) data will be used for comparison with data collected onsite. The period considered may be prior to operation of the site or the start of onsite monitoring. It may also be a moving window (e.g., as one year prior to each monitoring event). In some cases, use of all available background data is the preferred method, because the environment is protected from short-run fluctuations that may dominate a moving window, while the potentially liable person (PLP) is likely to have increased confidence in the interpretation afforded by an increased size in the background data set (Gibbons 1990). However, use of all data may decrease the power to detect increases in groundwater contamination. The decision to use all or part of the data should be based on a consideration of the consequences of each detection.

5.4 COMPARING SITE DATA TO SURFACE WATER STANDARDS

MTCA states that when "surface water cleanup levels are based on requirements specified in applicable state and federal laws, the procedures for evaluating compliance that are specified in those requirements shall be utilized to evaluate compliance with surface water cleanup levels unless these procedures conflict with the intent of this section" [WAC 173-340-730(7)(d)]. "Where procedures for evaluating compliance are not specified in an applicable state and federal law, the statistical methods used to evaluate compliance with surface water cleanup levels shall be appropriate for the distribution of the hazardous substance sampling data" [WAC 173-340-730(7)(e)]. The confidence interval and tolerance interval procedures described above are appropriate tests. The tolerance interval procedure, however, requires a decision about the percentile to be used and can be used only with normally distributed data. If the data are not normally distributed, transformation (e.g., by converting to logarithms) may correct this. Alternatively, the groundwater guidance document cited above includes a nonparametric test for proportions (U.S. EPA 1988, p. 5-21) that does not require normally distributed data. Other tests described in that guidance document, such as regression analysis, may be useful in situations where surface water contaminant concentrations are changing over time.

5.5 COMPARING SITE DATA TO AIR QUALITY STANDARDS

Requirements are given in WAC 173-340-750(7). Consult staff in the Department of Ecology Air Program for technical assistance.

6. GEOSTATISTICS [RESERVED]

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[1] Many of these references were cited in the text. Others are provided as sources for additional information.

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8. EXAMPLES

EXAMPLE 1

CALCULATION OF ARITHMETIC MEAN

We want to calculate the arithmetic mean, $\bar{x}$, of the following data set:

44	80	101	122
55	85	105	129
68	91	110	133
72	94	115	139
76	97	119	167

1. Calculate the sum of all the values:

   $$44 + 55 + \ldots + 139 + 167 = 2{,}002$$

2. The arithmetic mean is the sum divided by the number of samples, n. In this case, n = 20, and

   $$\bar{x} = 2{,}002/20 = 100.1.$$

EXAMPLE 2

CALCULATION OF GEOMETRIC MEAN

We want to calculate the geometric mean of the data set in Example 1.

1. Transform the data by taking the natural logarithm (base e) of each value. The log transformed data are listed below:

3.78	4.38	4.62	4.80
4.01	4.44	4.65	4.86
4.22	4.51	4.70	4.89
4.28	4.54	4.74	4.93
4.33	4.57	4.78	5.12

2. Calculate the sum of the log-transformed data values

   $3.78 + 4.01 + \ldots + 4.93 + 5.12 = 91.15.$

3. Calculate the arithmetic mean of the log-transformed values (the sum divided by the number of samples, n). In this case, $n = 20$, so the arithmetic mean of the transformed values is

   $91.15/20 = 4.558.$

4. The geometric mean is the exponent of the mean calculated in Step 3.

   $\exp(4.558) = e^{4.558} = 95.4.$

In this case, the geometric mean is relatively close to the arithmetic mean calculated in Example 1. This is because the data were derived from a normally distributed population. If the data were significantly skewed, the geometric mean would be substantially different from the arithmetic mean.

EXAMPLE 3

METHOD FOR CALCULATING THE MEDIAN OF A DATA SET

Suppose we want to estimate the median of the data set from Example 1.

1. The 20 data are sorted from smallest to largest, and a rank is assigned to each value.

Data	Rank
44	1
55	2
68	3
72	4
76	5
80	6
85	7
91	8
94	9
97	10
101	11
105	12
110	13
115	14
119	15
122	16
129	17
133	18
139	19
167	20

2. Because the sample size, n, is even, the sample median estimate is the average of the n/2th and the (n+2)/2th values. In this case the sample size is 20, the sample median estimate is the average of the 20/2 = 10th and the [(20+2)/2] = 11th ranked values.

3. For this data set, the 10th ranked value is 97 and the 11th ranked value is 101. The median is the arithmetic average of these two points:
   (97 + 101)/2 = 99.

EXAMPLE 4

ESTIMATING A PERCENTILE OF A DATA SET FROM A PROBABILITY PLOT

Twenty soil samples from a site are analyzed for lead, and the following concentrations (ppb) are obtained:

276	179	138	162
206	114	220	131
242	136	157	180
157	165	226	245
146	183	201	193

1. We want to estimate the 50th percentile (median) and 90th percentile of the data set using a probability plot. Assume the data set has been tested for lognormality and normality, and it appears that the data have been drawn from a normal distribution. The 20 data are sorted from smallest to largest, and a rank is assigned to each value. In addition, for each data point estimate (i - 0.5)100/n, where i is the rank of the data point.

Data	Rank	(i - 0.5)100/n	Data	Rank	(i - 0.5)100/n
114	1	2.5	180	11	52.5
131	2	7.5	183	12	57.5
136	3	12.5	193	13	62.5
138	4	17.5	201	14	67.5
146	5	22.5	206	15	72.5
157	6	27.5	220	16	77.5
157	7	32.5	226	17	82.5
162	8	37.5	242	18	87.5
165	9	42.5	245	19	92.5
179	10	47.5	276	20	97.5

2. Because in this case we assume that data are normally distributed, we plot x vs. (i - 0.5)100/n on normal probability paper (contained in this document), as shown below. A straight line is fit to the data by eye, which fits the data reasonably well, indicating that the data are drawn from a normal population.

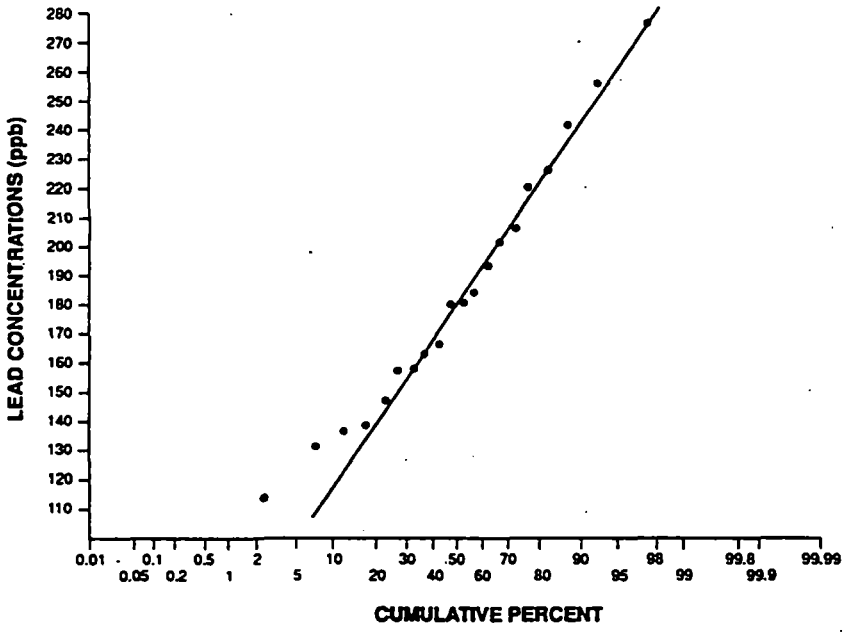

Figure E4. Example of a probability plot.

3. Using the line, we can read the 50th and 90th percentiles from the plot, by reading across the cumulative percent along the horizontal axis to 50 and 90. Using this technique, the 50th and 90th percentile are estimated to be approximately 179 ppb, and 242 ppb. This agrees reasonably well with the median of 179.5 estimated by the method shown in Example 3. A nonparametric method for estimating the 90th percentile is shown in Example 5.

Note: If the data set contained some data below the detection limit or PQL, the data above the limit could be plotted, and a line fit to the remaining data points to estimate upper percentiles.

EXAMPLE 5

NONPARAMETRIC (DISTRIBUTION-FREE) METHOD FOR CALCULATING PERCENTILE OF A DATA SET (Section 2.1.2.3)

Using a nonparametric method, we wish to estimate the 90th percentile of the lead concentration data set in Example 4.

1. The 20 data are sorted from smallest to largest, and a rank is assigned to each value.

Data	Rank	Data	Rank
114	1	180	11
131	2	183	12
136	3	193	13
138	4	201	14
146	5	206	15
157	6	220	16
157	7	226	17
162	8	242	18
165	9	245	19
179	10	276	20

2. $v = \frac{p}{100} (n + 1)$

where

p = percentile
n = number of samples
v = rank of pth percentile data

$$v = \frac{90}{100} (20 + 1) = 18.9$$

3. Since v is not an integer, the 90th percentile must be found by linear interpolation between the 18th and 19th ranked data, 242 and 245, respectively.

4. The linear interpolation is performed as follows:

   a. The difference between the rank values is calculated: 19 - 18 = 1
   b. The difference between v and the lower rank value is calculated: 18.9 - 18 = 0.9
   c. The ratio between the values calculated in steps a and b is found: 0.9/1 = 0.9
   d. The difference between the data values is calculated: 245 - 242 = 3.
   e. The ratio in c is multiplied by the difference between the data values: 0.9 (3) = 2.7
   f. This value is added to the lowest data value: 242 + 2.7 = 244.7.

Thus, the 90th percentile of the data set is 244.7.

EXAMPLE 6

CALCULATION OF VARIANCE, STANDARD DEVIATION, AND COEFFICIENT OF VARIATION

We want to calculate the sample variance, s^2, of the following concentrations (x_i) in mg/kg : 2.4, 4.4, 6.5, 6.7, and 8.2.

The arithmetic mean, $\bar{x}$, calculated as described in Example 1, is 5.64. The equation for calculating the variance is

$$s^2 = \frac{\Sigma (x_i - \bar{x})^2}{n - 1}$$

where n is the number of samples. In this example, n = 5, so the denominator is 5 - 1 = 4. Thus, the sample variance can be calculated as

$$s^2 = \frac{(2.4 - 5.64)^2 + (4.4 - 5.64)^2 + (6.5 - 5.64)^2 + (6.7 - 5.64)^2 + (8.2 - 5.64)^2}{4}$$

$$s^2 = 5.11$$

The standard deviation, s, is the square root of the variance:

$$s = \sqrt{5.11} = 2.26.$$

The coefficient of variation, CV, is calculated by:

$$CV = \frac{s}{\bar{x}}$$

$$CV = \frac{2.26}{5.64} = .040$$

NOTE: This calculation method should not be used for some purposes. See Supplement S-5.

EXAMPLE 7

W TEST FOR TESTING THE NORMALITY OF A DATA SET

The data from the 20 soil samples in Example 4 will be tested for normality by the W test (Shapiro and Wilk 1965). These data could be tested for lognormality by log-transforming the date, and then performing the same test on the transformed data.

1. The number of samples, n, is 20. The calculated mean, $\bar{x}$, of the data is 182.85.

2. The 20 data are sorted from smallest to largest, and a rank is assigned to each value

Data	Rank	Data	Rank
114	1	180	11
131	2	183	12
136	3	193	13
138	4	201	14
146	5	206	15
157	6	220	16
157	7	226	17
162	8	242	18
165	9	245	19
179	10	276	20

3. The denominator d is calculated for the data:

$$d = (114 - 182.85)^2 + (131 - 182.85)^2 + (136 - 182.85)^2 + (138 - 182.85)^2 + (146 - 182.85)^2 + (157 - 182.85)^2 + (157 - 182.85)^2 + (162 - 182.85)^2 + (165 - 182.85)^2 + (179 - 182.85)^2 + (180 - 182.85)^2 + (183 - 182.85)^2 + (193 - 182.85)^2 + (201 - 182.85)^2 + (206 - 182.85)^2 + (220 - 182.85)^2 + (226 - 182.85)^2 + (242 - 182.85)^2 + (245 - 182.85)^2 + (276 - 182.85)^2$$

$$d = 35{,}355$$

4. Calculate r, the number of a, coefficients used in the calculation.
Since n is even, $r = 20/2 = 10$

5. From Table A-1, the a_i coefficients for $n = 20$ are:

$a_1 = 0.4734$	$a_6 = 0.1334$
$a_2 = 0.3211$	$a_7 = 0.1013$
$a_3 = 0.2565$	$a_8 = 0.0711$
$a_4 = 0.2085$	$a_9 = 0.0422$
$a_5 = 0.1686$	$a_{10} = 0.0140$

6. W is calculated as follows:

$$W = (1/35{,}355)\,[0.4734(276 - 114) + 0.3211(245 - 131) + 0.2565(242 - 136)] + 0.2085(226 - 138) + 0.1686(220 - 146) + 0.1334(206 - 157) + 0.1013(201 - 157) + 0.0711(193 - 162) + 0.0422(183 - 165) + 0.0140(180 - 179)]^2$$

$$W = 0.97$$

Example 7. (Continued)

7. Using Table A-2, the value of W for the significance level $\alpha = 0.05$ is 0.905. The value for W calculated in Step 6 above (0.97) is greater than the value in Table A-2, so the null hypothesis that the population is normally distributed cannot be rejected, and the data should be assumed to have been drawn from a normal distribution.

NOTE: If calculating W by hand, use Worksheet W-1 or W-1a.

EXAMPLE 8

TRANSFORMATION OF LOGNORMALLY DISTRIBUTED DATA

The following groundwater concentrations of a contaminant (mg/l) have been measured at a site:

82	151	75	105
61	68	100	123
95	74	126	85
136	163	112	89
59	99	108	88

1. A histogram of the data suggests that they may be lognormally distributed (Figure 5a).

2. To test the lognormal assumption, the data are log-transformed ($\log_e$).

4.41	5.02	4.32	4.65
4.11	4.22	4.61	4.81
4.55	4.30	4.84	4.44
4.91	5.09	4.72	4.49
4.08	4.60	4.68	4.48

3. A histogram of the transformed values (Figure 5b) indicates that they are normally distributed. This suggests that the data are lognormally distributed. Note that the histogram method for determining normality or lognormality is subjective and depends on the intervals chosen for the graph. It is used here to illustrate lognormal transformations. In practice, a probability plot or other test (e.g., W test) should be used to determine normality or lognormality (see Supplement S-3).

EXAMPLE 9

PARAMETRIC AND NONPARAMETRIC METHODS DETERMINING WHETHER A CLEANUP STANDARD IS BELOW NATURAL BACKGROUND – NORMALLY DISTRIBUTED DATA

The cleanup standard for kryptonite in soil is 115 mg/kg, based on Method B of the MTCA regulations. The PLP collects 20 samples from locations determined to be natural background. Is the Method B cleanup standard below natural background?

The background data are:

110.28	107.11	61.56	91.81	89.08
116.32	20.06	112.84	101.87	64.52
124.14	91.80	50.28	97.04	91.55
111.94	78.54	110.17	80.78	155.19

Background data are assumed initially to be lognormally distributed (see the discussion in Section 4.3 and the flowchart for determination of cleanup standards based on background, Figure 12). To check the lognormal assumption for the kryptonite background data, the W test (see Example 7) will be used. As discussed in Section 2.1.4.1, the W test is designed as a test of the hypothesis that the data are from a normal distribution. However, it can be used to test the hypothesis of a lognormal distribution by first transforming the raw data using natural logarithms, and then calculating and evaluating the W statistic using the transformed data as shown in Example 7.

The W statistic for the transformed data is calculated to be 0.792. The critical value at the 0.05 level for a sample size of 20 is determined from Table A-2 to be 0.905. Since the calculated value for W is less than the critical value, the null hypothesis that the data are lognormal is rejected. The PLP then decides to determine if the data are normally distributed. The W value calculated on the raw (untransformed) data is 0.958, which exceeds the critical value of 0.905, so the null hypothesis that the data are normally distributed is not rejected.

The default procedure establishing the background-based cleanup standard at the 90th percentile of the estimated distribution is based on the assumption of a lognormal distribution. In cases where the assumption of a lognormal distribution is rejected, as in this example, Ecology should be consulted on appropriate alternative procedures to establish the cleanup standard. The 90th percentile concentration should not be used without consulting Ecology. For this example, assume that Ecology has determined that the cleanup standard should be based on the estimated 80th percentile concentration.

The 80th percentile then can be estimated using a table of standard normal values (see Table A-6) as follows:

$$x_{80} = \bar{x} + Z_{80}s$$

and, since

$$\bar{x} = 93.34$$

$$s = 29.33$$

and from Table A-6

$$Z_{80} = 0.842$$

then

$$x_{80} = 93.34 + 1.282(29.33)$$

$$= 118.04 \text{ mg/kg}$$

This procedure assumes a normal distribution for the background samples to estimate the 80th percentile value. Since that estimate, about 118 mg/kg, is greater than the Method B cleanup standard of 115 mg/kg, the Method B value is below natural background.

Now, assume that we wish to estimate the 80th percentile value of the background distribution using nonparametric methods as in Example 5.

First, the 20 background values are ranked from lowest to highest:

20.06	97.04
50.28	101.87
61.56	107.11
64.52	110.17
78.54	110.28
80.78	111.94
89.08	112.84
91.55	116.32
91.80	124.14
91.81	155.19

Then the 80th percentile is estimated as in Example 5, as follows:

$$k = \frac{p}{100}(n+1) = 0.80(21) = 16.8$$

and interpolating between the 16th and 17th ranked values, 111.94 and 112.84,

$$x_{80} = 111.94 + 0.8(112.84 - 111.94)$$

$$= 111.94 + 0.72$$

$$= 112.66 \text{ mg/kg}$$

Example 9. (Continued)

Since this estimate of the 80th percentile of the background data is less than the 115 mg/kg from Method B, the Method B cleanup standard is not below natural background.

This example demonstrates that the method of estimating the 80th percentile of natural background can affect whether or not a Method A, Method B, or Method C cleanup standard is determined to be below natural background. In this example, the difference in 80th percentile values from parametric and nonparametric approaches is not great; in other cases it may be much greater, and either approach can produce the higher estimated 90th percentile value. In this case, because the background-based cleanup standard is so close to the Method B standard, and the parametric and nonparametric methods result in different decisions, it would be wise to collect more background samples.

In general, the first (parametric) method shown here should be used unless the data deviate significantly from normal and lognormal distributions. If the data are lognormally distributed, as assumed in the default procedures and typically expected for most environmental data, see Example 10. Consult Ecology before using the nonparametric method.

EXAMPLE 10

PARAMETRIC AND NONPARAMETRIC METHODS DETERMINING WHETHER A CLEANUP STANDARD IS BELOW NATURAL BACKGROUND – LOGNORMALLY DISTRIBUTED DATA

The cleanup standard for ubiquinite in soil is 175 mg/kg, based on Method B of the regulations. The PLP collects 20 samples from locations determined to be natural background. Is the Method B cleanup standard below natural background?

The background data (rank-ordered) are:

42	78	95	122
61	81	98	132
66	83	104	138
69	85	109	212
71	90	114	286

The assumption that the background data are from a lognormal distribution is evaluated using the W test (see Example 7). The W test is used to evaluate a null hypothesis that background values are lognormally distributed by transforming the raw data using natural logarithms and then calculating the W statistic, as in Example 9. For the log-transformed ubiquinite data listed above, the W statistic is calculated to be 0.953; since that value is greater than the critical value of 0.905 (at the 0.05 level) from Table A-2, the null hypothesis is not rejected, and a lognormal distribution is assumed.

If the lognormal null hypothesis is not rejected, it is not necessary to test other distributions.

The 90th percentile of the lognormally-distributed background data can be estimated by transforming the raw data using logarithms, estimating a 90th percentile value using a table of standard normal values (see Table A-6), and then back-transforming to original units (appropriate for percentiles, but not for means!), as follows:

Transform the raw data using logarithms, with $y_i = \log_e x_i$:

3.738	4.357	4.554	4.804
4.111	4.394	4.585	4.883
4.190	4.419	4.644	4.927
4.234	4.443	4.691	5.357
4.263	4.500	4.736	5.656

The 90th percentile of the transformed (normal) data can be estimated as in Example 9:

$$y_{90} = \bar{y} + Z_{90}s_y$$

The mean and standard deviation of the transformed data are:

$$\bar{y} = 4.574$$

$$s_y = 0.429$$

and from Table A-6

$$Z_{90} = 1.282.$$

Then

$$y_{90} = 4.574 + 1.282(0.429)$$

$$= 5.124$$

Finally, transform back to the original units:

$$x_{90} = e^{5.124} = 168.0$$

This procedure uses the assumed lognormal distribution for the background samples to estimate the 90th percentile value. Since that estimate, 168.0 mg/kg, is less than the Method B cleanup standard of 175 mg/kg, the Method B value is determined not to be below natural background.

Now assume that we wish to estimate the 90th percentile value of the nontransformed background distribution using nonparametric methods, as in Example 5.

The 90th percentile is estimated as in Example 5, as follows:

$$k = p/100\ (n+1) = 90/100\ (21) = 18.9$$

and interpolating between the 18th and 19th ranked values, 138 and 212,

$$x_{90} = 138 + 0.9(212 - 138)$$

$$= 138 + 66.6$$

$$= 204.6$$

Since this estimate of the 90th percentile of the background data is greater than the 175 mg/kg from method B, the Method B cleanup standard is determined to be below natural background.

As in Example 9, this example demonstrates that the method of estimating the 90th percentile of natural background can affect whether or not a Method A, Method B, or Method C cleanup standard is determined to be below natural background. In this example, the nonparametric estimate of $x_{0.90}$ is substantially higher than the parametric estimate. The first (parametric) method shown here should be used unless the data deviate significantly from normal and lognormal distributions. Consult Ecology before using the nonparametric method.

EXAMPLE 11

EVALUATION OF SOILS COMPLIANCE MONITORING DATA

The Method B cleanup standard for a contaminant, Pesticite, in soils is 2.5 μg/kg. Assume that Pesticite is widely distributed in areas near the site (a pesticide distribution facility) from normal agricultural practices, unrelated to any site-specific releases. Appropriate and representative area background samples are collected and analyzed. It is determined from those samples that the assumption of a lognormal area background distribution is not rejected (at the 0.05 level) and that the estimated 90th percentile concentration of area background is 30 μg/kg. Then the Method B cleanup standard is less than area background, and a Method C standard equal to the 90th percentile of area background, 30 μg/kg, is selected in accordance with the default procedures discussed in section 4.3.

A compliance monitoring data set of 15 samples is collected and analyzed for Pesticite after site remediation activities are performed. Can the site be considered clean?

Assume the monitoring data are as follows:

ND (<5)	16	25
5	19	29
6	21	30
8	21	32
12	24	38

The W test (see Example 7) is used to evaluate the null hypothesis that the compliance monitoring data are from a lognormal distribution. The W statistic is calculated assuming a value of 2.5 μg/kg (one-half the detection limit) for the one not-detected (ND) value. The goodness-of-fit test for a lognormal distribution is performed by transforming the raw data using natural logarithms ($\log_e$), as in Example 10. The calculated W statistic is 0.888, which is slightly greater than the critical value of 0.881 for a 0.05 test with 15 samples (see Table A-2). Therefore, the null hypothesis of a lognormal distribution is not rejected.

Although the W test cannot reject a lognormal distribution, a histogram plot of the compliance monitoring data reveals that, subjectively, the lognormal distribution does not provide a close fit to the data. The compliance monitoring data appear to be a combination of lognormally-distributed background data (approximating the area background distribution) and a second distribution shifted upward to higher concentrations compared to that background distribution. The higher values in the compliance monitoring data set all appear to be from samples taken in an area of the site known to have been used for storing bags of dry Pesticite mix. That area was the most contaminated at the site before cleanup actions were taken.

Three criteria will be used to evaluate whether the site is in compliance:

1) Calculation of the upper confidence limit (UCL) on the mean, and comparison of that value to the 90th percentile of the background data

2) Frequency of exceedance

3) Magnitude of exceedances.

CRITERION 1

Since the null hypothesis of a lognormal distribution is not rejected, the method of Land (1971, 1975) described in Gilbert (1987) is used to calculate a one-sided 95 percent upper confidence limit on the mean concentration of Pesticite in soil at the site. The equation for that upper confidence limit (UCL) is as follows:

$$UCL_{95} = \exp(\bar{y} + 0.5s_y^2 + \frac{s_y H_{95}}{\sqrt{n-1}})$$

where

$\bar{y}$ = arithmetic mean of the n transformed values $y_i = \ln x_i$

s_y = standard deviation of the transformed data

n = the number of sampled values

H_{95} = tabled values from Land (1971, 1975) determined by n and s_y

The raw data are transformed using logarithms ($\log_e$):

0.916	2.773	3.219
1.609	2.944	3.367
1.792	3.045	3.401
2.079	3.045	3.466
2.485	3.178	3.638

The values for the mean and standard deviation of these transformed data are determined (to three decimal places):

$\bar{y}$ = 2.730

s_y = 0.794

The approximate value of H can be determined from the nomograph in Figure A-1 or Supplement S-2. In this case, n = 15 samples, and s_y = 0.794. Interpolating between 2.306 and 2.443, the H value is determined to be 2.434. The UCL on the mean is then calculated using these values, as follows:

$UCL_{95} = \exp(2.730 + 0.5(0.630) + 0.794(2.434)(1/[14]^{0.5}))$

$= \exp(3.562)$

$UCL_{95} = 35.2$ ug/kg

The calculated UCL of 35.2 μg/kg, from the compliance monitoring data, is therefore greater than the cleanup standard of 30 μg/kg based on the 90th percentile of area background, and the site does not meet the applicable cleanup standard based on background. Further cleanup actions are required. In this case, the residual soil contamination located where dry Pesticite mix was stored appears to cause the site to fail the test.

The exceedance of the background-based cleanup standard based on this test is sufficient by itself to require additional cleanup actions. Two additional tests are included in the regulation to account for the frequency and magnitude of exceedances of the background-based cleanup standard in the compliance monitoring data. For purposes of illustration, these tests are also discussed here, although once the test based on the UCL of the mean is failed, they would not necessarily have to be performed.

CRITERION 2

According to the regulation, the standard test, based on the frequency of exceedances of the cleanup level, is that no more than 10 percent of the compliance monitoring samples exceed the cleanup level. However, the actual probability of having more than 10 percent of compliance monitoring samples above the cleanup level if the site is at background concentrations is rather high, and generally increases as the compliance monitoring sample size increases (see Technical Attachment 1 to Figure 12). For sample sizes of 20 or more and a cleanup level based on the 90th percentile concentration of background, that probability is greater than 0.30. This is not acceptable, because even if a site is remediated to background concentrations (obviously a "clean site"), it has a >30 percent chance of failing this test. Therefore, an adjustment in the allowable percentage of compliance monitoring samples above the cleanup level can be made so that the "false positive" error rate approximates 5 percent. This adjustment is made only in the case of a cleanup level based on background.

For sample sizes less than or equal to 30, an appropriate adjustment is to allow up to 20 percent of the samples to exceed the cleanup level (see Attachment 1). Therefore, for the Pesticite site with 15 samples, the test based on frequency of exceedances would require additional cleanup actions if 4 or more out of 15 compliance monitoring samples exceeded the cleanup level. The calculated probability of 4 or more exceedances if the site has achieved background is 0.056 (5.6 percent). For the compliance monitoring data reported at the Pesticite site, 2 of the 15 values exceed the cleanup level of 30 μg/kg. The exceedance frequency is therefore 13.3 percent. Although this is greater than the standard test criterion of 10 percent, it is less than the adjusted criterion (for the specific background-based cleanup standard and compliance monitoring sample size) of 20 percent. The site does not fail the test of frequency of exceedances.

CRITERION 3

The regulation states that no compliance monitoring sample be more than two times the cleanup level. The probability of one or more samples exceeding two times the cleanup standard if the site is at background concentrations depends on the definition of the cleanup standard (i.e., the percentile value selected as the cleanup level), the shape of the background distribution (e.g., the coefficient of variation [CV], defined as the standard deviation divided by the mean concentration), and the number of compliance monitoring samples. A factor of exceedance that results in an approximate 5 percent false positive rate can be calculated (see Technical Attachment 2 to Figure 12).

Example 11. (Continued)

For the Pesticite site, assume that the background data are lognormally distributed with a CV of 0.7. The probability of exceeding twice the cleanup level (the 90th percentile concentration) in 15 compliance monitoring samples (false positive probability) is about 0.123 (12.3 percent). However, for a more acceptable rate of exceedence probability (0.05, or 5 percent), a factor of about 2.46 is calculated (see Technical Attachment 2 to Figure 12). The exceedance factor of 2.46 means that a sample may exceed the cleanup standard by up to 2.46x, instead of 2. Such an adjustment in the standard criterion can be made only in the case of a cleanup level based on background.

For the compliance monitoring data reported at the Pesticite site, the maximum concentration of 38 µg/kg is only 1.27 times the cleanup level of 30 ug/kg. That exceedance factor is less than the adjusted criterion value of 2.46 for the site. Therefore, the Pesticite site does not fail the magnitude of exceedence (Criterion 3) test.

The compliance monitoring data for this site strongly suggest a residual hot spot of contamination (e.g., based on the histogram of soil concentrations and their spatial pattern at the site). Alternative statistical procedures based on distributional tests such as the Wilcoxon or Quantile tests may be appropriate and useful in such situations (see Figure 12).

EXAMPLE 12

DETERMINATION OF GROUNDWATER CLEANUP STANDARDS BASED ON NATURAL BACKGROUND DATA

The Zarkle Industries site, now closed, is contaminated with the inorganic constituent Zodium, which was used in large quantities in a manufacturing process. In particular, groundwater concentrations of Zodium at the site are very high (mg/l levels). The Method B Cleanup standard for Zodium in groundwater is 0.5 μg/l, based on acceptable human health risks (drinking water ingestion). Is the Method B cleanup standard below natural background?

Several articles in the literature have noted that natural background concentrations of Zodium in groundwater are quite variable. The PLP decides to drill monitoring wells to determine background concentrations near the Zarkle Industries site. Sampling locations are selected carefully and reviewed with Ecology to screen out any locations that could be influenced by site contamination. The background results for Zodium (in μg/l) are as follows:

9.74	22.39
14.74	1.98
2.20	2.31
27.39	0.56
0.86	75.07

The higher results are reviewed by Ecology and the PLP to confirm that they represent background values and are not influenced by the site or other identifiable sources. No reason for rejecting the higher results is found; moreover, these higher concentrations are consistent with previous literature reports on Zodium. The results are accepted for determining natural background.

The assumption that the background data are from a lognormal distribution is evaluated using the W test (see Example 7). As in Examples 9 and 10, the W test is used to evaluate a null hypothesis that background values are lognormally distributed by transforming the raw data using natural logarithms and then calculating the W statistic. The calculated W statistic of 0.945 is compared to the critical value of 0.842 based on 10 samples and a 0.05 level test (Table A-2). Since the calculated W statistic is greater than the criterion value, the null hypothesis of a lognormal distribution is not rejected, and the data are assumed to be lognormally distributed.

The estimated 90th percentile background concentration is calculated as in Example 10. The $\log_e$ transformed data are as follows (to three decimal places only):

2.276	3.109
2.691	0.683
0.788	0.837
3.310	-0.580
-0.151	4.318

The mean, $\bar{y}$, and standard deviation, s, of the log-transformed data are 1.728 and 1.632, respectively.

The 90th percentile of these log-transformed data is obtained by finding the 90th percentile value based on the best-fit transformed normal distribution and then back-transforming (appropriate for percentiles, but not for means!), as follows:

Example 12. (Continued)

$$y_{90} = \bar{y} + z_{90}S_y$$

$$= 1.728 + 1.282(1.632)$$

$$= 3.820$$

Transforming back to original units, the estimated 90th percentile of the natural background for Zodium in groundwater is

$$x_{90} = e^{3.820} = 45.60\ \mu g/l$$

Therefore, the Method B cleanup standard of 0.5 $\mu g/l$ for Zodium is below natural background. Before accepting the estimated 90th percentile of the natural background distribution for Zodium as the cleanup standard, however, the distribution of background values is considered further. The estimated 90th percentile value of 45.60 $\mu g/l$ is more than 91 times higher than the risk-derived Method B standard of 0.5 $\mu g/l$.

The background data set shows considerable positive skew. The coefficient of variation (CV) of the best-fit lognormal distribution is calculated as the standard deviation divided by mean concentration, or about 3.65. Upper percentile values for distributions with that degree of skew are well above the typical values around the 50th percentile of the distribution.

The 50th percentile value is easily determined. Recall that the transformed data from a lognormal distribution are normally distributed, and the mean and 50th percentile (median) values for a normal distribution are identical. The 50th percentile value is therefore calculated using the mean of the log-transformed background data as follows:

$$y_{50} = 1.728$$

$$x_{50} = e^{1.728} = 5.63\ \mu g/L$$

The 90th percentile value of 45.60 $\mu g/L$ is therefore about 8.1 times higher than the 50th percentile value. Thus, the calculated risks at the 90th percentile are also more than 8 times higher than at more typical background concentrations. Ecology policy is to limit the cleanup standards based on natural background to no more than 4 times the 50th percentile background concentration. This policy represents a balancing of acceptable exposures and risks with the probability that clean (background) sites would fail a comparison with the cleanup standard for a site.

The cleanup standard for Zodium in groundwater at the Zarkle Industries site based on natural background is therefore 4 times the 50th percentile value, or

$$\text{Cleanup Standard} = (4)\ (5.63)$$

$$= 22.52\ \mu g/L$$

Example 12. (Continued)

This cleanup standard represents a value only slightly greater than the 80th percentile of the background distribution. The estimated percentile can be calculated by determining the Z value of a normal distribution that solves the equation

$$\log_e 22.52 = \bar{y} + Z_p s_y$$

and then looking up that Z value in Table A-6 to determine the percentile.

The effect for this site of limiting the natural background cleanup standard to 4 times the 50th percentile value is to adopt the 80th rather than the 90th percentile of the background distribution. This results in a higher probability that a clean (background) site would fail the test (higher false positive rate), balanced by almost a 50 percent reduction in the exposures that would occur at the estimated 90th percentile of natural background.

The percentile value for the cleanup standard of 22.52 µg/l is estimated as 80.22. A test based on the frequency of values above the cleanup standard at that percentile can be derived for a given compliance monitoring sample size to provide an approximate 5 percent false positive rate (i.e., an approximate 0.05 level test). Using the approach described in Technical Attachment 1 of Figure 12, for example, the probability that 5 or more out of 10 compliance monitoring samples would exceed a cleanup standard based on the 80.22nd percentile value is 0.031. Therefore, a test at the 0.03 level for 10 samples would be based on not more than 40 percent of the values exceeding the cleanup level.

A test based on the maximum magnitude of exceedance can be derived similarly using the approach described in Technical Attachment 2 of Figure 12. For example, with a compliance monitoring sample size of 10, there is a 5-percent chance that one or more values would exceed the 99.49th percentile if the site is at background. For a lognormal distribution with a CV of about 3.65, as estimated for the Zodium background distribution in groundwater, a test at the 0.05 level of the maximum magnitude observed would be based on an exceedance factor of about 16.5 times the cleanup standard.

Background data sets with high coefficients of variation (highly skewed distributions) will pose problems for simultaneously achieving desirable false positive error rates and statistical power to detect residual contamination, using the standard default methods described in this guidance document and based on relatively small numbers of samples. In such cases, it may be appropriate to consider using alternative distribution testing methods such as the Wilcoxon and Quantile tests. In the context of the standard default procedures, values of the lognormal distribution CV (the mean divided by the standard deviation of the best-fit lognormal distribution, not the raw sample values) greater than about 0.5 may be considered relatively high.

EXAMPLE 13

CONFIDENCE INTERVAL METHOD FOR TESTING COMPLIANCE - NORMALLY DISTRIBUTED DATA

We wish to evaluate the soil lead data from Example 4 to determine whether the site complies with the risk-based 250-mg/kg cleanup level (Method A).

276	179	138	162
206	114	220	131
242	136	157	180
157	165	226	245
146	183	201	193

n	20
$\bar{x}$	182.85
s	43.14

Assume that these data have been tested for lognormality and normality and are assumed to be normally distributed. Find the appropriate t-value in a t table (Appendix Table A-4). There are n − 1 = 19 degrees of freedom, and the correct column is for 0.05. The t-value is therefore 1.729. Calculate the upper confidence limit (UCL):

$$UCL = 182.85 + 1.729 \frac{43.1}{\sqrt{20}}$$
$$= 199.5.$$

Since the UCL on the mean is less than 250, the site meets the criteria that the UCL must be less than the cleanup standard. In addition, no single value is greater than two times the cleanup standard, and fewer than 10 percent (5 percent) of the values are above the cleanup standard. Therefore, the site can be considered uncontaminated. As described in Section 5.2.1, the confidence interval method should be used to compare compliance monitoring data to cleanup levels based on chronic or carcinogenic effects.

EXAMPLE 14

TOLERANCE INTERVAL METHOD FOR TESTING COMPLIANCE

Use the same data as for Example 13. From Table A-3 under $P_o = 0.1$ for $n = 20$ (sample size), $k = 1.926$. The value for P_o comes from the fact that this is a confidence interval around the 90th percentile ($100 - 90 = 10$; $\frac{P_o}{100} = 0.10$). Then:

$$T_U = 182.85 + (1.926)(43.14)$$

$$= 265.9$$

Although as shown in Example 13, the site meets two requirements for it to be considered clean, because the cleanup level of 250 falls below the upper tolerance interval, the site is not clean by this test. In general, the tolerance interval approach will be more stringent than the confidence interval method. As described in Section 5.2.2, the tolerance interval method should be used to compare compliance monitoring data to cleanup levels based on acute or short-term effects.

EXAMPLE 15

CALCULATION OF NONPARAMETRIC CONFIDENCE LIMITS FOR PERCENTILES WHEN n ≤20 (Section 5.2.2.3)

Assume that the following soils data set (in mg/kg) from a site has been tested for normality and lognormality, and found to fit neither distribution. The cleanup standard is 7 mg/kg. Does the site meet the cleanup standard for soils?

6.01	4.53	6.78	3.79
8.94	8.20	5.43	6.54
5.21	4.46	5.90	6.23
8.43	5.32	7.42	4.01

We want to find the upper 95 percent confidence limit around the 90th percentile for the data set.

A nonparametric test must be applied because the data are assumed not to be normally or lognormally distributed. In addition, n≤20, so the procedure described in Conover (1980) should be applied.

1. In this case, $\alpha = 0.05$, $1-\alpha = 0.95$, p/100 = 0.90, and n = 16. Conover provides two-sided confidence intervals in this table. However, under the regulation a one-sided interval is the appropriate test. Therefore, for an equivalent one-sided test at $\alpha = 0.05$, the two-sided test for twice that value, or 0.10 must be used. Table A-5 is used to find values for b. Read across columns for p/100 = 0.90, and down the left hand column to n = 16. Move down the column (p/100 = 0.90) until the values approximate $\alpha/2$ (in this case 0.05). Find the corresponding value of y in the far left column. In this example, a tabled value of 0.0684 is closest to 0.05, and the corresponding y value is 12. This value is r−1; we must add 1 to get r. Thus, in this example, r = 13.

2. Continue down the column for p/100 = .90, until you reach an entry approximately equal to $1-(\alpha/2)$, which is 0.950 in this example. The closest value is 0.8147, with a corresponding y value of 15. Again, this value represents s−1, so 1 is added to obtain to obtain s (16).

3. We wish to find the data values corresponding to ranks of r = 13 and s = 16. Order the data from smallest to largest and assign a rank to each value.

Data	Rank
3.79	1
4.01	2
4.46	3
4.53	4
5.21	5
5.32	6
5.43	7
5.90	8
6.01	9
6.23	10
6.54	11
6.78	12
7.42	13
8.20	14
8.43	15
8.94	16

4. The data values corresponding to ranks of 13 and 16 are 7.42 and 8.94. These values represent the lower and upper confidences limits about the 90th percentile. The upper confidence limit is 8.94 which is greater than the cleanup standard of 7 mg/l. Thus, the site should be considered contaminated.

Technical Note: In this case, the exact confidence coefficient is determined by the α entries used, and is not equal to 0.95. The actual value in this case is [1-0.017-0.8147 = 0.1683], not 0.05.

EXAMPLE 16

CALCULATION OF NONPARAMETRIC CONFIDENCE LIMITS FOR PERCENTILES WHEN N > 20 (Section 5.2.2.4)

Suppose we want to calculate the upper 95-percent confidence limit around the 90th percentile for a data set with n = 100.

Assume that these data have been tested and do not appear to be normally or lognormally distributed. Thus, we select the nonparametric method for estimating one-sided upper confidence limits (Gilbert 1987, p.141).

1. Find $Z_0 = Z_{0.95}$ in Table A-6. This value can be found by searching the table for a value close to 0.95. In Table A-6, the closest values are 0.9495 and 0.9505. Z_p is found by reading the left-hand column value (Z_p) in the same row as these values. In this case, the value is 1.6. The hundredths digit must then be interpolated from the values in the upper row. In this case, we must interpolate between 0.04 and 0.05 (corresponding to 0.9495 and 0.9505). (An example of linear interpolation is shown in Example 5.) Thus, $Z_p = 1.6 + 0.045 = 1.645$.

2. Calculate the rank of the upper confidence limit:

$$u = \frac{p}{100}(n+1) + Z_{1-\alpha}\sqrt{(n)(\frac{p}{100})(1 - \frac{p}{100})}$$

$$u = \frac{90}{100}(100+1) + 1.645\sqrt{(100)(\frac{90}{100})(1 - \frac{90}{100})}$$

$$u = 95.835$$

3. Order the data from smallest to largest and assign a rank to each value.

4. Since u is not an integer, the limit must be obtained by linear interpolation between the 95th and 96th ranked data values.

EXAMPLE 17

NONPARAMETRIC METHOD FOR EVALUATING GROUNDWATER COMPLIANCE (Section 5.3.3)

The method of Van der Parren will be used to estimate an upper confidence limit on the median. The following concentrations (mg/l) of XYZ are measured in the groundwater at a site. Does the groundwater meet the cleanup level of 6 ppm?

Raw data	Sorted data	
XYZ (ppm)	Rank	XYZ(ppm)
9.3	1	0.4
5.6	2	1.5
0.4	3	1.6
3.1	4	1.8
2.0	5	1.9
4.2	6	1.9
1.9	7	1.9
7.4	8	2.0
6.1	9	2.3
5.3	10	2.5
1.9	11	3.1
1.8	12	3.5
1.5	13	3.7
3.7	14	4.2
2.5	15	5.3
1.6	16	5.6
5.8	17	5.8
3.5	18	6.1
2.3	19	7.4
1.9	20	9.3

The sample size (n) is 20. From Appendix Table A-7, j=15. For the sorted data, the 15th value (= *upper confidence limit*) is 5.3 which is less than the cleanup standard of 6 ppm. Therefore, the criterion that the 95 percent confidence limit on the median must be below the cleanup standard is satisfied. However, 15 percent (more than 10 percent) of the data are above the cleanup standard, so this criterion is not met, and the site is still considered to be contaminated.

Technical Note: The true confidence coefficient defined in Van der Parren for this case is 0.9586.

APPENDIX A

Figure A-1. Upper 95% Confidence Limits
for a Lognormal Distribution (H values)

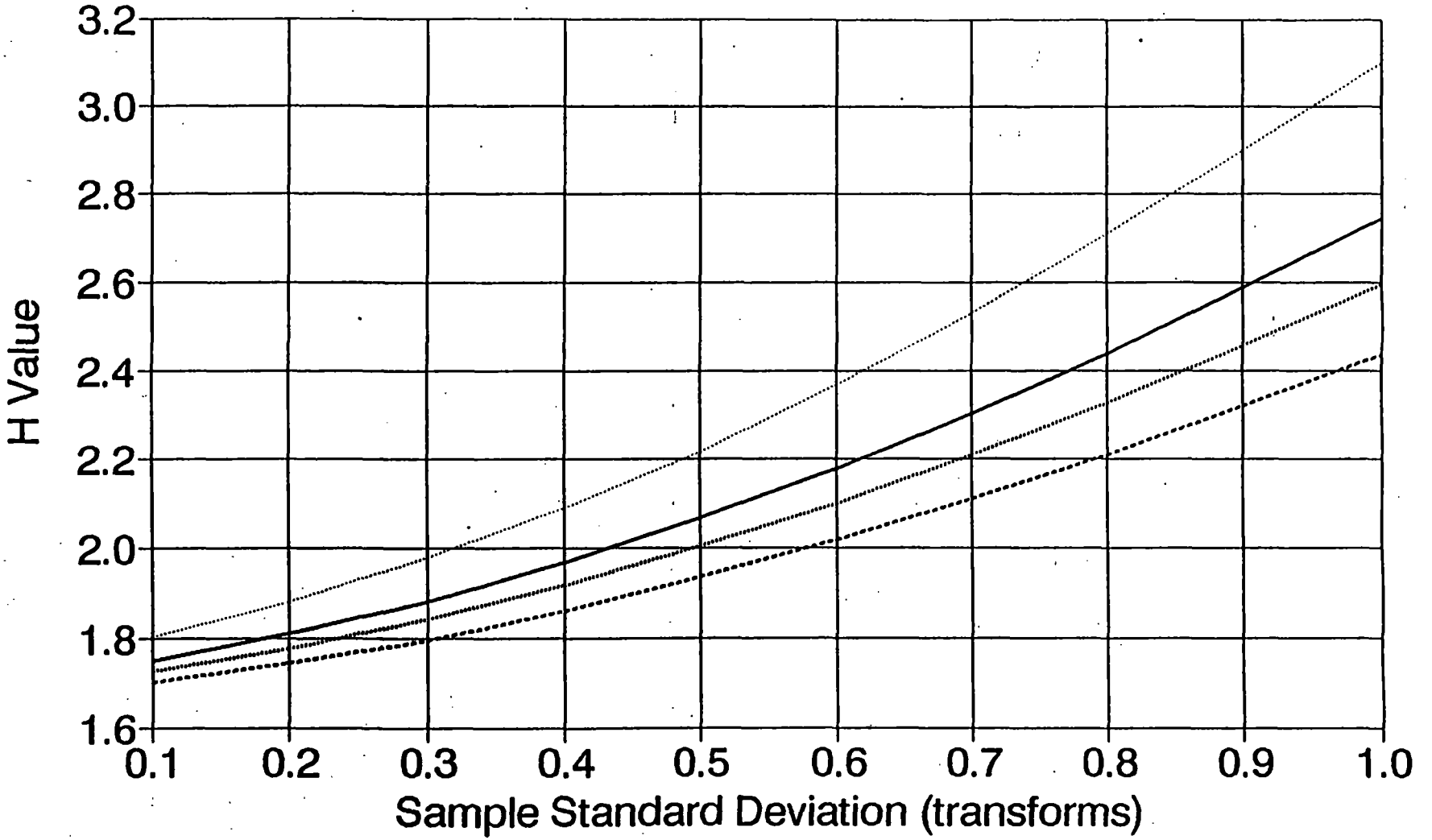

Figure A-1. Upper 95% Confidence Limits for a Lognormal Distribution (H values)

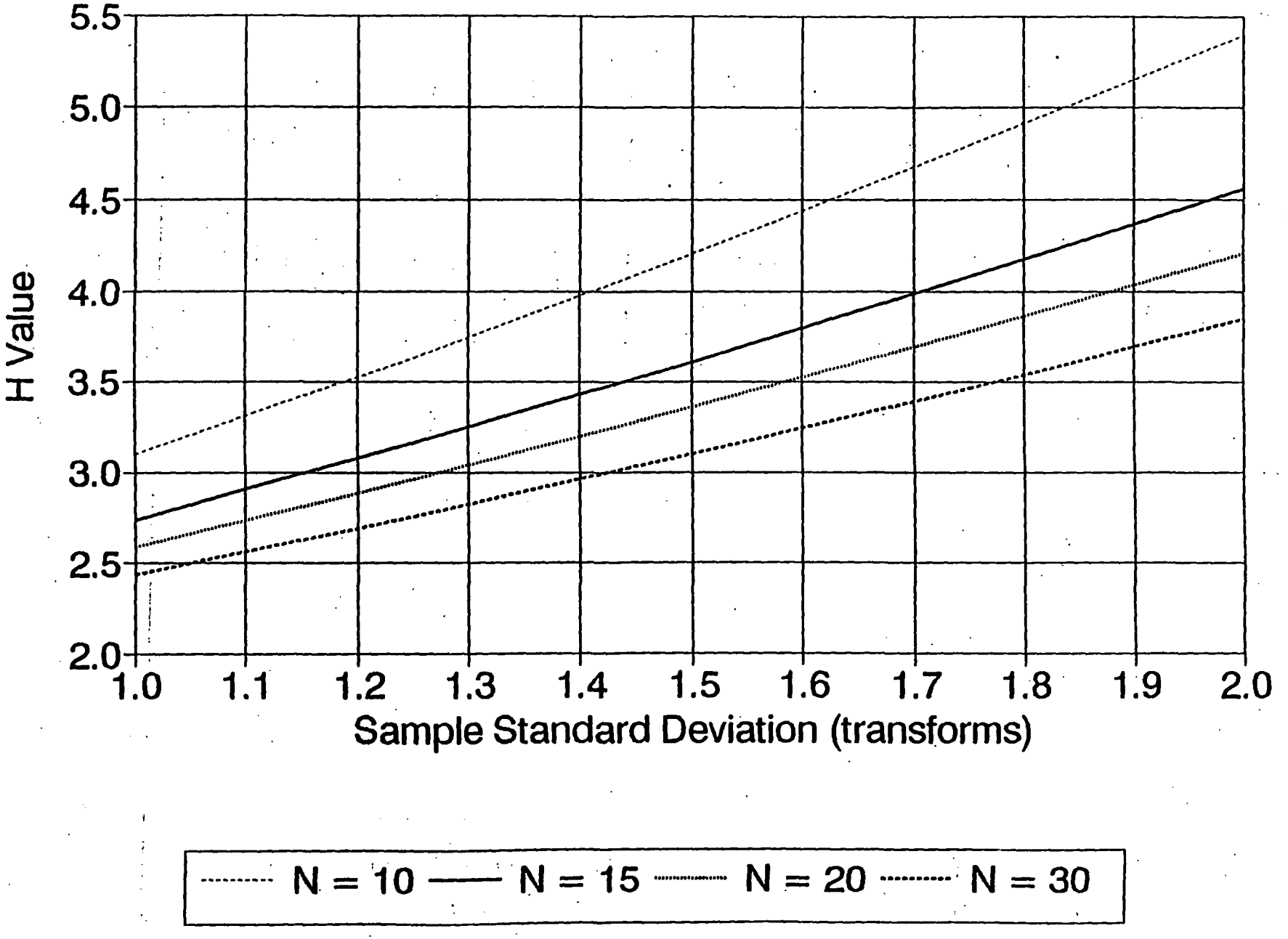

TABLE A-1. COEFFICIENTS a_i FOR THE SHAPIRO-WILK W TEST FOR NORMALITY

i \ n	2	3	4	5	6	7	8	9	10
1	0.7071	0.7071	0.6872	0.6646	0.6431	0.6233	0.6052	0.5888	0.5739
2	-	0.0000	0.1677	0.2413	0.2806	0.3031	0.3164	0.3244	0.3291
3	-	-	-	0.0000	0.0875	0.1401	0.1743	0.1976	0.2141
4	-	-	-	-	-	0.0000	0.0561	0.0947	0.1224
5	-	-	-	-	-	-	-	0.0000	0.0399

i \ n	11	12	13	14	15	16	17	18	19	20
1	0.5601	0.5475	0.5359	0.5251	0.5150	0.5056	0.4968	0.4886	0.4808	0.4734
2	0.3315	0.3325	0.3325	0.3318	0.3306	0.3290	0.3273	0.3253	0.3232	0.3211
3	0.2260	0.2347	0.2412	0.2460	0.2495	0.2521	0.2540	0.2553	0.2561	0.2565
4	0.1429	0.1586	0.1707	0.1802	0.1878	0.1939	0.1988	0.2027	0.2059	0.2085
5	0.0695	0.0922	0.1099	0.1240	0.1353	0.1447	0.1524	0.1587	0.1641	0.1686
6	0.0000	0.0303	0.0539	0.0727	0.0880	0.1005	0.1109	0.1197	0.1271	0.1334
7	-	-	0.0000	0.0240	0.0433	0.0593	0.0725	0.0837	0.0932	0.1013
8	-	-	-	-	0.0000	0.0196	0.0359	0.0496	0.0612	0.0711
9	-	-	-	-	-	-	0.0000	0.0163	0.0303	0.0422
10	-	-	-	-	-	-	-	-	0.0000	0.0140

i \ n	21	22	23	24	25	26	27	28	29	30
1	0.4643	0.4590	0.4542	0.4493	0.4450	0.4407	0.4366	0.4328	0.4291	0.4254
2	0.3185	0.3156	0.3126	0.3098	0.3069	0.3043	0.3018	0.2992	0.2968	0.2944
3	0.2578	0.2571	0.2563	0.2554	0.2543	0.2533	0.2522	0.2510	0.2499	0.2487
4	0.2119	0.2131	0.2139	0.2145	0.2148	0.2151	0.2152	0.2151	0.2150	0.2148
5	0.1736	0.1764	0.1787	0.1807	0.1822	0.1836	0.1848	0.1857	0.1864	0.1870
6	0.1399	0.1443	0.1480	0.1512	0.1539	0.1563	0.1584	0.1601	0.1616	0.1630
7	0.1092	0.1150	0.1201	0.1245	0.1283	0.1316	0.1346	0.1372	0.1395	0.1415
8	0.0804	0.0878	0.0941	0.0997	0.1046	0.1089	0.1128	0.1162	0.1192	0.1219
9	0.0530	0.0618	0.0696	0.0764	0.0823	0.0876	0.0923	0.0965	0.1002	0.1036
10	0.0263	0.0368	0.0459	0.0539	0.0610	0.0672	0.0728	0.0778	0.0822	0.0862
11	0.0000	0.0122	0.0228	0.0321	0.0403	0.0476	0.0540	0.0598	0.0650	0.0697
12	-	-	0.0000	0.0107	0.0200	0.0284	0.0358	0.0424	0.0483	0.0537
13	-	-	-	-	0.0000	0.0094	0.0178	0.0253	0.0320	0.0381
14	-	-	-	-	-	-	0.0000	0.0084	0.0159	0.0227
15	-	-	-	-	-	-	-	-	0.0000	0.0076

Source: After Shapiro and Wilk, 1965. Used by permission of the Biometrika Trustees.

TABLE A-1. (Continued)

i \ n	31	32	33	34	35	36	37	38	39	40
1	0.4220	0.4188	0.4156	0.4127	0.4096	0.4068	0.4040	0.4015	0.3989	0.3964
2	0.2921	0.2898	0.2876	0.2854	0.2834	0.2813	0.2794	0.2774	0.2755	0.2737
3	0.2475	0.2462	0.2451	0.2439	0.2427	0.2415	0.2403	0.2391	0.2380	0.2368
4	0.2145	0.2141	0.2137	0.2132	0.2127	0.2121	0.2116	0.2110	0.2104	0.2098
5	0.1874	0.1878	0.1880	0.1882	0.1883	0.1883	0.1883	0.1881	0.1880	0.1878
6	0.1641	0.1651	0.1660	0.1667	0.1673	0.1678	0.1683	0.1686	0.1689	0.1691
7	0.1433	0.1449	0.1463	0.1475	0.1487	0.1496	0.1505	0.1513	0.1520	0.1526
8	0.1243	0.1265	0.1284	0.1301	0.1317	0.1331	0.1344	0.1356	0.1366	0.1376
9	0.1066	0.1093	0.1118	0.1140	0.1160	0.1179	0.1196	0.1211	0.1225	0.1237
10	0.0899	0.0931	0.0961	0.0988	0.1013	0.1036	0.1056	0.1075	0.1092	0.1108
11	0.0739	0.0777	0.0812	0.0844	0.0873	0.0900	0.0924	0.0947	0.0967	0.0986
12	0.0585	0.0629	0.0669	0.0706	0.0739	0.0770	0.0798	0.0824	0.0848	0.0870
13	0.0435	0.0485	0.0530	0.0572	0.0610	0.0645	0.0677	0.0706	0.0733	0.0759
14	0.0289	0.0344	0.0395	0.0441	0.0484	0.0523	0.0559	0.0592	0.0622	0.0651
15	0.0144	0.0206	0.0262	0.0314	0.0361	0.0404	0.0444	0.0481	0.0515	0.0546
16	0.0000	0.0068	0.0131	0.0187	0.0239	0.0287	0.0331	0.0372	0.0409	0.0444
17	-	-	0.0000	0.0062	0.0119	0.0172	0.0220	0.0264	0.0305	0.0343
18	-	-	-	-	0.0000	0.0057	0.0110	0.0158	0.0203	0.0244
19	-	-	-	-	-	-	0.0000	0.0053	0.0101	0.0146
20	-	-	-	-	-	-	-	-	0.0000	0.0049

i \ n	41	42	43	44	45	46	47	48	49	50
1	0.3940	0.3917	0.3894	0.3872	0.3850	0.3830	0.3808	0.3789	0.3770	0.3751
2	0.2719	0.2701	0.2684	0.2667	0.2651	0.2635	0.2620	0.2604	0.2589	0.2574
3	0.2357	0.2345	0.2334	0.2323	0.2313	0.2302	0.2291	0.2281	0.2271	0.2260
4	0.2091	0.2085	0.2078	0.2072	0.2065	0.2058	0.2052	0.2045	0.2038	0.2032
5	0.1876	0.1874	0.1871	0.1868	0.1865	0.1862	0.1859	0.1855	0.1851	0.1847
6	0.1693	0.1694	0.1695	0.1695	0.1695	0.1695	0.1695	0.1693	0.1692	0.1691
7	0.1531	0.1535	0.1539	0.1542	0.1545	0.1548	0.1550	0.1551	0.1553	0.1554
8	0.1384	0.1392	0.1398	0.1405	0.1410	0.1415	0.1420	0.1423	0.1427	0.1430
9	0.1249	0.1259	0.1268	0.1278	0.1286	0.1293	0.1300	0.1306	0.1312	0.1317
10	0.1123	0.1136	0.1149	0.1160	0.1170	0.1180	0.1189	0.1197	0.1205	0.1212
11	0.1004	0.1020	0.1035	0.1049	0.1062	0.1073	0.1085	0.1095	0.1105	0.1113
12	0.0891	0.0909	0.0927	0.0943	0.0959	0.0972	0.0986	0.0998	0.1010	0.1020
13	0.0782	0.0804	0.0824	0.0842	0.0860	0.0876	0.0892	0.0906	0.0919	0.0932
14	0.0677	0.0701	0.0724	0.0745	0.0765	0.0783	0.0801	0.0817	0.0832	0.0846
15	0.0575	0.0602	0.0628	0.0651	0.0673	0.0694	0.0713	0.0731	0.0748	0.0764
16	0.0476	0.0506	0.0534	0.0560	0.0584	0.0607	0.0628	0.0648	0.0667	0.0685
17	0.0379	0.0411	0.0442	0.0471	0.0497	0.0522	0.0546	0.0568	0.0588	0.0608
18	0.0283	0.0318	0.0352	0.0383	0.0412	0.0439	0.0465	0.0489	0.0511	0.0532
19	0.0188	0.0227	0.0263	0.0296	0.0328	0.0357	0.0385	0.0411	0.0436	0.0459
20	0.0094	0.0136	0.0175	0.0211	0.0245	0.0277	0.0307	0.0335	0.0361	0.0386
21	0.0000	0.0045	0.0087	0.0126	0.0163	0.0197	0.0229	0.0259	0.0288	0.0314
22	-	-	0.0000	0.0042	0.0081	0.0118	0.0153	0.0185	0.0215	0.0244
23	-	-	-	-	0.0000	0.0039	0.0076	0.0111	0.0143	0.0174
24	-	-	-	-	-	-	0.0000	0.0037	0.0071	0.0104
25	-	-	-	-	-	-	-	-	0.0000	0.0035

TABLE A-2. QUANTILES OF THE SHAPIRO-WILK W TEST FOR NORMALITY

n	$W_{0.01}$	$W_{0.02}$	$W_{0.05}$	$W_{0.10}$	$W_{0.50}$
3	0.753	0.756	0.767	0.789	0.959
4	0.687	0.707	0.748	0.792	0.935
5	0.686	0.715	0.762	0.806	0.927
6	0.713	0.743	0.788	0.826	0.927
7	0.730	0.760	0.803	0.838	0.928
8	0.749	0.778	0.818	0.851	0.932
9	0.764	0.791	0.829	0.859	0.935
10	0.781	0.806	0.842	0.869	0.938
11	0.792	0.817	0.850	0.876	0.940
12	0.805	0.828	0.859	0.883	0.943
13	0.814	0.837	0.866	0.889	0.945
14	0.825	0.846	0.874	0.895	0.947
15	0.835	0.855	0.881	0.901	0.950
16	0.844	0.863	0.887	0.906	0.952
17	0.851	0.869	0.892	0.910	0.954
18	0.858	0.874	0.897	0.914	0.956
19	0.863	0.879	0.901	0.917	0.957
20	0.868	0.884	0.905	0.920	0.959
21	0.873	0.888	0.908	0.923	0.960
22	0.878	0.892	0.911	0.926	0.961
23	0.881	0.895	0.914	0.928	0.962
24	0.884	0.898	0.916	0.930	0.963
25	0.888	0.901	0.918	0.931	0.964
26	0.891	0.904	0.920	0.933	0.965
27	0.894	0.906	0.923	0.935	0.965
28	0.896	0.908	0.924	0.936	0.966
29	0.898	0.910	0.926	0.937	0.966
30	0.900	0.912	0.927	0.939	0.967
31	0.902	0.914	0.929	0.940	0.967
32	0.904	0.915	0.930	0.941	0.968
33	0.906	0.917	0.931	0.942	0.968
34	0.908	0.919	0.933	0.943	0.969
35	0.910	0.920	0.934	0.944	0.969
36	0.912	0.922	0.935	0.945	0.970
37	0.914	0.924	0.936	0.946	0.970
38	0.916	0.925	0.938	0.947	0.971
39	0.917	0.927	0.939	0.948	0.971
40	0.919	0.928	0.940	0.949	0.972
41	0.920	0.929	0.941	0.950	0.972
42	0.922	0.930	0.942	0.951	0.972
43	0.923	0.932	0.943	0.951	0.973
44	0.924	0.933	0.944	0.952	0.973
45	0.926	0.934	0.945	0.953	0.973
46	0.927	0.935	0.945	0.953	0.974
47	0.928	0.936	0.946	0.954	0.974
48	0.929	0.937	0.947	0.954	0.974
49	0.929	0.937	0.947	0.955	0.974
50	0.930	0.938	0.947	0.955	0.974

Values of W such that 100 p percent of the distribution of W is less than Wp.

Source: After Shapiro and Wilk, 1965. Used by permission of the Biometrika Trustees.

TABLE A-3. TABLE OF k USED IN CALCULATING TOLERANCE INTERVALS FOR A NORMALLY DISTRIBUTED VARIABLE (α = 0.05, P_o, and sample size n)

n	P_o			
	0.25	0.1	0.05	0.010
2	11.763	20.581	26.260	37.094
3	3.806	6.155	7.656	10.553
4	2.618	4.162	5.144	7.042
5	2.150	3.407	4.203	5.741
6	1.895	3.006	3.708	5.062
7	1.732	2.755	3.399	4.642
8	1.618	2.582	3.187	4.354
9	1.532	2.454	3.031	4.143
10	1.465	2.355	2.911	3.981
11	1.411	2.275	2.815	3.852
12	1.366	2.210	2.736	3.747
13	1.328	2.155	2.671	3.659
14	1.296	2.109	2.614	3.585
15	1.268	2.068	2.566	3.520
16	1.243	2.033	2.524	3.464
17	1.220	2.002	2.486	3.414
18	1.201	1.974	2.453	3.370
19	1.183	1.949	2.423	3.331
20	1.166	1.926	2.396	3.295
21	1.152	1.905	2.371	3.263
22	1.138	1.886	2.349	3.233
23	1.125	1.869	2.328	3.206
24	1.114	1.853	2.309	3.181
25	1.103	1.838	2.292	3.158
26	1.093	1.824	2.275	3.136
27	1.083	1.811	2.260	3.116
28	1.075	1.799	2.246	3.098
29	1.066	1.788	2.232	3.080
30	1.058	1.777	2.220	3.064
35	1.025	1.732	2.167	2.995
40	0.999	1.697	2.125	2.941
50	0.960	1.646	2.065	2.862
70	0.911	1.581	1.990	2.765
100	0.870	1.527	1.927	2.684
200	0.809	1.450	1.837	2.570
500	0.758	1.385	1.763	2.475
infinity	0.674	1.282	1.645	2.326

From U.S. EPA (1988).

TABLE A-4. TABLE OF ONE-SIDED CONFIDENCE LIMIT VALUES
(for selected α and degrees of freedom)

Use alpha to determine which column to use. Use the degrees of freedom to determine which row to use. The t value will be found at the intersection of the row and column. For values of degrees of freedom not in the table, interpolate between those values provided.

		α for determining $t_{1-\alpha,df}$							
		.25	.10	.05	.025	.01	.005	.0025	.001
	df								
	1	1.000	3.078	6.314	12.706	31.821	63.657	127.321	318.309
	2	0.816	1.886	2.920	4.303	6.965	9.925	14.089	22.327
Degrees of	3	0.765	1.638	2.353	3.182	4.541	5.841	7.453	10.215
Freedom	4	0.741	1.533	2.132	2.776	3.747	4.604	5.598	7.173
df	5	0.727	1.476	2.015	2.571	3.365	4.032	4.773	5.893
	6	0.718	1.440	1.943	2.447	3.143	3.707	4.317	5.208
	7	0.711	1.415	1.895	2.365	2.998	3.499	4.029	4.785
	8	0.706	1.397	1.860	2.306	2.896	3.355	3.833	4.501
	9	0.703	1.383	1.833	2.262	2.821	3.250	3.690	4.297
	10	0.700	1.372	1.812	2.228	2.764	3.169	3.581	4.144
	11	0.697	1.363	1.796	2.201	2.718	3.106	3.497	4.025
	12	0.695	1.356	1.782	2.179	2.681	3.055	3.428	3.930
	13	0.694	1.350	1.771	2.160	2.650	3.012	3.372	3.852
	14	0.692	1.345	1.761	2.145	2.624	2.977	3.326	3.787
	15	0.691	1.341	1.753	2.131	2.602	2.947	3.286	3.733
	16	0.690	1.337	1.746	2.120	2.583	2.921	3.252	3.686
	17	0.689	1.333	1.740	2.110	2.567	2.898	3.222	3.646
	18	0.688	1.330	1.734	2.101	2.552	2.878	3.197	3.610
	19	0.688	1.328	1.729	2.093	2.539	2.861	3.174	3.579
	20	0.687	1.325	1.725	2.086	2.528	2.845	3.153	3.552
	21	0.686	1.323	1.721	2.080	2.518	2.831	3.135	3.527
	22	0.686	1.321	1.717	2.074	2.508	2.819	3.119	3.505
	23	0.685	1.319	1.714	2.069	2.500	2.807	3.104	3.485
	24	0.685	1.318	1.711	2.064	2.492	2.797	3.091	3.467
	25	0.684	1.316	1.708	2.060	2.485	2.787	3.078	3.450
	26	0.684	1.315	1.706	2.056	2.479	2.779	3.067	3.435
	27	0.684	1.314	1.703	2.052	2.473	2.771	3.057	3.421
	28	0.683	1.313	1.701	2.048	2.467	2.763	3.047	3.408
	29	0.683	1.311	1.699	2.045	2.462	2.756	3.038	3.396
	30	0.683	1.310	1.697	2.042	2.457	2.750	3.030	3.385
	40	0.681	1.303	1.684	2.021	2.423	2.704	2.971	3.307
	60	0.679	1.296	1.671	2.000	2.390	2.660	2.915	3.232
	120	0.677	1.289	1.658	1.980	2.358	2.617	2.860	3.160
	400	0.675	1.284	1.649	1.966	2.336	2.588	2.823	3.111
	infinite	0.674	1.282	1.645	1.960	2.326	2.576	2.807	3.090

TABLE A-5. BINOMIAL DISTRIBUTION

n	y	p = .05	.10	.15	.20	.25	.30	.35	.40	.45
1	0	.9500	.9000	.8500	.8000	.7500	.7000	.6500	.6000	.5500
	1	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
2	0	.9025	.8100	.7225	.6400	.5625	.4900	.4225	.3600	.3025
	1	.9975	.9900	.9775	.9600	.9375	.9100	.8775	.8400	.7975
	2	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
3	0	.8574	.7290	.6141	.5120	.4219	.3430	.2746	.2160	.1664
	1	.9928	.9720	.9392	.8960	.8438	.7840	.7182	.6480	.5748
	2	.9999	.9990	.9966	.9920	.9844	.9730	.9571	.9360	.9089
	3	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
4	0	.8145	.6561	.5220	.4096	.3164	.2401	.1785	.1296	.0915
	1	.9860	.9477	.8905	.8192	.7383	.6517	.5630	.4752	.3910
	2	.9995	.9963	.9880	.9728	.9492	.9163	.8735	.8208	.7585
	3	1.0000	.9999	.9995	.9984	.9961	.9919	.9850	.9744	.9590
	4	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
5	0	.7738	.5905	.4437	.3277	.2373	.1681	.1160	.0778	.0503
	1	.9774	.9185	.8352	.7373	.6328	.5282	.4284	.3370	.2562
	2	.9988	.9914	.9734	.9421	.8965	.8369	.7648	.6826	.5931
	3	1.0000	.9995	.9978	.9933	.9844	.9692	.9460	.9130	.8688
	4	1.0000	1.0000	.9999	.9997	.9990	.9976	.9947	.9898	.9815
	5	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
6	0	.7351	.5314	.3771	.2621	.1780	.1176	.0754	.0467	.0277
	1	.9672	.8857	.7765	.6554	.5339	.4202	.3191	.2333	.1636
	2	.9978	.9842	.9527	.9011	.8306	.7443	.6471	.5443	.4415
	3	.9999	.9987	.9941	.9830	.9624	.9295	.8826	.8208	.7447
	4	1.0000	.9999	.9996	.9984	.9954	.9891	.9777	.9590	.9308
	5	1.0000	1.0000	1.0000	.9999	.9998	.9993	.9982	.9959	.9917
	6	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
7	0	.6983	.4783	.3206	.2097	.1335	.0824	.0490	.0280	.0152
	1	.9556	.8503	.7166	.5767	.4449	.3294	.2338	.1586	.1024
	2	.9962	.9743	.9262	.8520	.7564	.6471	.5323	.4199	.3164
	3	.9998	.9973	.9879	.9667	.9294	.8740	.8002	.7102	.6083
	4	1.0000	.9998	.9988	.9953	.9871	.9712	.9444	.9037	.8471
	5	1.0000	1.0000	.9999	.9996	.9987	.9962	.9910	.9812	.9643
	6	1.0000	1.0000	1.0000	1.0000	.9999	.9998	.9994	.9984	.9963
	7	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000

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TABLE A-5. (Continued)

n	y	$p = .50$	.55	.60	.65	.70	.75	.80	.85	.90	.95
1	0	.5000	.4500	.4000	.3500	.3000	.2500	.2000	.1500	.1000	.0500
	1	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
2	0	.2500	.2025	.1600	.1225	.0900	.0625	.0400	.0225	.0100	.0025
	1	.7500	.6975	.6400	.5775	.5100	.4375	.3600	.2775	.1900	.0975
	2	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
3	0	.1250	.0911	.0640	.0429	.0270	.0156	.0080	.0034	.0010	.0001
	1	.5000	.4252	.3520	.2818	.2160	.1562	.1040	.0608	.0280	.0072
	2	.8750	.8336	.7840	.7254	.6570	.5781	.4880	.3859	.2710	.1426
	3	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
4	0	.0625	.0410	.0256	.0150	.0081	.0039	.0016	.0005	.0001	.0000
	1	.3125	.2415	.1792	.1265	.0837	.0508	.0272	.0120	.0037	.0005
	2	.6875	.6090	.5248	.4370	.3483	.2617	.1808	.1095	.0523	.0140
	3	.9375	.9085	.8704	.8215	.7599	.6836	.5904	.4780	.3439	.1855
	4	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
5	0	.0312	.0185	.0102	.0053	.0024	.0010	.0003	.0001	.0000	.0000
	1	.1875	.1312	.0870	.0540	.0308	.0156	.0067	.0022	.0005	.0000
	2	.5000	.4069	.3174	.2352	.1631	.1035	.0579	.0266	.0086	.0012
	3	.8125	.7438	.6630	.5716	.4718	.3672	.2627	.1648	.0815	.0226
	4	.9688	.9497	.9222	.8840	.8319	.7627	.6723	.5563	.4095	.2262
	5	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
6	0	.0156	.0083	.0041	.0018	.0007	.0002	.0001	.0000	.0000	.0000
	1	.1094	.0692	.0410	.0223	.0109	.0046	.0016	.0004	.0001	.0000
	2	.3438	.2553	.1792	.1174	.0705	.0376	.0170	.0059	.0013	.0001
	3	.6562	.5585	.4557	.3529	.2557	.1694	.0989	.0473	.0158	.0022
	4	.8906	.8364	.7667	.6809	.5798	.4661	.3446	.2235	.1143	.0328
	5	.9844	.9723	.9533	.9246	.8824	.8220	.7379	.6229	.4686	.2649
	6	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
7	0	.0078	.0037	.0016	.0006	.0002	.0001	.0000	.0000	.0000	.0000
	1	.0625	.0357	.0188	.0090	.0038	.0013	.0004	.0001	.0000	.0000
	2	.2266	.1529	.0963	.0556	.0288	.0129	.0047	.0012	.0002	.0000
	3	.5000	.3917	.2898	.1998	.1260	.0706	.0333	.0121	.0027	.0002
	4	.7734	.6836	.5801	.4677	.3529	.2436	.1480	.0738	.0257	.0038
	5	.9375	.8976	.8414	.7662	.6706	.5551	.4233	.2834	.1497	.0444
	6	.9922	.9848	.9720	.9510	.9176	.8665	.7903	.6794	.5217	.3017
	7	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000

TABLE A-5. (Continued)

n	y	$p = .05$	.10	.15	.20	.25	.30	.35	.40	.45
8	0	.6634	.4305	.2725	.1678	.1001	.0576	.0319	.0168	.0084
	1	.9428	.8131	.6572	.5033	.3671	.2553	.1691	.1064	.0632
	2	.9942	.9619	.8948	.7969	.6785	.5518	.4278	.3154	.2201
	3	.9996	.9950	.9786	.9437	.8862	.8059	.7064	.5941	.4770
	4	1.0000	.9996	.9971	.9896	.9727	.9420	.8939	.8263	.7396
	5	1.0000	1.0000	.9998	.9988	.9958	.9887	.9747	.9502	.9115
	6	1.0000	1.0000	1.0000	.9999	.9996	.9987	.9964	.9915	.9819
	7	1.0000	1.0000	1.0000	1.0000	1.0000	.9999	.9998	.9993	.9983
	8	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
9	0	.6302	.3874	.2316	.1342	.0751	.0404	.0207	.0101	.0046
	1	.9288	.7748	.5995	.4362	.3003	.1960	.1211	.0705	.0385
	2	.9916	.9470	.8591	.7382	.6007	.4628	.3373	.2318	.1495
	3	.9994	.9917	.9661	.9144	.8343	.7297	.6089	.4826	.3614
	4	1.0000	.9991	.9944	.9804	.9511	.9012	.8283	.7334	.6214
	5	1.0000	.9999	.9994	.9969	.9900	.9747	.9464	.9006	.8342
	6	1.0000	1.0000	1.0000	.9997	.9987	.9957	.9888	.9750	.9502
	7	1.0000	1.0000	1.0000	1.0000	.9999	.9996	.9986	.9962	.9909
	8	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	.9999	.9997	.9992
	9	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
10	0	.5987	.3487	.1969	.1074	.0563	.0282	.0135	.0060	.0025
	1	.9139	.7361	.5443	.3758	.2440	.1493	.0860	.0464	.0233
	2	.9885	.9298	.8202	.6778	.5256	.3828	.2616	.1673	.0996
	3	.9990	.9872	.9500	.8791	.7759	.6496	.5138	.3823	.2660
	4	.9999	.9984	.9901	.9672	.9219	.8497	.7515	.6331	.5044
	5	1.0000	.9999	.9986	.9936	.9803	.9527	.9051	.8338	.7384
	6	1.0000	1.0000	.9999	.9991	.9965	.9894	.9740	.9452	.8980
	7	1.0000	1.0000	1.0000	.9999	.9996	.9984	.9952	.9877	.9726
	8	1.0000	1.0000	1.0000	1.0000	1.0000	.9999	.9995	.9983	.9955
	9	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	.9999	.9997
	10	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
11	0	.5688	.3138	.1673	.0859	.0422	.0198	.0088	.0036	.0014
	1	.8981	.6974	.4922	.3221	.1971	.1130	.0606	.0302	.0139
	2	.9848	.9104	.7788	.6174	.4552	.3127	.2001	.1189	.0652
	3	.9984	.9815	.9306	.8389	.7133	.5696	.4256	.2963	.1911
	4	.9999	.9972	.9841	.9496	.8854	.7897	.6683	.5328	.3971
	5	1.0000	.9997	.9973	.9883	.9657	.9218	.8513	.7535	.6331
	6	1.0000	1.0000	.9997	.9980	.9924	.9784	.9499	.9006	.8262
	7	1.0000	1.0000	1.0000	.9998	.9988	.9957	.9878	.9707	.9390
	8	1.0000	1.0000	1.0000	1.0000	.9999	.9994	.9980	.9941	.9852
	9	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	.9998	.9993	.9978
	10	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	.9998
	11	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000

TABLE A-5. (Continued)

n	y	$p = .50$	.55	.60	.65	.70	.75	.80	.85	.90	.95
8	0	.0039	.0017	.0007	.0002	.0001	.0000	.0000	.0000	.0000	.0000
	1	.0352	.0181	.0085	.0036	.0013	.0004	.0001	.0000	.0000	.0000
	2	.1445	.0885	.0498	.0253	.0113	.0042	.0012	.0002	.0000	.0000
	3	.3633	.2604	.1737	.1061	.0580	.0273	.0104	.0029	.0004	.0000
	4	.6367	.5230	.4059	.2936	.1941	.1138	.0563	.0214	.0050	.0004
	5	.8555	.7799	.6846	.5722	.4482	.3215	.2031	.1052	.0381	.0058
	6	.9648	.9368	.8936	.8309	.7447	.6329	.4967	.3428	.1869	.0572
	7	.9961	.9916	.9832	.9681	.9424	.8999	.8322	.7275	.5695	.3366
	8	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
9	0	.0020	.0008	.0003	.0001	.0000	.0000	.0000	.0000	.0000	.0000
	1	.0195	.0091	.0038	.0014	.0004	.0001	.0000	.0000	.0000	.0000
	2	.0898	.0498	.0250	.0112	.0043	.0013	.0003	.0000	.0000	.0000
	3	.2539	.1658	.0994	.0536	.0253	.0100	.0031	.0006	.0001	.0000
	4	.5000	.3786	.2666	.1717	.0988	.0489	.0196	.0056	.0009	.0000
	5	.7461	.6386	.5174	.3911	.2703	.1657	.0856	.0339	.0083	.0006
	6	.9102	.8505	.7682	.6627	.5372	.3993	.2618	.1409	.0530	.0084
	7	.9805	.9615	.9295	.8789	.8040	.6997	.5638	.4005	.2252	.0712
	8	.9980	.9954	.9899	.9793	.9596	.9249	.8658	.7684	.6126	.3698
	9	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
10	0	.0010	.0003	.0001	.0000	.0000	.0000	.0000	.0000	.0000	.0000
	1	.0107	.0045	.0017	.0005	.0001	.0000	.0000	.0000	.0000	.0000
	2	.0547	.0274	.0123	.0048	.0016	.0004	.0001	.0000	.0000	.0000
	3	.1719	.1020	.0548	.0260	.0106	.0035	.0009	.0001	.0000	.0000
	4	.3770	.2616	.1662	.0949	.0473	.0197	.0064	.0014	.0001	.0000
	5	.6230	.4956	.3669	.2485	.1503	.0781	.0328	.0099	.0016	.0001
	6	.8281	.7340	.6177	.4862	.3504	.2241	.1209	.0500	.0128	.0010
	7	.9453	.9004	.8327	.7384	.6172	.4744	.3222	.1798	.0702	.0115
	8	.9893	.9767	.9536	.9140	.8507	.7560	.6242	.4557	.2639	.0861
	9	.9990	.9975	.9940	.9865	.9718	.9437	.8926	.8031	.6513	.4013
	10	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
11	0	.0005	.0002	.0000	.0000	.0000	.0000	.0000	.0000	.0000	.0000
	1	.0059	.0022	.0007	.0002	.0000	.0000	.0000	.0000	.0000	.0000
	2	.0327	.0148	.0059	.0020	.0006	.0001	.0000	.0000	.0000	.0000
	3	.1133	.0610	.0293	.0122	.0043	.0012	.0002	.0000	.0000	.0000
	4	.2744	.1738	.0994	.0501	.0216	.0076	.0020	.0003	.0000	.0000
	5	.5000	.3669	.2465	.1487	.0782	.0343	.0117	.0027	.0003	.0000
	6	.7256	.6029	.4672	.3317	.2103	.1146	.0504	.0159	.0028	.0001
	7	.8867	.8089	.7037	.5744	.4304	.2867	.1611	.0694	.0185	.0016
	8	.9673	.9348	.8811	.7999	.6873	.5448	.3826	.2212	.0896	.0152
	9	.9941	.9861	.9698	.9394	.8870	.8029	.6779	.5078	.3026	.1019
	10	.9995	.9986	.9964	.9912	.9802	.9578	.9141	.8327	.6862	.4312
	11	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000

TABLE A-5. (Continued)

n	y	$p = .05$	.10	.15	.20	.25	.30	.35	.40	.45
12	0	.5404	.2824	.1422	.0687	.0317	.0138	.0057	.0022	.0008
	1	.8816	.6590	.4435	.2749	.1584	.0850	.0424	.0196	.0083
	2	.9804	.8891	.7358	.5583	.3907	.2528	.1513	.0834	.0421
	3	.9978	.9744	.9078	.7946	.6488	.4925	.3467	.2253	.1345
	4	.9998	.9957	.9761	.9274	.8424	.7237	.5833	.4382	.3044
	5	1.0000	.9995	.9954	.9806	.9456	.8822	.7873	.6652	.5269
	6	1.0000	.9999	.9993	.9961	.9857	.9614	.9154	.8418	.7393
	7	1.0000	1.0000	.9999	.9994	.9972	.9905	.9745	.9427	.8883
	8	1.0000	1.0000	1.0000	.9999	.9996	.9983	.9944	.9847	.9644
	9	1.0000	1.0000	1.0000	1.0000	1.0000	.9998	.9992	.9972	.9921
	10	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	.9999	.9997	.9989
	11	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	.9999
	12	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
13	0	.5133	.2542	.1209	.0550	.0238	.0097	.0037	.0013	.0004
	1	.8646	.6213	.3983	.2336	.1267	.0637	.0296	.0126	.0049
	2	.9755	.8661	.6920	.5017	.3326	.2025	.1132	.0579	.0269
	3	.9969	.9658	.8820	.7473	.5843	.4206	.2783	.1686	.0929
	4	.9997	.9935	.9658	.9009	.7940	.6543	.5005	.3530	.2279
	5	1.0000	.9991	.9925	.9700	.9198	.8346	.7159	.5744	.4268
	6	1.0000	.9999	.9987	.9930	.9757	.9376	.8705	.7712	.6437
	7	1.0000	1.0000	.9998	.9988	.9944	.9818	.9538	.9023	.8212
	8	1.0000	1.0000	1.0000	.9998	.9990	.9960	.9874	.9679	.9302
	9	1.0000	1.0000	1.0000	1.0000	.9999	.9993	.9975	.9922	.9797
	10	1.0000	1.0000	1.0000	1.0000	1.0000	.9999	.9997	.9987	.9959
	11	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	.9999	.9995
	12	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
	13	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
14	0	.4877	.2288	.1028	.0440	.0178	.0068	.0024	.0008	.0002
	1	.8470	.5846	.3567	.1979	.1010	.0475	.0205	.0081	.0029
	2	.9699	.8416	.6479	.4481	.2811	.1608	.0839	.0398	.0170
	3	.9958	.9559	.8535	.6982	.5213	.3552	.2205	.1243	.0632
	4	.9996	.9908	.9533	.8702	.7415	.5842	.4227	.2793	.1672
	5	1.0000	.9985	.9885	.9561	.8883	.7805	.6405	.4859	.3373
	6	1.0000	.9998	.9978	.9884	.9617	.9067	.8164	.6925	.5461
	7	1.0000	1.0000	.9997	.9976	.9897	.9685	.9247	.8499	.7414
	8	1.0000	1.0000	1.0000	.9996	.9978	.9917	.9757	.9417	.8811
	9	1.0000	1.0000	1.0000	1.0000	.9997	.9983	.9940	.9825	.9574
	10	1.0000	1.0000	1.0000	1.0000	1.0000	.9998	.9989	.9961	.9886
	11	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	.9999	.9994	.9978
	12	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	.9999	.9997
	13	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
	14	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000

TABLE A-5. (Continued)

n	y	$p = .50$	.55	.60	.65	.70	.75	.80	.85	.90	.95
12	0	.0002	.0001	.0000	.0000	.0000	.0000	.0000	.0000	.0000	.0000
	1	.0032	.0011	.0003	.0001	.0000	.0000	.0000	.0000	.0000	.0000
	2	.0193	.0079	.0028	.0008	.0002	.0000	.0000	.0000	.0000	.0000
	3	.0730	.0356	.0153	.0056	.0017	.0004	.0001	.0000	.0000	.0000
	4	.1938	.1117	.0573	.0255	.0095	.0028	.0006	.0001	.0000	.0000
	5	.3872	.2607	.1582	.0846	.0386	.0143	.0039	.0007	.0001	.0000
	6	.6128	.4731	.3348	.2127	.1178	.0544	.0194	.0046	.0005	.0000
	7	.8062	.6956	.5618	.4167	.2763	.1576	.0726	.0239	.0043	.0002
	8	.9270	.8655	.7747	.6533	.5075	.3512	.2054	.0922	.0256	.0022
	9	.9807	.9579	.9166	.8487	.7472	.6093	.4417	.2642	.1109	.0196
	10	.9968	.9917	.9804	.9576	.9150	.8416	.7251	.5565	.3410	.1184
	11	.9998	.9992	.9978	.9943	.9862	.9683	.9313	.8578	.7176	.4596
	12	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
13	0	.0001	.0000	.0000	.0000	.0000	.0000	.0000	.0000	.0000	.0000
	1	.0017	.0005	.0001	.0000	.0000	.0000	.0000	.0000	.0000	.0000
	2	.0112	.0041	.0013	.0003	.0001	.0000	.0000	.0000	.0000	.0000
	3	.0461	.0203	.0078	.0025	.0007	.0001	.0000	.0000	.0000	.0000
	4	.1334	.0698	.0321	.0126	.0040	.0010	.0002	.0000	.0000	.0000
	5	.2905	.1788	.0977	.0462	.0182	.0056	.0012	.0002	.0000	.0000
	6	.5000	.3563	.2288	.1295	.0624	.0243	.0070	.0013	.0001	.0000
	7	.7095	.5732	.4256	.2841	.1654	.0802	.0300	.0075	.0009	.0000
	8	.8666	.7721	.6470	.4995	.3457	.2060	.0991	.0342	.0065	.0003
	9	.9539	.9071	.8314	.7217	.5794	.4157	.2527	.1180	.0342	.0031
	10	.9888	.9731	.9421	.8868	.7975	.6674	.4983	.3080	.1339	.0245
	11	.9983	.9951	.9874	.9704	.9363	.8733	.7664	.6017	.3787	.1354
	12	.9999	.9996	.9987	.9963	.9903	.9762	.9450	.8791	.7458	.4867
	13	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
14	0	.0001	.0000	.0000	.0000	.0000	.0000	.0000	.0000	.0000	.0000
	1	.0009	.0003	.0001	.0000	.0000	.0000	.0000	.0000	.0000	.0000
	2	.0065	.0022	.0006	.0001	.0000	.0000	.0000	.0000	.0000	.0000
	3	.0287	.0114	.0039	.0011	.0002	.0000	.0000	.0000	.0000	.0000
	4	.0898	.0426	.0175	.0060	.0017	.0003	.0000	.0000	.0000	.0000
	5	.2120	.1189	.0583	.0243	.0083	.0022	.0004	.0000	.0000	.0000
	6	.3953	.2586	.1501	.0753	.0315	.0103	.0024	.0003	.0000	.0000
	7	.6047	.4539	.3075	.1836	.0933	.0383	.0116	.0022	.0002	.0000
	8	.7880	.6627	.5141	.3595	.2195	.1117	.0439	.0115	.0015	.0000
	9	.9102	.8328	.7207	.5773	.4158	.2585	.1298	.0467	.0092	.0004
	10	.9713	.9368	.8757	.7795	.6448	.4787	.3018	.1465	.0441	.0042
	11	.9935	.9830	.9602	.9161	.8392	.7189	.5519	.3521	.1584	.0301
	12	.9991	.9971	.9919	.9795	.9525	.8990	.8021	.6433	.4154	.1530
	13	.9999	.9998	.9992	.9976	.9932	.9822	.9560	.8972	.7712	.5123
	14	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000

TABLE A-5. (Continued)

n	y	$p = .05$	.10	.15	.20	.25	.30	.35	.40	.45
15	0	.4633	.2059	.0874	.0352	.0134	.0047	.0016	.0005	.0001
	1	.8290	.5490	.3186	.1671	.0802	.0353	.0142	.0052	.0017
	2	.9638	.8159	.6042	.3980	.2361	.1268	.0617	.0271	.0107
	3	.9945	.9444	.8227	.6482	.4613	.2969	.1727	.0905	.0424
	4	.9994	.9873	.9383	.8358	.6865	.5155	.3519	.2173	.1204
	5	.9999	.9978	.9832	.9389	.8516	.7216	.5643	.4032	.2608
	6	1.0000	.9997	.9964	.9819	.9434	.8689	.7548	.6098	.4522
	7	1.0000	1.0000	.9994	.9958	.9827	.9500	.8868	.7869	.6535
	8	1.0000	1.0000	.9999	.9992	.9958	.9848	.9578	.9050	.8182
	9	1.0000	1.0000	1.0000	.9999	.9992	.9963	.9876	.9662	.9231
	10	1.0000	1.0000	1.0000	1.0000	.9999	.9993	.9972	.9907	.9745
	11	1.0000	1.0000	1.0000	1.0000	1.0000	.9999	.9995	.9981	.9937
	12	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	.9999	.9997	.9989
	13	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	.9999
	14	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
	15	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
16	0	.4401	.1853	.0743	.0281	.0100	.0033	.0010	.0003	.0001
	1	.8108	.5147	.2839	.1407	.0635	.0261	.0098	.0033	.0010
	2	.9571	.7892	.5614	.3518	.1971	.0994	.0451	.0183	.0066
	3	.9930	.9316	.7899	.5981	.4050	.2459	.1339	.0651	.0281
	4	.9991	.9830	.9209	.7982	.6302	.4499	.2892	.1666	.0853
	5	.9999	.9967	.9765	.9183	.8103	.6598	.4900	.3288	.1976
	6	1.0000	.9995	.9944	.9733	.9204	.8247	.6881	.5272	.3660
	7	1.0000	.9999	.9989	.9930	.9729	.9256	.8406	.7161	.5629
	8	1.0000	1.0000	.9998	.9985	.9925	.9743	.9329	.8577	.7441
	9	1.0000	1.0000	1.0000	.9998	.9984	.9929	.9771	.9417	.8759
	10	1.0000	1.0000	1.0000	1.0000	.9997	.9984	.9938	.9809	.9514
	11	1.0000	1.0000	1.0000	1.0000	1.0000	.9997	.9987	.9951	.9851
	12	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	.9998	.9991	.9965
	13	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	.9999	.9994
	14	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	.9999
	15	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
	16	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000

TABLE A-5. (Continued)

n	y	$p = .50$	.55	.60	.65	.70	.75	.80	.85	.90	.95
15	0	.0000	.0000	.0000	.0000	.0000	.0000	.0000	.0000	.0000	.0000
	1	.0005	.0001	.0000	.0000	.0000	.0000	.0000	.0000	.0000	.0000
	2	.0037	.0011	.0003	.0001	.0000	.0000	.0000	.0000	.0000	.0000
	3	.0176	.0063	.0019	.0005	.0001	.0000	.0000	.0000	.0000	.0000
	4	.0592	.0255	.0093	.0028	.0007	.0001	.0000	.0000	.0000	.0000
	5	.1509	.0769	.0338	.0124	.0037	.0008	.0001	.0000	.0000	.0000
	6	.3036	.1818	.0950	.0422	.0152	.0042	.0008	.0001	.0000	.0000
	7	.5000	.3465	.2131	.1132	.0500	.0173	.0042	.0006	.0000	.0000
	8	.6964	.5478	.3902	.2452	.1311	.0566	.0181	.0036	.0003	.0000
	9	.8491	.7392	.5968	.4357	.2784	.1484	.0611	.0168	.0022	.0001
	10	.9408	.8796	.7827	.6481	.4845	.3135	.1642	.0617	.0127	.0006
	11	.9824	.9576	.9095	.8273	.7031	.5387	.3518	.1773	.0556	.0055
	12	.9963	.9893	.9729	.9383	.8732	.7639	.6020	.3958	.1841	.0362
	13	.9995	.9983	.9948	.9858	.9647	.9198	.8329	.6814	.4510	.1710
	14	1.0000	.9999	.9995	.9984	.9953	.9866	.9648	.9126	.7941	.5367
	15	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
16	0	.0000	.0000	.0000	.0000	.0000	.0000	.0000	.0000	.0000	.0000
	1	.0003	.0001	.0000	.0000	.0000	.0000	.0000	.0000	.0000	.0000
	2	.0021	.0006	.0001	.0000	.0000	.0000	.0000	.0000	.0000	.0000
	3	.0106	.0035	.0009	.0002	.0000	.0000	.0000	.0000	.0000	.0000
	4	.0384	.0149	.0049	.0013	.0003	.0000	.0000	.0000	.0000	.0000
	5	.1051	.0486	.0191	.0062	.0016	.0003	.0000	.0000	.0000	.0000
	6	.2272	.1241	.0583	.0229	.0071	.0016	.0002	.0000	.0000	.0000
	7	.4018	.2559	.1423	.0671	.0257	.0075	.0015	.0002	.0000	.0000
	8	.5982	.4371	.2839	.1594	.0744	.0271	.0070	.0011	.0001	.0000
	9	.7728	.6340	.4728	.3119	.1753	.0796	.0267	.0056	.0005	.0000
	10	.8949	.8024	.6712	.5100	.3402	.1897	.0817	.0235	.0033	.0001
	11	.9616	.9147	.8334	.7108	.5501	.3698	.2018	.0791	.0170	.0009
	12	.9894	.9719	.9349	.8661	.7541	.5950	.4019	.2101	.0684	.0070
	13	.9979	.9934	.9817	.9549	.9006	.8029	.6482	.4386	.2108	.0429
	14	.9997	.9990	.9967	.9902	.9739	.9365	.8593	.7161	.4853	.1892
	15	1.0000	.9999	.9997	.9990	.9967	.9900	.9719	.9257	.8147	.5599
	16	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000

TABLE A-5. (Continued)

n	y	$p = .05$	.10	.15	.20	.25	.30	.35	.40	.45
17	0	.4181	.1668	.0631	.0225	.0075	.0023	.0007	.0002	.0000
	1	.7922	.4818	.2525	.1182	.0501	.0193	.0067	.0021	.0006
	2	.9497	.7618	.5198	.3096	.1637	.0774	.0327	.0123	.0041
	3	.9912	.9174	.7556	.5489	.3530	.2019	.1028	.0464	.0184
	4	.9988	.9779	.9013	.7582	.5739	.3887	.2348	.1260	.0596
	5	.9999	.9953	.9681	.8943	.7653	.5968	.4197	.2639	.1471
	6	1.0000	.9992	.9917	.9623	.8929	.7752	.6188	.4478	.2902
	7	1.0000	.9999	.9983	.9891	.9598	.8954	.7872	.6405	.4743
	8	1.0000	1.0000	.9997	.9974	.9876	.9597	.9006	.8011	.6626
	9	1.0000	1.0000	1.0000	.9995	.9969	.9873	.9617	.9081	.8166
	10	1.0000	1.0000	1.0000	.9999	.9994	.9968	.9880	.9652	.9174
	11	1.0000	1.0000	1.0000	1.0000	.9999	.9993	.9970	.9894	.9699
	12	1.0000	1.0000	1.0000	1.0000	1.0000	.9999	.9994	.9975	.9914
	13	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	.9999	.9995	.9981
	14	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	.9999	.9997
	15	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
	16	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
	17	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
18	0	.3972	.1501	.0536	.0180	.0056	.0016	.0004	.0001	.0000
	1	.7735	.4503	.2241	.0991	.0395	.0142	.0046	.0013	.0003
	2	.9419	.7338	.4797	.2713	.1353	.0600	.0236	.0082	.0025
	3	.9891	.9018	.7202	.5010	.3057	.1646	.0783	.0328	.0120
	4	.9985	.9718	.8794	.7164	.5187	.3327	.1886	.0942	.0411
	5	.9998	.9936	.9581	.8671	.7175	.5344	.3550	.2088	.1077
	6	1.0000	.9988	.9882	.9487	.8610	.7217	.5491	.3743	.2258
	7	1.0000	.9998	.9973	.9837	.9431	.8593	.7283	.5634	.3915
	8	1.0000	1.0000	.9995	.9957	.9807	.9404	.8609	.7368	.5778
	9	1.0000	1.0000	.9999	.9991	.9946	.9790	.9403	.8653	.7473
	10	1.0000	1.0000	1.0000	.9998	.9988	.9939	.9788	.9424	.8720
	11	1.0000	1.0000	1.0000	1.0000	.9998	.9986	.9938	.9797	.9463
	12	1.0000	1.0000	1.0000	1.0000	1.0000	.9997	.9986	.9942	.9817
	13	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	.9997	.9987	.9951
	14	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	.9998	.9990
	15	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	.9999
	16	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
	17	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
	18	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000

TABLE A-5. (Continued)

n	y	$p = .50$	.55	.60	.65	.70	.75	.80	.85	.90	.95
17	0	.0000	.0000	.0000	.0000	.0000	.0000	.0000	.0000	.0000	.0000
	1	.0001	.0000	.0000	.0000	.0000	.0000	.0000	.0000	.0000	.0000
	2	.0012	.0003	.0001	.0000	.0000	.0000	.0000	.0000	.0000	.0000
	3	.0064	.0019	.0005	.0001	.0000	.0000	.0000	.0000	.0000	.0000
	4	.0245	.0086	.0025	.0006	.0001	.0000	.0000	.0000	.0000	.0000
	5	.0717	.0301	.0106	.0030	.0007	.0001	.0000	.0000	.0000	.0000
	6	.1662	.0826	.0348	.0120	.0032	.0006	.0001	.0000	.0000	.0000
	7	.3145	.1834	.0919	.0383	.0127	.0031	.0005	.0000	.0000	.0000
	8	.5000	.3374	.1989	.0994	.0403	.0124	.0026	.0003	.0000	.0000
	9	.6855	.5257	.3595	.2128	.1046	.0402	.0109	.0017	.0001	.0000
	10	.8338	.7098	.5522	.3812	.2248	.1071	.0377	.0083	.0008	.0000
	11	.9283	.8529	.7361	.5803	.4032	.2347	.1057	.0319	.0047	.0001
	12	.9755	.9404	.8740	.7652	.6113	.4261	.2418	.0987	.0221	.0012
	13	.9936	.9816	.9536	.8972	.7981	.6470	.4511	.2444	.0826	.0088
	14	.9988	.9959	.9877	.9673	.9226	.8363	.6904	.4802	.2382	.0503
	15	.9999	.9994	.9979	.9933	.9807	.9499	.8818	.7475	.5182	.2078
	16	1.0000	1.0000	.9998	.9993	.9977	.9925	.9775	.9369	.8332	.5819
	17	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
18	0	.0000	.0000	.0000	.0000	.0000	.0000	.0000	.0000	.0000	.0000
	1	.0001	.0000	.0000	.0000	.0000	.0000	.0000	.0000	.0000	.0000
	2	.0007	.0001	.0000	.0000	.0000	.0000	.0000	.0000	.0000	.0000
	3	.0038	.0010	.0002	.0000	.0000	.0000	.0000	.0000	.0000	.0000
	4	.0154	.0049	.0013	.0003	.0000	.0000	.0000	.0000	.0000	.0000
	5	.0481	.0183	.0058	.0014	.0003	.0000	.0000	.0000	.0000	.0000
	6	.1189	.0537	.0203	.0062	.0014	.0002	.0000	.0000	.0000	.0000
	7	.2403	.1280	.0576	.0212	.0061	.0012	.0002	.0000	.0000	.0000
	8	.4073	.2527	.1347	.0597	.0210	.0054	.0009	.0001	.0000	.0000
	9	.5927	.4222	.2632	.1391	.0596	.0193	.0043	.0005	.0000	.0000
	10	.7597	.6085	.4366	.2717	.1407	.0569	.0163	.0027	.0002	.0000
	11	.8811	.7742	.6257	.4509	.2783	.1390	.0513	.0118	.0012	.0000
	12	.9519	.8923	.7912	.6450	.4656	.2825	.1329	.0419	.0064	.0002
	13	.9846	.9589	.9058	.8114	.6673	.4813	.2836	.1206	.0282	.0015
	14	.9962	.9880	.9672	.9217	.8354	.6943	.4990	.2798	.0982	.0109
	15	.9993	.9975	.9918	.9764	.9400	.8647	.7287	.5203	.2662	.0581
	16	.9999	.9997	.9987	.9954	.9858	.9605	.9009	.7759	.5497	.2265
	17	1.0000	1.0000	.9999	.9996	.9984	.9944	.9820	.9464	.8499	.6028
	18	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000

TABLE A-5. (Continued)

n	y	$p = .05$	.10	.15	.20	.25	.30	.35	.40	.45
19	0	.3774	.1351	.0456	.0144	.0042	.0011	.0003	.0001	.0000
	1	.7547	.4203	.1985	.0829	.0310	.0104	.0031	.0008	.0002
	2	.9335	.7054	.4413	.2369	.1113	.0462	.0170	.0055	.0015
	3	.9869	.8850	.6841	.4551	.2631	.1332	.0591	.0230	.0077
	4	.9980	.9648	.8556	.6733	.4654	.2822	.1500	.0696	.0280
	5	.9998	.9914	.9463	.8369	.6678	.4739	.2968	.1629	.0777
	6	1.0000	.9983	.9837	.9324	.8251	.6655	.4812	.3081	.1727
	7	1.0000	.9997	.9959	.9767	.9225	.8180	.6656	.4878	.3169
	8	1.0000	1.0000	.9992	.9933	.9713	.9161	.8145	.6675	.4940
	9	1.0000	1.0000	.9999	.9984	.9911	.9674	.9125	.8139	.6710
	10	1.0000	1.0000	1.0000	.9997	.9977	.9895	.9653	.9115	.8159
	11	1.0000	1.0000	1.0000	1.0000	.9995	.9972	.9886	.9648	.9129
	12	1.0000	1.0000	1.0000	1.0000	.9999	.9994	.9969	.9884	.9658
	13	1.0000	1.0000	1.0000	1.0000	1.0000	.9999	.9993	.9969	.9891
	14	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	.9999	.9994	.9972
	15	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	.9999	.9995
	16	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	.9999
	17	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
	18	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
	19	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
20	0	.3585	.1216	.0388	.0115	.0032	.0008	.0002	.0000	.0000
	1	.7358	.3917	.1756	.0692	.0243	.0076	.0021	.0005	.0001
	2	.9245	.6769	.4049	.2061	.0913	.0355	.0121	.0036	.0009
	3	.9841	.8670	.6477	.4114	.2252	.1071	.0444	.0160	.0049
	4	.9974	.9568	.8298	.6296	.4148	.2375	.1182	.0510	.0189
	5	.9997	.9887	.9327	.8042	.6172	.4164	.2454	.1256	.0553
	6	1.0000	.9976	.9781	.9133	.7858	.6080	.4166	.2500	.1299
	7	1.0000	.9996	.9941	.9679	.8982	.7723	.6010	.4159	.2520
	8	1.0000	.9999	.9987	.9900	.9591	.8867	.7624	.5956	.4143
	9	1.0000	1.0000	.9998	.9974	.9861	.9520	.8782	.7553	.5914
	10	1.0000	1.0000	1.0000	.9994	.9961	.9829	.9468	.8725	.7507
	11	1.0000	1.0000	1.0000	.9999	.9991	.9949	.9804	.9435	.8692
	12	1.0000	1.0000	1.0000	1.0000	.9998	.9987	.9940	.9790	.9420
	13	1.0000	1.0000	1.0000	1.0000	1.0000	.9997	.9985	.9935	.9786
	14	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	.9997	.9984	.9936
	15	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	.9997	.9985
	16	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	.9997
	17	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
	18	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
	19	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
	20	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000

TABLE A-5. (Continued)

n	y	$p = .50$	.55	.60	.65	.70	.75	.80	.85	.90	.95
19	0	.0000	.0000	.0000	.0000	.0000	.0000	.0000	.0000	.0000	.0000
	1	.0000	.0000	.0000	.0000	.0000	.0000	.0000	.0000	.0000	.0000
	2	.0004	.0001	.0000	.0000	.0000	.0000	.0000	.0000	.0000	.0000
	3	.0022	.0005	.0001	.0000	.0000	.0000	.0000	.0000	.0000	.0000
	4	.0096	.0028	.0006	.0001	.0000	.0000	.0000	.0000	.0000	.0000
	5	.0318	.0109	.0031	.0007	.0001	.0000	.0000	.0000	.0000	.0000
	6	.0835	.0342	.0116	.0031	.0006	.0001	.0000	.0000	.0000	.0000
	7	.1796	.0871	.0352	.0114	.0028	.0005	.0000	.0000	.0000	.0000
	8	.3238	.1841	.0885	.0347	.0105	.0023	.0003	.0000	.0000	.0000
	9	.5000	.3290	.1861	.0875	.0326	.0089	.0016	.0001	.0000	.0000
	10	.6762	.5060	.3325	.1855	.0839	.0287	.0067	.0008	.0000	.0000
	11	.8204	.6831	.5122	.3344	.1820	.0775	.0233	.0041	.0003	.0000
	12	.9165	.8273	.6919	.5188	.3345	.1749	.0676	.0163	.0017	.0000
	13	.9682	.9223	.8371	.7032	.5261	.3322	.1631	.0537	.0086	.0002
	14	.9904	.9720	.9304	.8500	.7178	.5346	.3267	.1444	.0352	.0020
	15	.9978	.9923	.9770	.9409	.8668	.7369	.5449	.3159	.1150	.0132
	16	.9996	.9985	.9945	.9830	.9538	.8887	.7631	.5587	.2946	.0665
	17	1.0000	.9998	.9992	.9969	.9896	.9690	.9171	.8015	.5797	.2453
	18	1.0000	1.0000	.9999	.9997	.9989	.9958	.9856	.9544	.8649	.6226
	19	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
20	0	.0000	.0000	.0000	.0000	.0000	.0000	.0000	.0000	.0000	.0000
	1	.0000	.0000	.0000	.0000	.0000	.0000	.0000	.0000	.0000	.0000
	2	.0002	.0000	.0000	.0000	.0000	.0000	.0000	.0000	.0000	.0000
	3	.0013	.0003	.0000	.0000	.0000	.0000	.0000	.0000	.0000	.0000
	4	.0059	.0015	.0003	.0000	.0000	.0000	.0000	.0000	.0000	.0000
	5	.0207	.0064	.0016	.0003	.0000	.0000	.0000	.0000	.0000	.0000
	6	.0577	.0214	.0065	.0015	.0003	.0000	.0000	.0000	.0000	.0000
	7	.1316	.0580	.0210	.0060	.0013	.0002	.0000	.0000	.0000	.0000
	8	.2517	.1308	.0565	.0196	.0051	.0009	.0001	.0000	.0000	.0000
	9	.4119	.2493	.1275	.0532	.0171	.0039	.0006	.0000	.0000	.0000
	10	.5881	.4086	.2447	.1218	.0480	.0139	.0026	.0002	.0000	.0000
	11	.7483	.5857	.4044	.2376	.1133	.0409	.0100	.0013	.0001	.0000
	12	.8684	.7480	.5841	.3990	.2277	.1018	.0321	.0059	.0004	.0000
	13	.9423	.8701	.7500	.5834	.3920	.2142	.0867	.0219	.0024	.0000
	14	.9793	.9447	.8744	.7546	.5836	.3828	.1958	.0673	.0113	.0003
	15	.9941	.9811	.9490	.8818	.7625	.5852	.3704	.1702	.0432	.0026
	16	.9987	.9951	.9840	.9556	.8929	.7748	.5886	.3523	.1330	.0159
	17	.9998	.9991	.9964	.9879	.9645	.9087	.7939	.5951	.3231	.0755
	18	1.0000	.9999	.9995	.9979	.9924	.9757	.9308	.8244	.6083	.2642
	19	1.0000	1.0000	1.0000	.9998	.9992	.9968	.9885	.9612	.8784	.6415
	20	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000

TABLE A-6. CUMULATIVE NORMAL DISTRIBUTION (VALUES OF p CORRESPONDING TO Z_p FOR THE NORMAL CURVE)

Z_p	.00	.01	.02	.03	.04	.05	.06	.07	.08	.09
.0	.5000	.5040	.5080	.5120	.5160	.5199	.5239	.5279	.5319	.5359
.1	.5398	.5438	.5478	.5517	.5557	.5596	.5636	.5674	.5714	.5753
.2	.5793	.5832	.5871	.5910	.5948	.5987	.6026	.6064	.6103	.6141
.3	.6179	.6217	.6255	.6293	.6331	.6368	.6406	.6443	.6480	.6517
.4	.6554	.6591	.6628	.6664	.6700	.6736	.6772	.6808	.6844	.6879
.5	.6915	.6950	.6985	.7019	.7054	.7088	.7123	.7157	.7190	.7224
.6	.7257	.7291	.7324	.7357	.7389	.7422	.7454	.7486	.7517	.7549
.7	.7580	.7611	.7642	.7673	.7704	.7734	.7764	.7794	.7823	.7852
.8	.7881	.7910	.7939	.7967	.7995	.8023	.8051	.8078	.8106	.8133
.9	.8159	.8186	.8212	.8238	.8264	.8289	.8315	.8340	.8365	.8389
1.0	.8413	.8438	.8461	.8485	.8508	.8531	.8554	.8577	.8595	.8621
1.1	.8643	.8665	.8686	.8708	.8729	.8749	.8770	.8790	.8810	.8830
1.2	.8849	.8869	.8888	.8907	.8925	.8944	.8962	.8980	.8997	.9015
1.3	.9032	.9049	.9066	.9082	.9099	.9115	.9131	.9147	.9162	.9177
1.4	.9192	.9207	.9222	.9236	.9251	.9265	.9279	.9292	.9306	.9319
1.5	.9332	.9345	.9357	.9370	.9382	.9394	.9406	.9418	.9429	.9441
1.6	.9452	.9463	.9474	.9484	.9495	.9505	.9515	.9525	.9535	.9545
1.7	.9554	.9564	.9573	.9582	.9591	.9599	.9608	.9616	.9625	.9633
1.8	.9641	.9649	.9656	.9664	.9671	.9678	.9686	.9693	.9699	.9706
1.9	.9713	.9719	.9726	.9732	.9738	.9744	.9750	.9756	.9761	.9767
2.0	.9772	.9778	.9783	.9788	.9793	.9798	.9803	.9808	.9812	.9817
2.1	.9821	.9826	.9830	.9834	.9838	.9842	.9846	.9850	.9854	.9857
2.2	.9861	.9864	.9868	.9871	.9875	.9878	.9881	.9884	.9887	.9890
2.3	.9893	.9896	.9898	.9901	.9904	.9906	.9909	.9911	.9913	.9916
2.4	.9918	.9920	.9922	.9925	.9927	.9929	.9931	.9932	.9934	.9936
2.5	.9938	.9940	.9941	.9943	.9945	.9946	.9948	.9949	.9951	.9952
2.6	.9953	.9955	.9956	.9957	.9959	.9960	.9961	.9962	.9963	.9964
2.7	.9965	.9966	.9967	.9968	.9969	.9970	.9971	.9972	.9973	.9974
2.8	.9974	.9975	.9976	.9977	.9977	.9978	.9979	.9979	.9980	.9981
2.9	.9981	.9982	.9982	.9983	.9984	.9984	.9985	.9985	.9986	.9986
3.0	.9987	.9987	.9987	.9988	.9988	.9989	.9989	.9989	.9990	.9990
3.1	.9990	.9991	.9991	.9991	.9992	.9992	.9992	.9992	.9993	.9993
3.2	.9993	.9993	.9994	.9994	.9994	.9994	.9994	.9995	.9995	.9995
3.3	.9995	.9995	.9995	.9996	.9996	.9996	.9996	.9996	.9996	.9997
3.4	.9997	.9997	.9997	.9997	.9997	.9997	.9997	.9997	.9997	.9998

Source: After Pearson and Hartley, 1966. Used by permission of the Biometrika Trustees.

TABLE A-7. VALUES FOR j*, USED FOR ESTIMATING NONPARAMETRIC CONFIDENCE LIMITS FOR THE MEDIAN[1]

Sample Size (n)	j
5	5
6	6
7	7
8	7
9	8
10	9
11	9
12	10
13	10
14	11
15	12
16	12
17	13
18	13
19	14
20	15
21	15
22	16
23	16
24	17
25	18
26	18
27	19
28	19
29	20
30	20
31	21
32	22
33	22
34	23

TABLE A-7. (Continued)

Sample Size (n)	j
35	23
36	24
37	24
38	25
39	26
40	26
41	27
42	27
43	28
44	28
45	29
46	30
47	30
48	31
49	31
50	32

[1]In this table, j is the rank of the value used as an estimate of the nonparametric upper confidence limit of the median. Values shown are for two-sided confidence intervals with $\alpha = 0.05$.

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Tables for distribution-free confidence limits for the median

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SUMMARY

A table of the cumulative binomial distribution is used to provide confidence limits for the population median based on samples of size $n = 3(1)150$ from any continuous univariate distribution. The confidence interval covers the median with a probability of at least $1-2\alpha$, where $1-2\alpha = 0{\cdot}70$, $0{\cdot}80$, $0{\cdot}90$, $0{\cdot}95$, $0{\cdot}98$ and $0{\cdot}99$. The exact probability of coverage is given in each case.

1. INTRODUCTION

Thompson (1936) suggested a procedure for constructing a confidence interval for the median, independently of the underlying population form in the case of a continuous univariate distribution. Nair (1940) established a limited table using these order statistics. The present paper extends that of Nair.

Let $x_1, \ldots, x_n$ be the order statistics from a sample of size n. Let (x_k, x_{n-k+1}) be the smallest symmetrical interval of the form (x_i, x_{n-i+1}) covering the median with probability at least $1-2\alpha$, the exact probability being $1-2I$. Here k and I are tabulated as functions of n and $1-2\alpha$. In a few cases, the k-value retained corresponds to a probability slightly below $1-2\alpha$ though very close to it. An asterisk indicates this situation.

2. RELATED TOPICS

Relevant previous work includes the following. Geigy (1963) tabulates binomial confidence limits (x_g, x_d) for np, $p = 0{\cdot}5$ and $n = 6(1)1000$ at levels $2\alpha = 0{\cdot}05$ and $0{\cdot}01$. From these, the indices $(k, n-k+1)$ we are looking for are obtained as (x_g+1, x_d).

The subscript k in Table 1 can also be found as $(A+1)$, A being the critical value for the sign test in Owen (1962, Table 12.1). There

$$n = 1\,(1)\,50\,(2)\,100\,(10)\,200\,(20)\,500\,(50)\,1000;$$

$$\alpha = 0{\cdot}005,\ 0{\cdot}01,\ 0{\cdot}025,\ 0{\cdot}05 \text{ and } 0{\cdot}10.$$

Critical values for the sign test are also tabulated by Dixon & Massey (1957, p. 417) for $n = 3\,(1)\,90$ and $2\alpha = 0{\cdot}01$, $0{\cdot}05$, $0{\cdot}10$ and $0{\cdot}25$.

For values of the parameters n and α not appearing in Table 1 or in the above mentioned sources, the required information can be obtained alternatively from Tables of the Incomplete Beta-Function (Pearson, 1968) or from tables of cumulative binomial probabilities (Grubbs & Simon, 1952; Harvard University Press, 1955). In the last table,

$$n = 1\,(1)\,50\,(2)\,100\,(10)\,200\,(20)\,500\,(50)\,1000.$$

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Table 1. *Confidence limits for the median*

	$1-2\alpha$											
	0·70		0·80		0·90		0·95		0·98		0·99	
n	k	I	k	I	k	I	k	I	k	I	k	I
1												
2												
3	1	0·1250										
4	1	·0625	1	0·0625								
5	1	·0313	1	·0313	1	0·0313						
6	2	·1094	1	·0156	1	·0156	1	0·0156				
7	2	·0625	2	·0625	1	·0078	1	·0078	1	0·0078		
8	3	·1445	2	·0352	2	·0352	1	·0039	1	·0039	1	0·0039
9	3	·0898	3	·0898	2	·0195	2	·0195	1	·0020	1	·0020
10	3	·0547	3	·0547	2	·0107	2	·0107	1	·0010	1	·0010
11	4	·1133	3	·0327	3	·0327	2	·0059	2	·0059	1	·0005
12	4	·0730	4	·0730	3	·0193	3	·0193	2	·0032	2	·0032
13	5	·1334	4	·0461	4	·0461	3	·0112	2	·0017	2	·0017
14	5	·0898	5	·0898	4	·0287	3	·0065	3	·0065	2	·0009
15	5	·0592	5	·0592	4	·0176	4	·0176	3	·0037	3	·0037
16	6	·1050	5	·0384	5	·0384	4	·0106	3	·0021	3	·0021
17	6	·0717	6	·0717	5	·0245	5	·0245	4	·0064	3	·0012
18	7	·1189	6	·0481	6	·0481	5	·0154	4	·0038	4	·0038
19	7	·0835	7	·0835	6	·0318	5	·0096	5	·0096	4	·0022
20	8	·1316	7	·0576	6	·0207	6	·0207	5	·0059	4	·0013
21	8	·0946	8	·0946	7	·0392	6	·0133	5	·0036	5	·0036
22	9	·1431	8	·0669	7	·0262	6	·0085	6	·0085	5	·0022
23	9	·1050	8	·0466	8	·0466	7	·0173	6	·0053	5	·0013
24	9	·0758	9	·0758	8	·0320	7	·0113	6	·0033	6	·0033
25	10	·1148	9	·0539	8	·0216	8	·0216	7	·0073	6	·0020
26	10	·0843	10	·0843	9	·0378	8	·0145	7	·0047	7	·0047
27	11	·1239	10	·0610	9	·0261	8	·0096	8	·0096	7	·0030
28	11	·0925	11	·0925	10	·0436	9	·0178	8	·0063	7	·0019
29	12	·1325	11	·0680	10	·0307	9	·0121	8	·0041	8	·0041
30	12	·1002	11	·0494	11	·0494	10	·0214	9	·0081	8	·0026
31	13	·1405	12	·0748	11	·0354	10	·0147	9	·0053	8	·0017
32	13	·1077	12	·0551	11	·0251	10	·0100	10	·0100	9	·0035
33	14	·1481	13	·0814	12	·0401	11	·0175	10	·0068	9	·0023
34	14	·1147	13	·0607	12	·0288	11	·0122	10	·0045	10	·0045
35	14	·0877	14	·0877	13	·0448	12	·0205	11	·0083	10	·0030
36	15	·1215	14	·0662	13	·0326	12	·0144	11	·0057	10	·0020
37	15	·0939	15	·0939	14	·0494	13	·0235	12	·0100	11	·0038
38	16	·1279	15	·0716	14	·0365	13	·0168	12	·0069	11	·0025
39	16	·0998	16	·0998	14	·0266	13	·0119	12	·0047	12	·0047
40	17	·1341	16	·0769	15	·0403	14	·0192	13	·0083	12	·0032
41	17	·1055	16	·0586	15	·0298	14	·0138	13	·0057	12	·0022
42	18	·1400	17	·0821	16	·0442	15	·0218	14	·0097	13	·0040
43	18	·1110	17	·0631	16	·0330	15	·0158	14	·0069	13	·0027
44	19	·1456	18	·0871	17	·0481	16	·0244	14	·0048	14	·0048
45	19	·1163	18	·0676	17	·0362	16	·0178	15	·0080	14	·0033
46	19	·0920	19	·0920	17	·0270	16	·0129	15	·0057	14	·0023
47	20	·1214	19	·0719	18	·0395	17	·0200	16	·0093	15	·0040
48	20	·0967	20	·0967	18	·0297	17	·0147	16	·0066	15	·0028
49	21	·1264	20	·0762	19	·0427	18	·0222	16	·0047	16	·0047
50	21	·1013	20	·0595	19	·0325	18	·0164	17	·0077	16	·0033

Sample size n. Interval (x_k, x_{n-k+1}) has confidence coefficient $1-2I$ and is narrowest interval with confidence coefficient at least $1-2\alpha$. An asterisk denotes that I very slightly exceeds α.

Table 1 (*cont.*)

	$1-2\alpha$											
	0·70		0·80		0·90		0·95		0·98		0·99	
n	k	I	k	I	k	I	k	I	k	I	k	I
51	22	0·1312	21	0·0804	20	0·0460	19	0·0244	17	0·0055	16	0·0023
52	22	·1058	21	·0632	20	·0352	19	·0182	18	·0088	17	·0039
53	23	·1358	22	·0845	21	·0492	19	·0135	18	·0063	17	·0027
54	23	·1101	22	·0668	21	·0380	20	·0201	19	·0099	18	·0045
55	24	·1403	23	·0885	21	·0290	20	·0150	19	·0072	18	·0032
56	24	·1144	23	·0704	22	·0407	21	·0220	19	·0052	18	·0023
57	25	·1446	24	·0924	22	·0314	21	·0166	20	·0082	19	·0038
58	25	·1185	24	·0740	23	·0435	22	·0240	20	·0060	19	·0027
59	26	·1488	25	·0963	23	·0337	22	·0182	21	·0092	20	·0043
60	26	·1225	25	·0775	24	·0462	22	·0137	21	·0067	20	·0031
61	26	·1000	25	·0619	24	·0361	23	·0198	21	·0049	21	·0049
62	27	·1264	26	·0809	25	·0490	23	·0150	22	·0075	21	·0036
63	27	·1037	26	·0649	25	·0385	24	·0215	22	·0056	21	·0026
64	28	·1302	27	·0843	25	·0300	24	·0164	23	·0084	22	·0041
65	28	·1073	27	·0680	26	·0408	25	·0232	23	·0062	22	·0030
66	29	·1339	28	·0876	26	·0320	25	·0178	24	·0093	23	·0046
67	29	·1108	28	·0710	27	·0432	26	·0249	24	·0070	23	·0034
68	30	·1375	29	·0909	27	·0341	26	·0192	24	·0052	23	·0025
69	30	·1142	29	·0740	28	·0456	26	·0147	25	·0077	24	·0038
70	31	·1410	30	·0941	28	·0361	27	·0207	25	·0058	24	·0028
71	31	·1175	30	·0769	29	·0480	27	·0160	26	·0085	25	·0043
72	32	·1444	31	·0972	29	·0382	28	·0222	26	·0064	25	·0032
73	32	·1208	31	·0798	29	·0302	28	·0172	27	·0093	26	·0048
74	33	·1477	31	·0651	30	·0403	29	·0237	27	·0070	26	·0035
75	33	·1240	32	·0827	30	·0320	29	·0185	27	·0053	26	·0026
76	33	·1034	32	·0677	31	·0423	29	·0143	28	·0077	27	·0040
77	34	·1271	33	·0855	31	·0338	30	·0198	28	·0058	27	·0029
78	34	·1063	33	·0703	32	·0444	30	·0154	29	·0084	28	·0044
79	35	·1302	34	·0883	32	·0356	31	·0211	29	·0064	28	·0033
80	35	·1092	34	·0728	33	·0465	31	·0165	30	·0091	29	·0048
81	36	·1332	35	·0910	33	·0374	32	·0224	30	·0070	29	·0036
82	36	·1121	35	·0753	34	·0485	32	·0176	31	·0099	29	·0027
83	37	·1361	36	·0937	34	·0392	33	·0238	31	·0076	30	·0040
84	37	·1149	36	·0778	34	·0315	33	·0188	31	·0088	30	·0030
85	38	·1390	37	·0964	35	·0410	33	·0147	32	·0082	31	·0044
86	38	·1177	37	·0803	35	·0331	34	·0199	32	·0063	31	·0033
87	39	·1418	38	·0990	36	·0428	34	·0157	33	·0089	32	·0048
88	39	·1204	38	·0827	36	·0347	35	·0211	33	·0068	32	·0037
89	40	·1445	38	·0687	37	·0447	35	·0167	34	·0096	32	·0028
90	40	·1230	39	·0851	37	·0363	36	·0222	34	·0074	33	·0040
91	41	·1472	39	·0709	38	·0465	36	·0177	34	·0057	33	·0031
92	41	·1257	40	·0875	38	·0379	37	·0235	35	·0080	34	·0044
93	42	·1499	40	·0731	39	·0483	37	·0188	35	·0062	34	·0033
94	42	·1282	41	·0898	39	·0395	38	·0247	36	·0086	35	·0048
95	42	·1090	41	·0752	40	·0501*	38	·0198	36	·0067	35	·0037
96	43	·1307	42	·0921	40	·0411	38	·0158	37	·0092	35	·0028
97	43	·1114	42	·0774	40	·0335	39	·0209	37	·0072	36	·0040
98	44	·1332	43	·0944	41	·0427	39	·0167	38	·0098	36	·0030
99	44	·1138	43	·0795	41	·0349	40	·0219	38	·0077	37	·0043
100	45	·1356	44	·0967	42	·0443	40	·0176	38	·0060	37	·0033

Sample size n. Interval (x_k, x_{n-k+1}) has confidence coefficient $1-2I$ and is narrowest interval with confidence coefficient at least $1-2\alpha$. An asterisk denotes that I very slightly exceeds α.

Table 1 (*cont.*)

	$1-2\alpha$											
	0·70		0·80		0·90		0·95		0·98		0·99	
n	k	I	k	I	k	I	k	I	k	I	k	I
101	45	0·1161	44	0·0816	42	0·0364	41	0·0230	39	0·0082	38	0·0047
102	46	·1380	45	·0989	43	·0459	41	·0185	39	·0065	38	·0036
103	46	·1184	45	·0837	43	·0378	42	·0241	40	·0088	39	·0050*
104	47	·1403	45	·0705	44	·0475	42	·0195	40	·0069	39	·0039
105	47	·1207	46	·0857	44	·0392	42	·0157	41	·0094	39	·0030
106	48	·1426	46	·0724	45	·0491	43	·0204	41	·0074	40	·0042
107	48	·1229	47	·0878	45	·0407	43	·0165	42	·0099	40	·0033
108	49	·1449	47	·0743	45	·0335	44	·0214	42	·0079	41	·0045
109	49	·1251	48	·0898	46	·0421	44	·0173	42	·0062	41	·0035
110	50	·1471	48	·0762	46	·0348	45	·0224	43	·0084	42	·0049
111	50	·1273	49	·0918	47	·0435	45	·0182	43	·0066	42	·0038
112	51	·1493	49	·0780	47	·0361	46	·0234	44	·0089	42	·0029
113	51	·1294	50	·0938	48	·0450	46	·0190	44	·0070	43	·0041
114	51	·1116	50	·0799	48	·0373	47	·0243	45	·0094	43	·0032
115	52	·1315	51	·0957	49	·0464	47	·0199	45	·0075	44	·0044
116	52	·1136	51	·0817	49	·0386	47	·0161	46	·0099	44	·0034
117	53	·1336	52	·0977	50	·0478	48	·0208	46	·0079	45	·0047
118	53	·1156	52	·0835	50	·0399	48	·0169	46	·0063	45	·0037
119	54	·1356	53	·0996	51	·0493	49	·0216	47	·0084	46	·0050
120	54	·1176	53	·0853	51	·0412	49	·0177	47	·0067	46	·0039
121	55	·1376	53	·0727	51	·0343	50	·0225	48	·0089	46	·0031
122	55	·1195	54	·0871	52	·0425	50	·0184	48	·0071	47	·0042
123	56	·1396	54	·0744	52	·0354	51	·0234	49	·0093	47	·0033
124	56	·1215	55	·0889	53	·0438	51	·0192	49	·0075	48	·0045
125	57	·1415	55	·0761	53	·0366	52	·0243	50	·0098	48	·0035
126	57	·1233	56	·0906	54	·0451	52	·0200	50	·0079	49	·0048
127	58	·1434	56	·0777	54	·0377	52	·0163	50	·0063	49	·0037
128	58	·1252	57	·0923	55	·0463	53	·0208	51	·0083	50	·0050*
129	59	·1453	57	·0793	55	·0389	53	·0170	51	·0067	50	·0040
130	59	·1271	58	·0940	56	·0478	54	·0216	52	·0088	50	·0032
131	60	·1472	58	·0809	56	·0401	54	·0178	52	·0070	51	·0043
132	60	·1289	59	·0957	57	·0489	55	·0224	53	·0092	51	·0034
133	61	·1490	59	·0825	57	·0412	55	·0185	53	·0074	52	·0045
134	61	·1307	60	·0974	57	·0346	56	·0233	54	·0097	52	·0036
135	61	·1140	60	·0841	58	·0424	56	·0192	54	·0078	53	·0048
136	62	·1324	61	·0991	58	·0357	57	·0241	54	·0063	53	·0038
137	62	·1158	61	·0857	59	·0436	57	·0200	55	·0082	53	·0030
138	63	·1342	61	·0738	59	·0367	58	·0249	55	·0066	54	·0040
139	63	·1175	62	·0873	60	·0447	58	·0207	56	·0086	54	·0032
140	64	·1359	62	·0753	60	·0378	58	·0171	56	·0070	55	·0043
141	64	·1191	63	·0888	61	·0459	59	·0214	57	·0090	55	·0034
142	65	·1376	63	·0767	61	·0388	59	·0178	57	·0073	56	·0045
143	65	·1208	64	·0903	62	·0470	60	·0222	58	·0094	56	·0036
144	66	·1393	64	·0782	62	·0399	60	·0184	58	·0077	57	·0048
145	66	·1224	65	·0918	63	·0482	61	·0229	59	·0099	57	·0038
146	67	·1410	65	·0796	63	·0409	61	·0191	59	·0080	58	·0050*
147	67	·1241	66	·0934	64	·0493	62	·0237	59	·0065	58	·0040
148	68	·1426	66	·0810	64	·0420	62	·0198	60	·0084	58	·0032
149	68	·1257	67	·0949	64	·0356	63	·0245	60	·0069	59	·0043
150	69	·1442	67	·0824	65	·0430	63	·0204	61	·0088	59	·0034

Sample size n. Interval (x_k, x_{n-k+1}) has confidence coefficient $1-2I$ and is narrowest interval with confidence coefficient at least $1-2\alpha$. An asterisk denotes that I very slightly exceeds α.

3. Basic equations and procedure

Let $z_1, \ldots, z_n$ be a random sample from a continuous population with density function $f(z)$ and

$$F_i = F(x_i) = \int_{-\infty}^{x_i} f(z)\,dz$$

be the area of $f(z)$ which is less than the ith ordered observation x_i.

Let $G_{k,s}$ be the distribution function of the joint distribution of F_k and F_s $(k < s)$. The interval (x_k, x_s) covers the p-quantile X_p whenever $F_k \leqslant p \leqslant F_s$. This happens with probability

$$1-2I = \int_0^p \int_p^1 dG_{k,s}(F_k, F_s).$$

This can be shown (Kendall & Stuart, 1969, p. 518) to be equivalent to

$$1-2I = I_p(k, n-k+1) - I_p(s, n-s+1),$$

where $I_p(i,j)$ is the incomplete beta function.

If the quantile considered is the median, this yields

$$1-2I = I_{0.5}(k, n-k+1) - I_{0.5}(s, n-s+1),$$

when $k+s = n+1$, we obtain a similar situation for ascending and decreasing order, i.e.

$$\begin{aligned} 1-2I &= 1-2I_{0.5}(k, n-k+1) \\ &= \sum_{r=k}^{n-k} \binom{n}{r} p^r q^{n-r} \quad (p = q = \tfrac{1}{2}). \end{aligned}$$

Grubbs & Simon (1952) tabulate

$$\sum_{r=c}^{n} \binom{n}{r} p^r (1-p)^{n-r}.$$

Therefore k can easily be obtained as the largest integer for which

$$\sum_{r=k}^{n} \binom{n}{r} p^r (1-p)^{n-r} \geqslant 1-\alpha.$$

It is a pleasure to thank Mrs Jonckers, who helped in constructing the tables and typed the text, and to Mrs Weyers who typed the tables.

References

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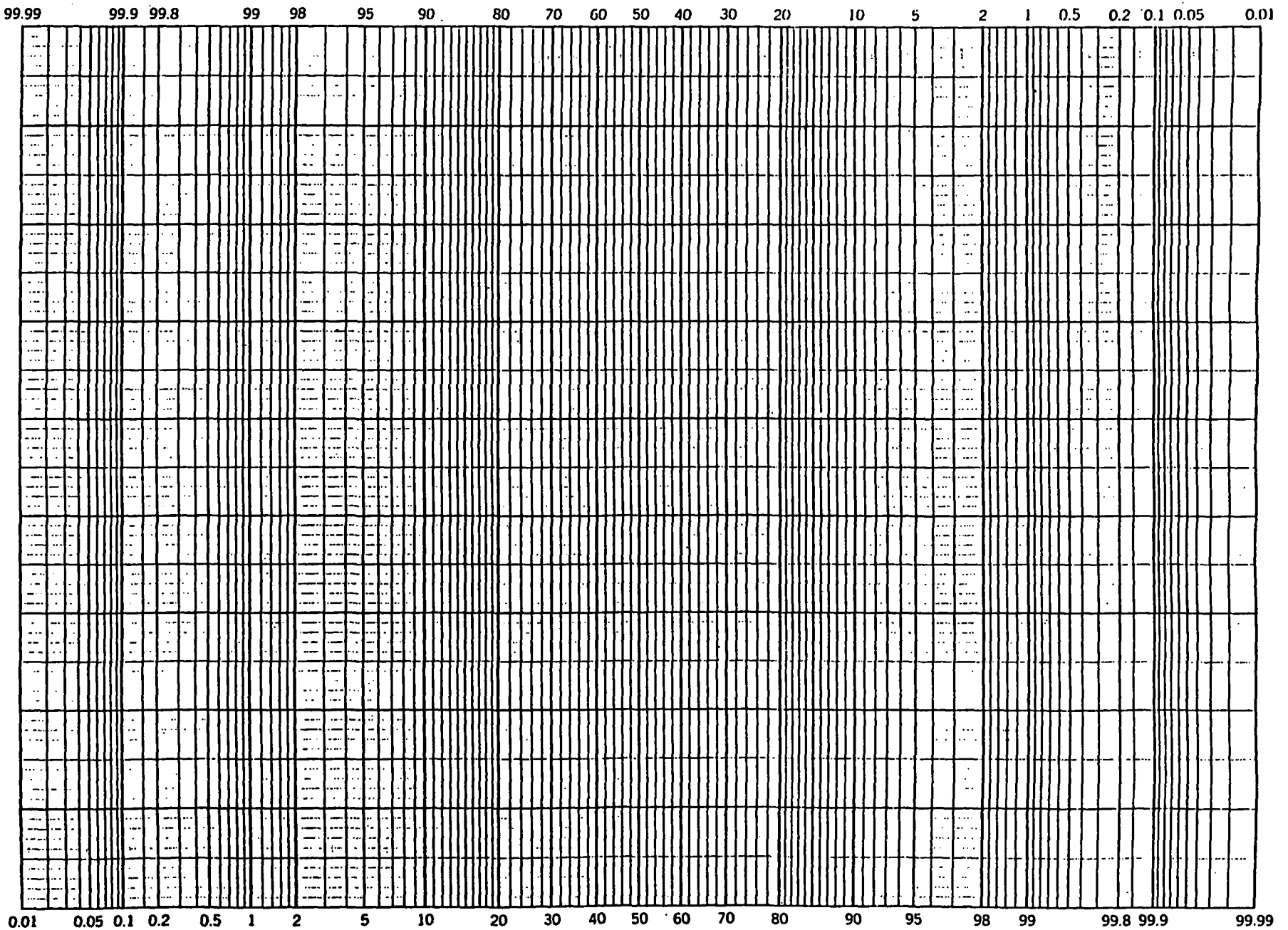
[*Received February* 1970. *Revised May* 1970]

Editorial note added in proof. Reference should also be made to the extensive tables of W. J. MacKinnon (*J. Am. Statist. Ass.* 59, 1964, 935–56), who, however, did not give I.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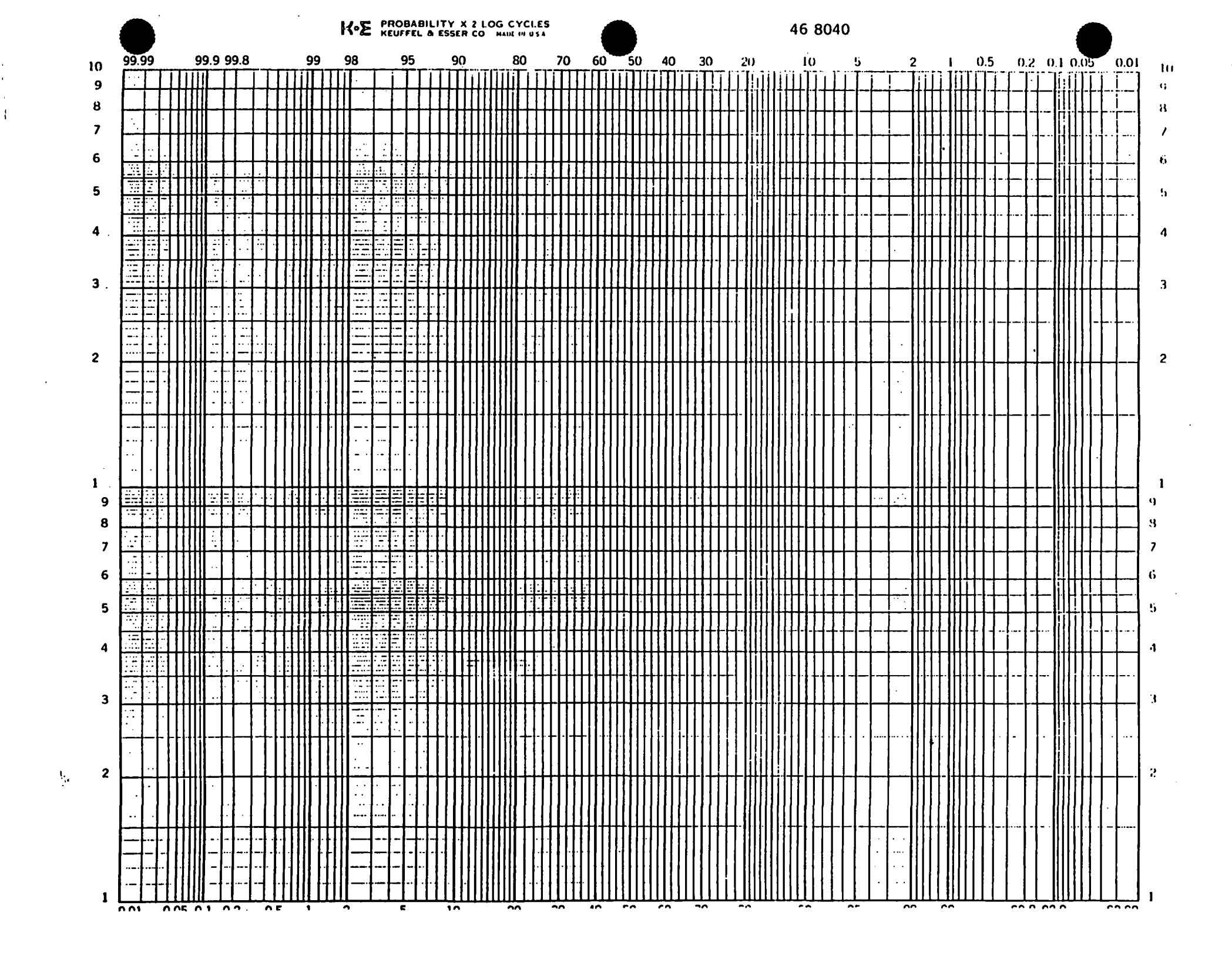

K•E PROBABILITY X 2 LOG CYCLES
KEUFFEL & ESSER CO MADE IN U.S.A.
46 8040
99.99 99.9 99.8 99 98 95 90 80 70 60 50 40 30 20 10 5 2 1 0.5 0.2 0.1 0.05 0.01
10 9 8 7 6 5 4 3 2 1

SUPPLEMENT S-1

SUMMARY TABLE - Calculating a Value for Comparison with a Cleanup Standard.

SITE DATA DISTRIBUTION		TOXIC EFFECTS	SOIL	GROUNDWATER
Lognormal (default)		Chronic	UCL calculated using H-statistic (5.2.1.2) See: Worksheet W-2, Example 11 (under Criterion 1)	Same as for soil (5.2.1.2)
		Short Term/Acute	UTL on 90th percentile using log-transformed data (5.2.2.2)	UTL on 50th percentile (median) (5.3.2)
Normal		Chronic	UCL on mean (5.2.1.1). See Example 13.	Same as for soil (5.2.1.1)
		Short Term/Acute	UTL on 90th percentile (5.2.2.1). See Example 14.	UCL on mean (5.3.1, 5.2.1.1). See Example 13.
Significantly different from lognormal and normal	N≤20	Chronic	• Consider obtaining additional samples Requires consultation with Ecology: • UTL on site-specific percentile (5.2.2.3) See Example 15. • UCL using Z statistic? (5.2.1.3) See Example 16.	Same as for soil
		Short Term/Acute	• Consider obtaining additional samples • UTL on 90th percentile (5.2.2.3) See Example 15.	• Consider obtaining additional samples • UTL on median (5.3.3) See Example 17.
	N>20	Chronic	Requires consultation with Ecology: • UCL on site-specific percentile (5.2.2.4) • UCL using Z statistic? (5.2.1.3)	Same as for soil
		Short Term/Acute	UCL on 90th percentile (5.2.2.4)	UCL on median (5.3.3)

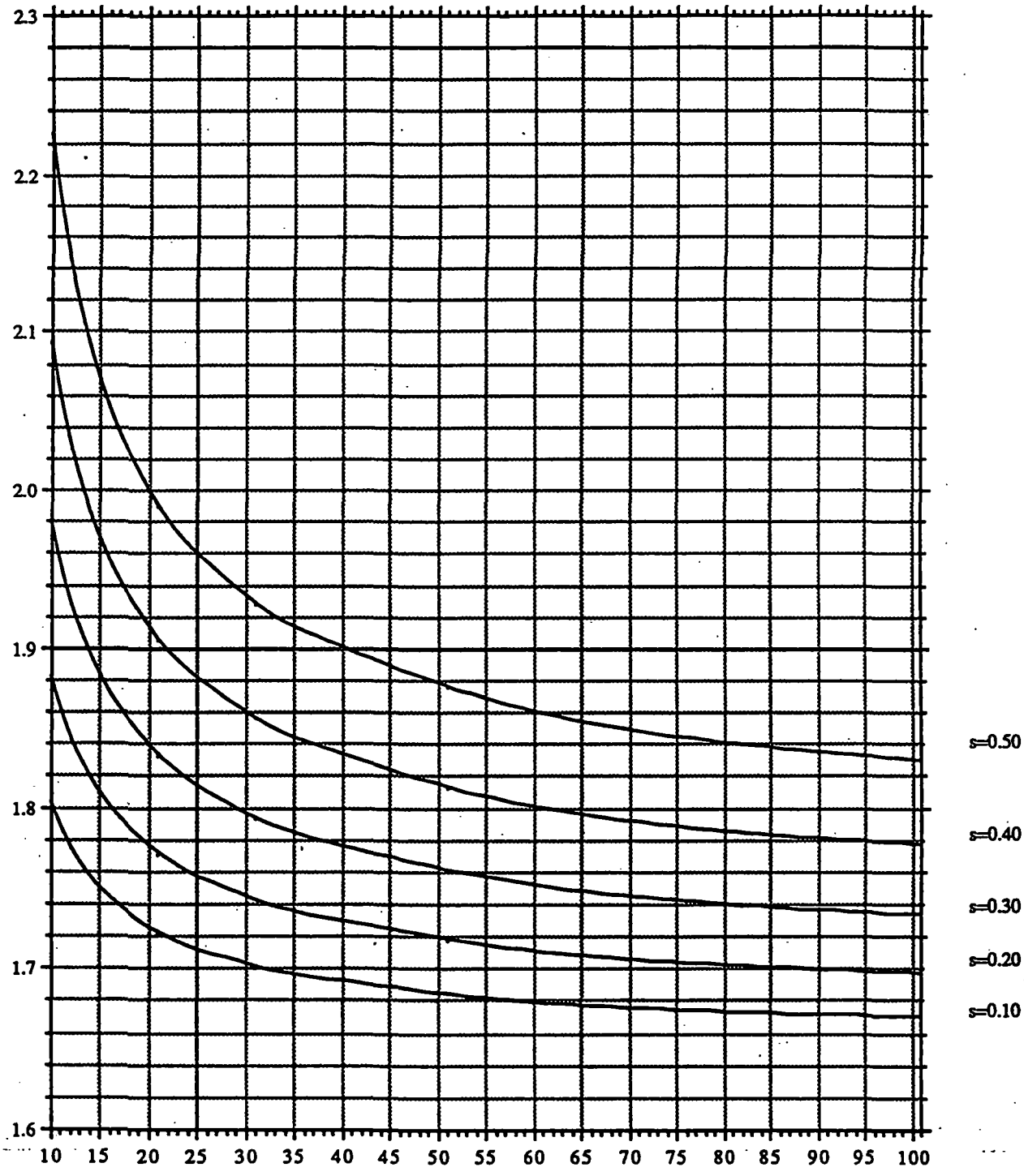
Abbreviations UCL: Upper confidence limit UTL: Upper tolerance limit

ADDITIONAL REQUIREMENTS: When Cleanup Standard is not based on background, other compliance criteria are: (1) No single value more than twice the Cleanup Standard, and (2) No more than 10% of values greater than Cleanup Standard. When Cleanup Standard is based on background, different criteria may apply (Figure 12, Section 4.3.3.2).

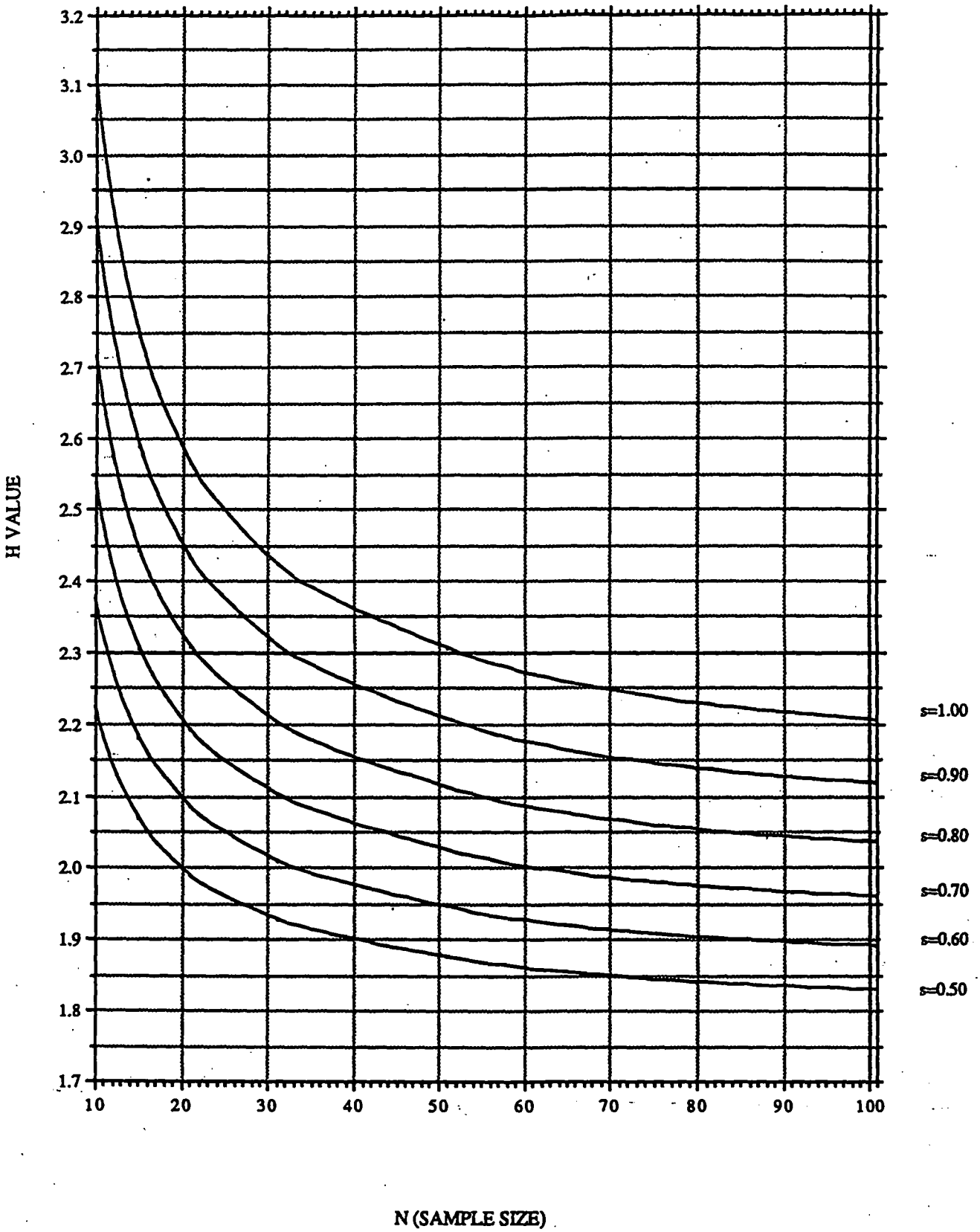
SUPPLEMENT S-2

Additional graphs for estimating H-values to calculate upper 95% confidence limits (lognormal distribution). Supplement to Figure A-1.

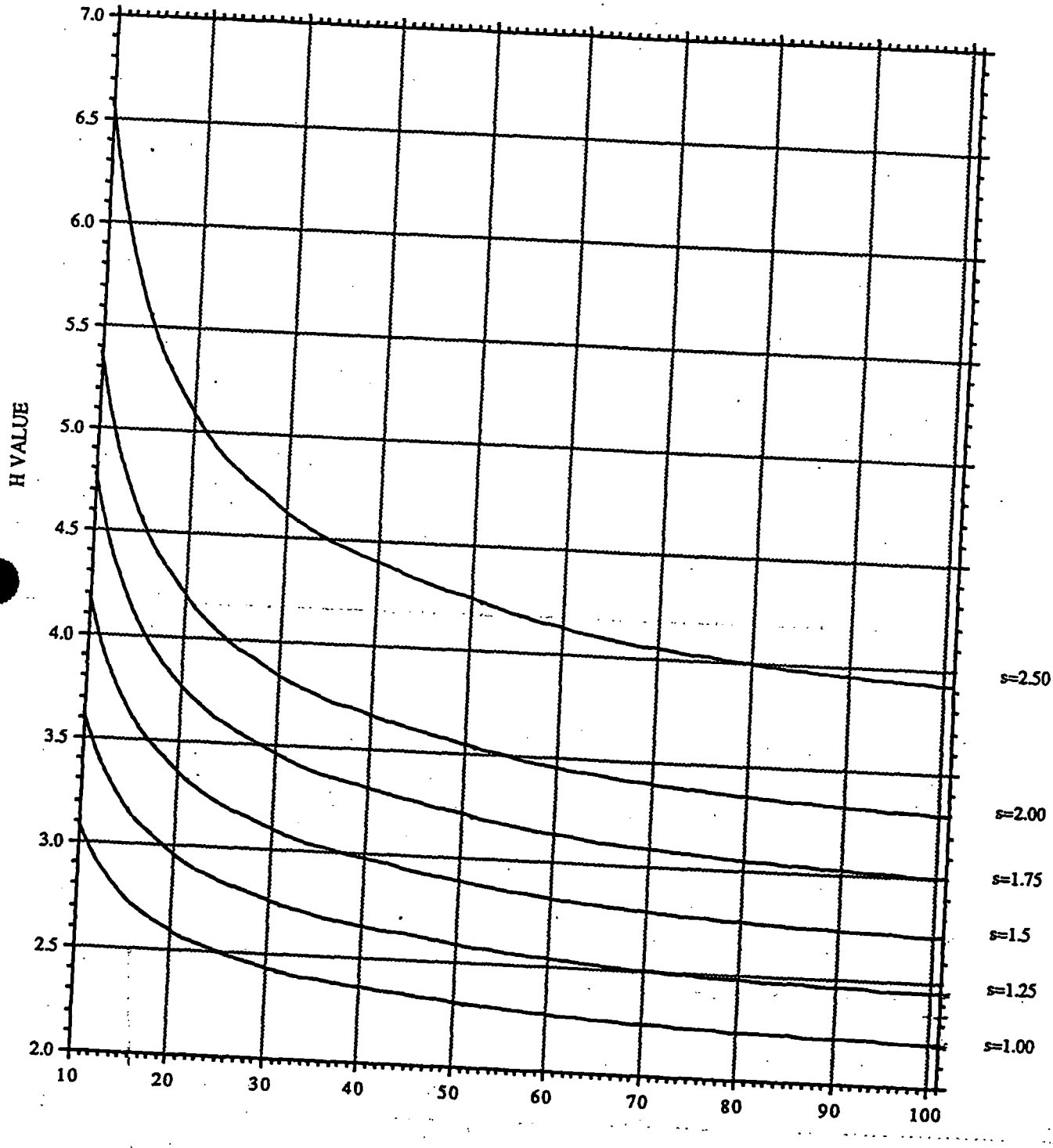
H Values for Std. Devn. = 0.10 to 0.50 (Std. Devn. of log-transformed data)



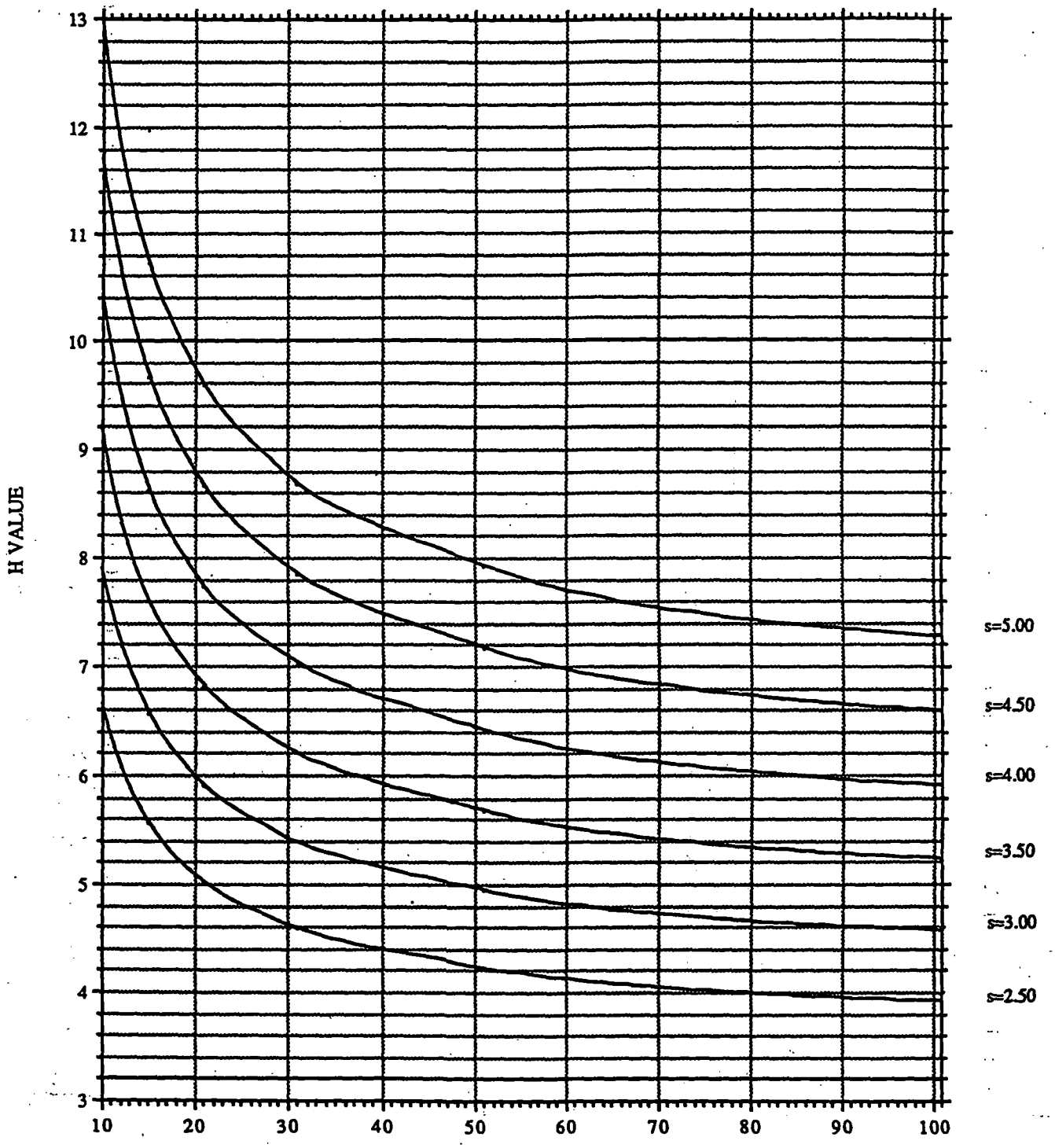
H Values for Std. Devn. = 0.50 to 1.00 (Std. Devn. of log-transformed data)



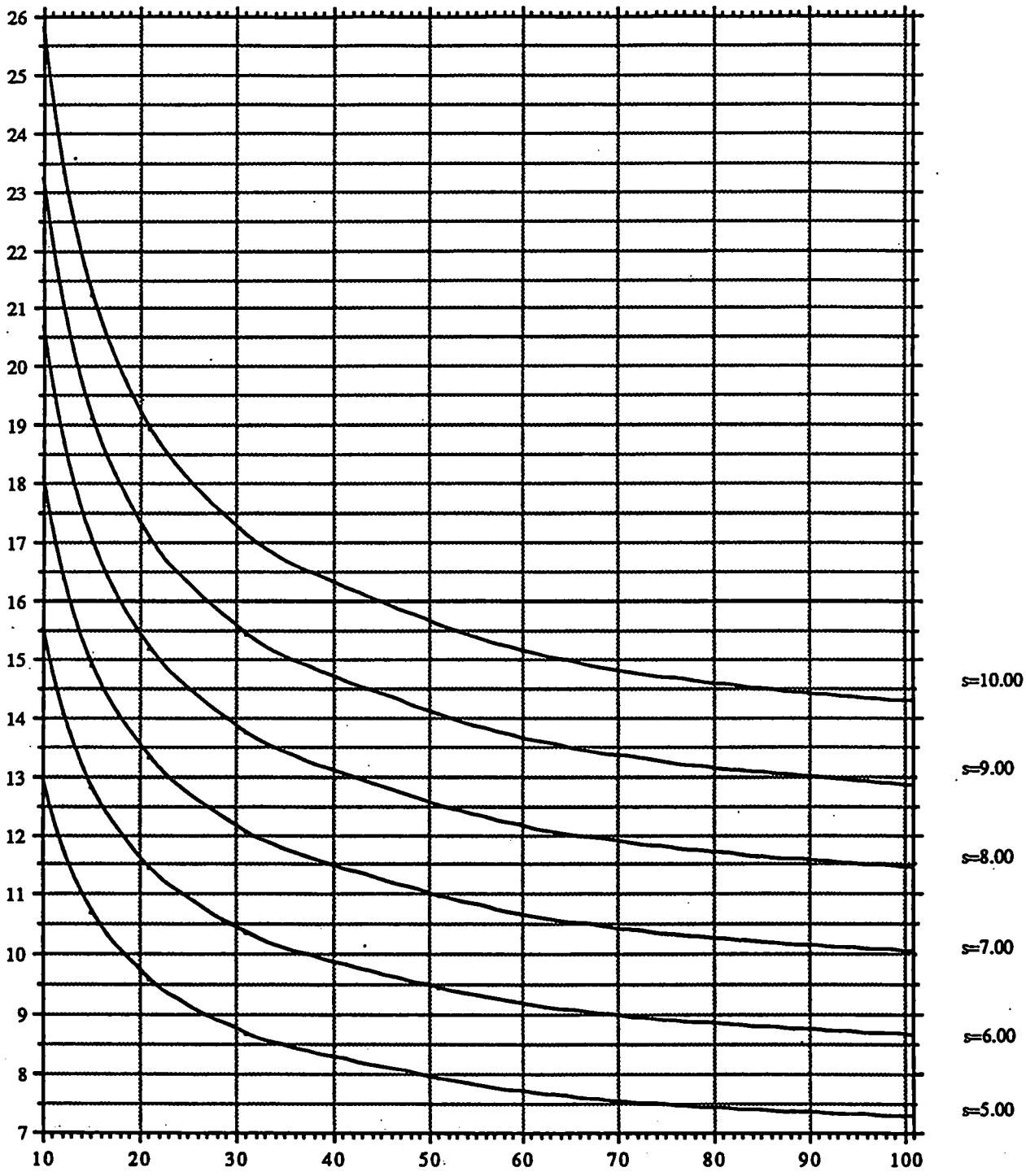
H Values for Std. Devn. = 1.00 to 2.50 (Std. Devn. of log-transformed data)



H Values for Std. Devn. = 2.50 to 5.00 (Std. Devn. of log-transformed data)



H Values for Std. Devn. = 5.00 to 10.00 (Std. Devn. of log-transformed data)



SUPPLEMENT S-3

PROCEDURE FOR DETERMINING THE DISTRIBUTION OF SITE OR BACKGROUND DATA (See Section 2.1.4)

Step 1. Default assumption is lognormal distribution.

Step 2. Look at a probability plot of the log-transformed data to check the assumption of a lognormal distribution (see Section 2.1.4.2). The procedure is the same as shown in Example 4, except that the data must be log-transformed first. Probability paper is supplied at the end of the Guidance Document.

Although Example 4 shows how to do the plots by hand, it is easier to use statistical software such as STATGRAPHICS® or SYSTAT® for this purpose.

> STATGRAPHICS® Log-transform the data first. Then, at the main menu, select option G. Estimation and Testing under PLOTTING AND DESCRIPTIVE STATISTICS. Next, select option 3. Normal Probability Plot in the ESTIMATION AND TESTING menu. At the Data vector field prompt, enter the variable name used for the log-transformed data.

The points should lie on a straight line if the data are lognormally distributed. This is a subjective test. The fit to a straight line should be "good" but need not be exact (compare Figures 6 and 7).

If the fit is poor or questionable, proceed to Step 3. Otherwise, conclude that a lognormal distribution is valid, and stop here. [Note: Step 2 is provided for convenience but it is acceptable to proceed directly from Step 1 to Step 3.]

Step 3. Test for lognormality using the W test. Log-transform the data before doing the test. (See Example 7 and Worksheet W-1.) For sample sizes greater than 50, D'Agostino's test should be used (see section 2.1.4.1).

If the test does not indicate a significant difference from lognormality, conclude that a lognormal distribution is valid, and stop here. If lognormality is rejected, go to Step 4.

Step 4. Repeat the procedures described in Step 2, but *do not log-transform the data.* If the fit to a straight line is poor or questionable, proceed to Step 5. Otherwise, conclude that a normal distribution is valid, and stop here. [Note: Step 4 is for convenience and is optional; alternatively, go directly from Step 3 to Step 5.]

Step 5. Test for normality using the W test (Example 7, Worksheet W-1a). For sample sizes greater than 50, D'Agostino's test should be used (see Section 2.1.4.1).

If the test does not indicate a significant difference from normality, conclude that a normal distribution is valid. If normality is rejected, conclude that the data are significantly different from both lognormal and normal distributions and follow instructions for "non-lognormal, non-normal" distribution data in the Guidance Document.

SUPPLEMENT S-4

PROCEDURE FOR CALCULATING BACKGROUND VALUE.

See Figure 12 for complete flowchart and Section 4.3.3.2

PART I (See Example 12. Although groundwater is used in the example, calculations are the same for soil).

Step 1. Is the default assumption that background data are lognormally distributed rejected? (See Supplement S-3.) If data are not lognormally distributed, go to PART II. Otherwise, proceed to Step 2.

Step 2. Lognormal distribution. Calculate the 90th percentile value. (See Section 2.1.2.2, Example 10 and Worksheet W-3.)

Step 3. Calculate the 50th percentile (median). Several methods can be used (e.g. Section 2.1.2.1, Examples 3, 4 and 12). Worksheet W-3 uses the method from Example 12.

Step 4. Is the 90th percentile more than 4 times the 50th percentile?

NO: Use the 90th percentile as the background value

YES: Use 4 times the 50th percentile value

Note: Ecology may require a different percentile if background data are lognormally distributed but compliance monitoring (site) data are not (Section 4.3.3.2, Figure 12).

PART II Data are not lognormally distributed.

Step 1. Is the alternative that data are normally distributed rejected? (See Supplement S-2.) If data are neither lognormally or normally distributed, go to PART III. Otherwise, proceed to Step 2.

Step 2. Normal distribution. Use a percentile as the background value. In general, Ecology may use the 80th percentile (Example 9) as the background value. However, the department may also determine that another percentile is more appropriate on a site-specific basis.

PART III Data are neither normally or lognormally distributed.

Requires site-specific decision by Ecology. Options include:

(1) Percentile calculated using nonparametric methods (see Examples 5 and 9)

(2) Wilcoxon rank sum test (Mann Whitney U test).

SUPPLEMENT S-5

PROCEDURE FOR CALCULATING COEFFICIENT OF VARIATION FROM BEST-FIT DISTRIBUTION.

Decisions relating to the coefficient of variation of a contaminant distribution (e.g. see Section 4.3.5) should be based on the best-fit distribution, not the sample statistics (see Section 2.1.3 and Example 12). This supplement describes a simple procedure for calculating the coefficient of variation using the statistical software package, STATGRAPHICS®. It is assumed here that a decision has already been made regarding the data distribution (Supplement S-3). This information is needed in Step 4.

Step 1. Under the **PLOTTING AND DESCRIPTIVE STATISTICS** submenu, select option **H (Distribution Functions).**

Step 2. In the **DISTRIBUTION FUNCTIONS** menu, select option **1 (Distribution Fitting).**

Step 3. The **Distribution Fitting** menu appears next. Data must be provided in the **Data vector** field. There are two ways to do this:

1) Enter the data in the **Data vector** field from the keyboard. Use a comma or space to separate different values.

2) Enter the name of a file and variable if the data have already been entered in a STATGRAPHICS® file. For help, press F7, then scroll through the list. When you find the variable, press Enter.

Step 4. Enter the appropriate distribution number from the menu in the next field. For example, enter 13 for the lognormal distribution.

Step 5. Press F6. The best-fit values for the mean and standard deviation will then be displayed. Divide the standard deviation by the mean to get the coefficient of variation (CV).

For further information: To compare the best-fit distribution with the data distribution, press F6 again and select Histogram from the next menu. The screen will then show options for the graph. After making any desired changes, press F6 to see the plot.

WORKSHEET W-1 Calculations for W test.

Col. 1	Col. 2	Col. 3
Data sorted lowest to highest	Log_e-transformed	Numbers in Col. 2 squared

Calculations:

A		Col. 3 total
B		Col. 2 total
C		B^2
N		Number of samples
D		A - (C/N)
r		N/2 (N even) (N-1)/2 (N odd)

Proceed to Page 2 of Worksheet.

This worksheet shows calculations required to test the possibility that the data differ significantly from a **lognormal distribution** (see Section 2.1.4.2). The computation method shown here differs slightly from that shown in Example 7 to avoid rounding errors that give a less accurate value for W.

If the data are not lognormally distributed, Worksheet W-1a shows the calculations required to test the possibility that the data differ significantly from a **normal distribution** (see Section 2.1.4.1).

See Supplement S-3 for further information, including alternatives to the use of these Worksheets.

WORKSHEET W-1.

Col. 4	Col. 5	Col. 6	Col. 7
List the first r numbers from Col. 2 (smallest to largest)	List the last r numbers from Col. 2 (largest to smallest)	List the coefficients from Table A-1	(Col. 5 - Col. 4) X Col. 6

Calculations:

E		Col. 7 total
F		E^2
W		F/D

Compare W with the appropriate value below. If W is smaller than the tabled value, the default assumption of a lognormal distribution for the data must be rejected.

Sample size (N)	Critical value	Sample size (N)	Critical value
3	0.767	27	0.923
4	0.748	28	0.924
5	0.762	29	0.926
6	0.788	30	0.927
7	0.803	31	0.929
8	0.818	32	0.930
9	0.829	33	0.931
10	0.842	34	0.933
11	0.850	35	0.934
12	0.859	36	0.935
13	0.866	37	0.936
14	0.874	38	0.938
15	0.881	39	0.939
16	0.887	40	0.940
17	0.892	41	0.941
18	0.897	42	0.942
19	0.901	43	0.943
20	0.905	44	0.944
21	0.908	45	0.945
22	0.911	46	0.945
23	0.914	47	0.946
24	0.916	48	0.947
25	0.918	49	0.947
26	0.920	50	0.947

WORKSHEET W-1 Calculations for W test. EXAMPLE

Col. 1	Col. 2	Col. 3
Data sorted lowest to highest	Log_e-transformed	Numbers in Col. 2 squared
0.13	-2.042	4.163
0.45	-0.7985	0.638
0.60	-0.5108	0.261
0.76	-0.2744	0.075
1.05	0.0488	0.002
1.12	0.1133	0.013
1.20	0.1823	0.033
1.37	0.3148	0.099
1.69	0.5247	0.275
2.06	0.7227	0.522

Calculations:

A	6.0816	Col. 3 total
B	-1.7173	Col. 2 total
C	2.9491	B^2
N	10	Number of samples
D	5.7867	A - (C/N)
r	5	N/2 (N even) (N-1)/2 (N odd)

Proceed to Page 2 of Worksheet.

This worksheet shows calculations required to test the possibility that the data differ significantly from a **lognormal distribution** (see Section 2.1.4.2). The computation method shown here differs slightly from that shown in Example 7 to avoid rounding errors that give a less accurate value for W.

If the data are not lognormally distributed, Worksheet W-1a shows the calculations required to test the possibility that the data differ significantly from a **normal distribution** (see Section 2.1.4.1).

See Supplement S-3 for further information, including alternatives to the use of these Worksheets.

r=5 from page 1

Col. 4	Col. 5	Col. 6	Col. 7
List the first r numbers from Col. 2 (smallest to largest)	List the last r numbers from Col. 2 (largest to smallest)	List the coefficients from Table A-1	(Col. 5 - Col. 4) X Col. 6
-2.0402	0.7227	0.5739	1.5856
-0.7985	0.5247	0.3291	0.4355
-0.5108	0.3148	0.2141	0.1768
-0.2744	0.1823	0.1224	0.0559
0.0488	0.1133	0.0399	0.0026

Calculations:

E	2.2564	Col. 7 total
F	5.0912	E^2
W	0.8798	F/D

Compare W with the appropriate value below. If W is smaller than the tabled value, the default assumption of a lognormal distribution for the data must be rejected.

0.8798 is larger than 0.842, so can't reject assumption of lognormal distribution.

Sample size (N)	Critical value	Sample size (N)	Critical value
3	0.767	27	0.923
4	0.748	28	0.924
5	0.762	29	0.926
6	0.788	30	0.927
7	0.803	31	0.929
8	0.818	32	0.930
9	0.829	33	0.931
10	0.842	34	0.933
11	0.850	35	0.934
12	0.859	36	0.935
13	0.866	37	0.936
14	0.874	38	0.938
15	0.881	39	0.939
16	0.887	40	0.940
17	0.892	41	0.941
18	0.897	42	0.942
19	0.901	43	0.943
20	0.905	44	0.944
21	0.908	45	0.945
22	0.911	46	0.945
23	0.914	47	0.946
24	0.916	48	0.947
25	0.918	49	0.947
26	0.920	50	0.947

WORKSHEET W-1a. Calculations for W test

(Use this worksheet only if lognormal distribution has been rejected).

Col. 1 Data sorted lowest to highest	Col. 2 Numbers in Col. 1 squared

Calculations:

A		Col. 2 total
B		Col. 1 total
C		B^2
N		Number of samples
D		A - (C/N)
r		N/2 (N even) (N-1)/2 (N odd)

Proceed to Page 2 of Worksheet.

This worksheet shows calculations required to test the possibility that the data differ significantly from a **normal distribution** (see Section 2.1.4.1). The test should only be conducted if the default assumption of a lognormal distribution has been rejected. The computation method shown here differs slightly from that shown in Example 7 to avoid rounding errors that give a less accurate value for W.

See Supplement S-3 for further information, including alternatives to the use of these Worksheets.

WORKSHEET W-1a.

Col. 4 — List the first r numbers from Col. 1 (smallest to largest)	Col. 5 — List the last r numbers from Col. 1 (largest to smallest)	Col. 6 — List the coefficients from Table A-1	Col. 7 — (Col. 5 - Col. 4) X Col. 6

Calculations:

E		Col. 7 total
F		E^2
W		F/D

Compare W with the appropriate value below. If W is smaller than the tabled value, the assumption of a normal distribution for the data must be rejected.

Sample size (N)	Critical value	Sample size (N)	Critical value
3	0.767	27	0.923
4	0.748	28	0.924
5	0.762	29	0.926
6	0.788	30	0.927
7	0.803	31	0.929
8	0.818	32	0.930
9	0.829	33	0.931
10	0.842	34	0.933
11	0.850	35	0.934
12	0.859	36	0.935
13	0.866	37	0.936
14	0.874	38	0.938
15	0.881	39	0.939
16	0.887	40	0.940
17	0.892	41	0.941
18	0.897	42	0.942
19	0.901	43	0.943
20	0.905	44	0.944
21	0.908	45	0.945
22	0.911	46	0.945
23	0.914	47	0.946
24	0.916	48	0.947
25	0.918	49	0.947
26	0.920	50	0.947

WORKSHEET W-1a. Calculations for W test

(Use this worksheet only if lognormal distribution has been rejected).

EXAMPLE

Col. 1	Col. 2
Data sorted lowest to highest	Numbers in Col. 1 squared
5.14	26.40
12.68	160.86
13.62	185.61
19.98	399.23
36.08	1301.80
38.75	1501.83
42.88	1838.69
45.19	2041.86
45.22	2045.00
48.59	2360.65
52.33	2738.63
56.70	3214.44
62.13	3860.56
68.85	4740.61
80.62	6500.25
80.86	6538.50
86.56	7493.05
104.35	10889.34
104.45	10908.97
105.23	11072.30
114.15	13029.99
125.74	15811.30
149.32	22297.36
149.58	22375.07
150.54	22661.69
210.18	44176.05
334.51	111898.95
367.75	135242.27
377.49	142495.68
418.63	175253.59

Calculations:

A	785 060.5	Col. 2 total
B	3 508.1	Col. 1 total
C	12306915	B^2
N	30	Number of samples
D	374 830	A - (C/N)
r	15	N/2 (N even) (N-1)/2 (N odd)

Proceed to Page 2 of Worksheet.

This worksheet shows calculations required to test the possibility that the data differ significantly from a **normal distribution** (see Section 2.1.4.1). The test should only be conducted if the default assumption of a lognormal distribution has been rejected. The computation method shown here differs slightly from that shown in Example 7 to avoid rounding errors that give a less accurate value for W.

See Supplement S-3 for further information, including alternatives to the use of these Worksheets.

WORKSHEET W-1a.

Col. 4	Col. 5	Col. 6	Col. 7
List the first r numbers from Col. 1 (smallest to largest)	List the last r numbers from Col. 1 (largest to smallest)	List the coefficients from Table A-1	(Col. 5 - Col. 4) X Col. 6
5.14	418.63	0.4254	175.9
12.68	377.49	0.2944	107.4
13.62	367.75	0.2487	88.1
19.98	334.51	0.2148	67.6
36.08	210.18	0.1870	32.6
38.75	150.54	0.1630	18.2
42.88	149.58	0.1415	15.1
45.19	149.32	0.1219	12.7
45.22	125.74	0.1036	8.3
48.59	114.15	0.0862	5.7
52.33	105.23	0.0697	3.7
56.70	104.45	0.0537	2.6
62.13	104.35	0.0381	1.6
68.85	86.56	0.0227	0.4
80.62	80.86	0.0076	0.002

Calculations:

E	539.8	Col. 7 total
F	291339.7	E^2
W	0.78	F/D

Compare W with the appropriate value below. If W is smaller than the tabled value, the assumption of a normal distribution for the data must be rejected.

Since 0.78 is smaller than 0.927, reject normal distribution.

Sample size (N)	Critical value	Sample size (N)	Critical value
3	0.767	27	0.923
4	0.748	28	0.924
5	0.762	29	0.926
6	0.788	30	0.927
7	0.803	31	0.929
8	0.818	32	0.930
9	0.829	33	0.931
10	0.842	34	0.933
11	0.850	35	0.934
12	0.859	36	0.935
13	0.866	37	0.936
14	0.874	38	0.938
15	0.881	39	0.939
16	0.887	40	0.940
17	0.892	41	0.941
18	0.897	42	0.942
19	0.901	43	0.943
20	0.905	44	0.944
21	0.908	45	0.945
22	0.911	46	0.945
23	0.914	47	0.946
24	0.916	48	0.947
25	0.918	49	0.947
26	0.920	50	0.947

WORKSHEET W-2 Calculations for Upper 95% Confidence Limit (UCL) using H-statistic (lognormally distributed data) - Land's Method

Col. 1 Data (need not be sorted)	Col. 2 Log_e-transformed

Calculations:

M		Average of values in Col. 2
S		Standard deviation (Col. 2)
N		Number of samples
P		$\sqrt{(N-1)}$
T		$0.5S^2$
H		Use S and N to find value for H in Figure A-1. See Supplement S-2 for a more extensive nomograph.
V		(S X H)/P
K		M + T + V
UCL		Exp(K) or e^K

See Section 5.2.1.2 and Example 11

WORKSHEET W-2 Calculations for Upper 95% Confidence Limit (UCL) using H-statistic (lognormally distributed data) - Land's Method

EXAMPLE

Col. 1 Data (need not be sorted)	Col. 2 Log_e-transformed
77.46	4.350
81.48	4.400
87.27	4.469
90.01	4.500
90.27	4.503
90.56	4.506
94.91	4.553
98.27	4.588
99.73	4.602
101.79	4.623
102.73	4.632
110.26	4.703
112.74	4.725
113.57	4.732
114.24	4.738
114.47	4.740
125.10	4.829
129.46	4.863
140.13	4.943
143.47	4.966

Calculations:

M	4.648	Average of values in Col. 2
S	0.172	Standard deviation (Col. 2)
N	20	Number of samples
P	4.359	$\sqrt{(N-1)}$
T	0.0148	$0.5S^2$
H	$\approx$ 1.76	Use S and N to find value for H in Figure A-1. See Supplement S-2 for a more extensive nomograph.
V	0.069	(S X H)/P
K	4.732	M + T + V
UCL	113.6	Exp(K) or e^K

See Section 5.2.1.2 and Example 11

WORKSHEET W-3. Calculating a Background Value (BV) for lognormally distributed data (see Supplement S-4).

Col. 1 *Data (need not be sorted)*	Col. 2 Log_e-transformed

Calculations:

M		Average of numbers in Col. 2
S		Standard devn. (Col.2)
P		M + (1.282 × S)
P_{90}		Exp(P) or e^P (P_{90} = 90th percentile)
P_{50}		Exp(M) or e^M (P_{50} = 50th percentile or median)
$4P_{50}$		$4 \times P_{50}$
BV		P_{90} or $4P_{50}$ (if $P_{90} > 4P_{50}$)

Note: If more than 15% of the data are values assigned to BDL or below-PQL measurements, use the nonparametric method (see Example 10) or use a probability plot, with numbers from Col. 2 (see Example 4, p. 77). For more information, see Section 2.2.1.

WORKSHEET W-3. Calculating a Background Value (BV) for lognormally distributed data (see Supplement S-4).

EXAMPLE

Col. 1	Col. 2
Data (need not be sorted)	Log-transformed
100.36	4.609
101.86	4.624
120.53	4.792
107.57	4.678
90.64	4.507
107.14	4.674
114.45	4.740
112.49	4.723
107.46	4.677
95.30	4.557

Calculations:

M	4.66	Average of numbers in Col. 2
S	0.086	Standard devn. (Col.2)
P	4.768	M + (1.282 × S)
P_{90}	117.7	Exp(P) or e^P (P_{90} = 90th percentile)
P_{50}	105.43	Exp(M) or e^M (P_{50} = 50th percentile or median)
$4P_{50}$	421.7	$4 \times P_{50}$
BV	117.7	P_{90} or $4P_{50}$ (if $P_{90} > 4P_{50}$)

Note: If more than 15% of the data are values assigned to BDL or below-PQL measurements, use the nonparametric method (see Example 10) or use a probability plot, with numbers from Col. 2 (see Example 4, p. 77). For more information, see Section 2.2.1.

Appendix E

Site-Specific Climatological, Zoning and Planning Information

D-1. General Population and Housing Characteristics: 1990

Geographic Area: Helena city,Arkansas

Subject	Number
Total population	**7,491**
SEX	
Male	3,338
Female	4,153
AGE	
Under 5 years	718
5 to 17 years	1,821
18 to 20 years	333
21 to 24 years	350
25 to 44 years	1,649
45 to 54 years	667
55 to 59 years	325
60 to 64 years	360
65 to 74 years	629
75 to 84 years	450
85 years and over	189
Under 18 years	2,539
65 years and over	1,268
HOUSEHOLDS BY TYPE	
Total households	**2,711**
Family households (families)	1,790
Married-couple families	1,013
Other family, male householder	70
Other family, female householder	707
Nonfamily households	921
Householder living alone	870
Householder 65 years and over	488
Persons living in households	7,221
Persons per household	2.66
GROUP QUARTERS	
Persons living in group quarters	270
Institutionalized persons	264
Other persons in group quarters	6
RACE AND HISPANIC ORIGIN	
White	2,700
Black	4,744
American Indian, Eskimo, or Aleut	8
Asian or Pacific Islander	32
Other race	7
Hispanic origin (of any race)	36
Total housing units	**2,987**
OCCUPANCY AND TENURE	
Occupied housing units	2,711
Owner occupied	1,161
Renter occupied	1,550
Vacant housing units	276
For seasonal, recreational, or occasional use	9
Homeowner vacancy rate	2.6
Rental vacancy rate	9.9
Persons per owner-occupied unit	2.49
Persons per renter-occupied unit	2.8
Units with over 1 person per room	220
UNITS IN STRUCTURE	
1-unit detached	1,727

D-1. General Population and Housing Characteristics: 1990

Geographic Area: Helena city,Arkansas

Subject	Number
1-unit attached	214
2 to 4 units	657
5 to 9 units	170
10 or more units	121
Mobile home, trailer, or other	98
VALUE	
Specified owner-occupied housing units	1,022
Less than $50,000	550
$50,000 to $99,999	340
$100,000 to $149,999	88
$150,000 to $199,999	21
$200,000 to $299,999	16
$300,000 or more	7
Median (dollars)	46,100
CONTRACT RENT	
Specified renter-occupied housing units paying cash rent	1,399
Less than $250	1,235
$250 to $499	137
$500 to $749	26
$750 to $999	1
$1,000 or more	0
Median (dollars)	134
RACE AND HISPANIC ORIGIN OF HOUSEHOLDER	
Occupied housing units	2,711
White	1,120
Black	1,577
American Indian, Eskimo, or Aleut	5
Asian or Pacific Islander	8
Other race	1
Hispanic origin (of any race)	10

(X) Not applicable

Source: U.S. Bureau of the Census, 1990 Census of Population and Housing, Summary Tape File 1 (100% Data)
Matrices P1, P3, P5, P6, P8, P11, P15, P16, P23, H1, H2, H3, H5, H8, H10, H18A, H21, H23, H23B, H32, H32B, H41.

NOTE TO ALL DATA USERS: All survey and census results contain measurement error and may contain sampling error. Information about these potential errors is provided or referenced with the data or the source of the data. The Census Bureau recommends that data users incorporate this information into their analyses as these errors could impact inferences. Researchers analyzing data to create their own estimates are responsible for the validity of those estimates and should not cite the Census Bureau as the source of the estimates but only as the source of the core data.

We have modified some data to protect individuals' privacy, but in a way that preserves the usefulness of the data.

NOTE TO ALL DATA USERS: All survey and census results contain measurement error and may contain sampling error. Information about these potential errors is provided or referenced with the data or the source of the data. The Census Bureau recommends that data users incorporate this information into their analyses as these errors could impact inferences. Researchers analyzing data to create their own estimates are responsible for the validity of those estimates and should not cite the Census Bureau as the source of the estimates but only as the source of the core data.

We have modified some data to protect individuals' privacy, but in a way that preserves the usefulness of the data.

(external system)

D-1. General Population and Housing Characteristics: 1990

Geographic Area: West Helena city,Arkansas

Subject	Number
Total population	**9,695**
SEX	
Male	4,373
Female	5,322
AGE	
Under 5 years	906
5 to 17 years	2,474
18 to 20 years	403
21 to 24 years	453
25 to 44 years	2,467
45 to 54 years	883
55 to 59 years	385
60 to 64 years	444
65 to 74 years	717
75 to 84 years	445
85 years and over	118
Under 18 years	3,380
65 years and over	1,280
HOUSEHOLDS BY TYPE	
Total households	**3,445**
Family households (families)	2,553
Married-couple families	1,637
Other family, male householder	98
Other family, female householder	818
Nonfamily households	892
Householder living alone	812
Householder 65 years and over	440
Persons living in households	9,685
Persons per household	2.81
GROUP QUARTERS	
Persons living in group quarters	10
Institutionalized persons	0
Other persons in group quarters	10
RACE AND HISPANIC ORIGIN	
White	4,645
Black	5,013
American Indian, Eskimo, or Aleut	14
Asian or Pacific Islander	14
Other race	9
Hispanic origin (of any race)	98
Total housing units	**3,671**
OCCUPANCY AND TENURE	
Occupied housing units	3,445
Owner occupied	1,830
Renter occupied	1,615
Vacant housing units	226
For seasonal, recreational, or occasional use	3
Homeowner vacancy rate	1.2
Rental vacancy rate	7.3
Persons per owner-occupied unit	2.59
Persons per renter-occupied unit	3.06
Units with over 1 person per room	265
UNITS IN STRUCTURE	
1-unit detached	2,756
1-unit attached	107
2 to 4 units	628

D-1. General Population and Housing Characteristics: 1990

Geographic Area: West Helena city,Arkansas

Subject	Number
5 to 9 units	34
10 or more units	16
Mobile home, trailer, or other	130
VALUE	
Specified owner-occupied housing units	1,659
Less than $50,000	1,288
$50,000 to $99,999	345
$100,000 to $149,999	18
$150,000 to $199,999	5
$200,000 to $299,999	3
$300,000 or more	0
Median (dollars)	36,400
CONTRACT RENT	
Specified renter-occupied housing units paying cash rent	1,483
Less than $250	1,217
$250 to $499	266
$500 to $749	0
$750 to $999	0
$1,000 or more	0
Median (dollars)	153
RACE AND HISPANIC ORIGIN OF HOUSEHOLDER	
Occupied housing units	3,445
White	1,857
Black	1,573
American Indian, Eskimo, or Aleut	6
Asian or Pacific Islander	5
Other race	4
Hispanic origin (of any race)	30

(X) Not applicable

Source: U.S. Bureau of the Census, 1990 Census of Population and Housing, Summary Tape File 1 (100% Data)
Matrices P1, P3, P5, P6, P8, P11, P15, P16, P23, H1, H2, H3, H5, H8, H10, H18A, H21, H23, H23B, H32, H32B, H41.

NOTE TO ALL DATA USERS: All survey and census results contain measurement error and may contain sampling error. Information about these potential errors is provided or referenced with the data or the source of the data. The Census Bureau recommends that data users incorporate this information into their analyses as these errors could impact inferences. Researchers analyzing data to create their own estimates are responsible for the validity of those estimates and should not cite the Census Bureau as the source of the estimates but only as the source of the core data.

We have modified some data to protect individuals' privacy, but in a way that preserves the usefulness of the data.

(external system)

Current Population Reports
Population Projections

Population Projections: States, 1995 – 2025

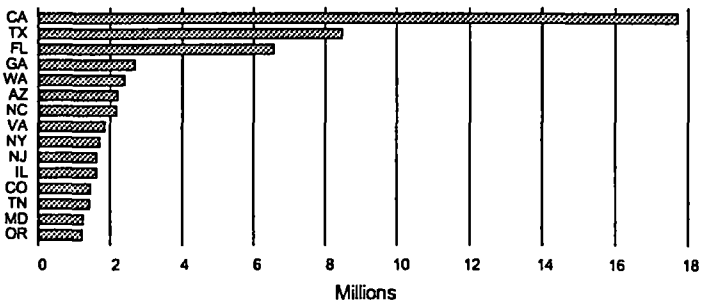
By Paul Campbell

CENSUS BUREAU
P25-1131
Issued May 1997

How will states' populations change in the future? All states will have more people (especially in the South and West) and more elderly as Baby Boomers age.

This report identifies population changes that are projected to affect the 50 states and the District of Columbia during the years 1995 to 2025. These projections are used as the basic input to many federal, state, and local projection models that produce detailed statistics on education, economic factors, labor force, health care, voting, and so forth. The results are useful to planners in both the public and private sectors.

Figure 1.
Most of the Increase is in the South and West
States with the largest projected net increase in population: 1995 to 2025



Source: U.S. Bureau of the Census, Population Division, PPL-47.

Basic assumptions for state population projections

Population. State projections are consistent with the national population projections.

Births. State trends in age-race-Hispanic-specific fertility rates for states parallel projected national trends.

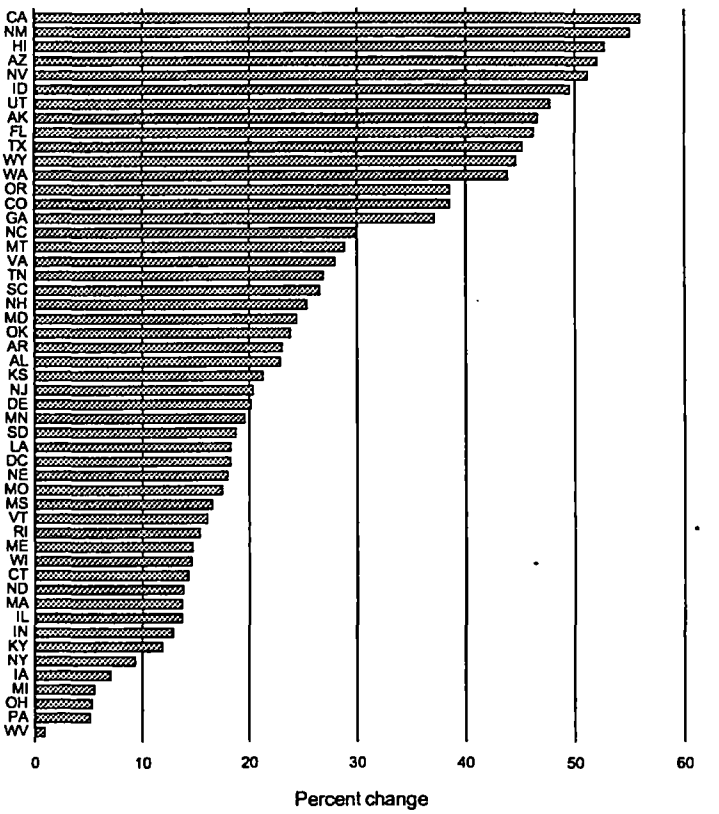
Deaths. State trends in age-sex-race-Hispanic-specific survival rates for states parallel projected national trends.

Net international migration. 820,000 annually, distributed by State, based on net international migration rates derived from 1990 census data for foreign-born persons who immigrated during the 1985-1990 period.

Net internal migration. Based on a time-series model using estimates of state-to-state migration for the 1975-94 period; the first 5 projection years use the time-series projections exclusively, the next 10 projection years interpolate toward the 1975-94 average of the time series, and the last 15 years use that average exclusively.

(For detailed discussions of the assumptions and methodology used to develop population projections, see the report cited on p. 6.)

Figure 2.
Fastest-Growing States
States ranked by percent change in population: 1995 to 2025



Source: U.S. Bureau of the Census, Population Division, PPL-47.

More people in the South and West

Over the next three decades, net population change (births minus deaths plus net migration) will be most evident in three states — California, Texas, and Florida — each of which will gain more than 6 million persons (see Figure 1 on page 1). They will account for 45 percent of the net population change in the United States. No other state will gain more than 2.7 million persons. In fact, the 12 States that will add between 1.0 million and 2.7 million people during this period will account for only 30 percent of the Nation's growth.

California, the most populous state with 12 percent of the Nation's population in 1995, is expected to have 15 percent of the Nation's population by 2025. California's increase in population — 17.7 million people — is nearly the current population of New York State. Besides natural increase, international migration is expected to contribute to California's rapid growth (Table 1).

The most populous states in the South will continue to grow fairly rapidly. During 1994, Texas replaced New York as the second most populous state and is expected to remain in that position throughout the projection period. Florida is projected to replace New York as the third most populous state by 2020.

Fastest growth in the West

The rate of population change among the 50 states and the District of Columbia will vary during the late 1990s. Nevada is expected to have the most rapid growth (22 percent from 1995 to 2000), with the District of Columbia at the other end of the continuum with a population loss of 6 percent. The most rapid rates of change are projected for the mountain states, with rates ranging from 9 percent to 22 percent during the 1995-2000 period. Georgia, with a 9 percent rate of population change, is the only other state projected to grow this rapidly.

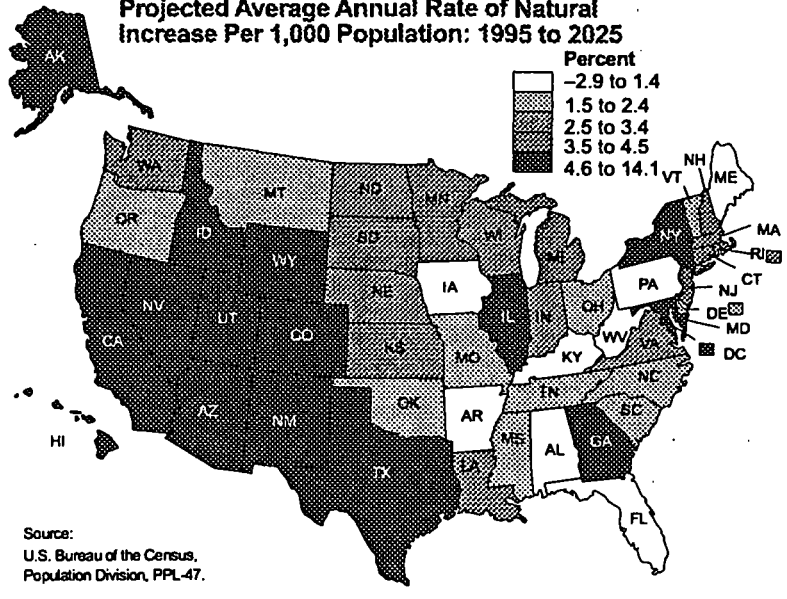
After 2000, the rate of population change for most states will decline substantially, assuming that national projection trends and historical trends in interstate migration continue. (See methodology details PPL-47.) In contrast, California is expected to grow faster after 2000, resulting in the highest rate of population change (52 percent) during the 2000-2025 period; see Figure 2 on page 1. During either period, the fastest growing states are in the West.

State differences in fertility and mortality to widen

Between 1995 and 2025, the range of birth rates is expected to widen slightly, reflecting the concentration of race and ethnic groups with high fertility rates in some states and differential migration patterns. Fertility is expected to range from 20 births per 1,000 population in the District of Columbia and California to 10 births per 1,000 population in West Virginia during the 30 years. The variation in mortality is expected to range from 13 deaths per 1,000 population in West Virginia and the District of Columbia to 5 deaths per 1,000 population in Alaska.

Alaska, California, Utah, Texas, and Hawaii (in rank order) are projected to have the highest average annual rate of natural increase from 1995 to 2025, with rates ranging from 14 down to 9 persons per 1,000 population. West Virginia and Arkansas are the only states expecting either no gain or a loss from natural increase (see Figure 3 below).

Figure 3.
Projected Average Annual Rate of Natural Increase Per 1,000 Population: 1995 to 2025



Source:
U.S. Bureau of the Census,
Population Division, PPL-47.

Figure 4.
Americans on the Move

States with the highest and lowest rates of in-migrants, out-migrants, and net interstate migrants per 1,000 population

States	In-migrants	States	Out-migrants	States	Net interstate migrants
Highest rates...					
DC	88	DC	98	Florida	8
Alaska	72	Alaska	76	Oregon	7
Wyoming	67	Wyoming	60	New Mexico	6
Nevada	60	Nevada	54	Nevada	6
New Mexico	54	Hawaii	49	Wyoming	6
Lowest rates...					
Wisconsin	19	Ohio	22	California	-4
Pennsylvania	18	Minnesota	21	Massachusetts	-4
California	18	Michigan	21	Illinois	-5
Michigan	17	Pennsylvania	19	New York	-9
New York	15	Wisconsin	19	DC	-10

Source: U.S. Census Bureau, PE-45.

Table 1. Total Population and Net Change for States: 1995 to 2025

[Thousands. Resident population]

Region, division, and state	Projections for July 1							July 1, 1995, to July 1, 2025				
									Components of change			
											Net migration	
	1995	2000	2005	2010	2015	2020	2025	Net change	Births	Deaths	Interstate migration	Immigration
United States	262,755	274,634	285,981	297,716	310,133	322,742	335,059	72,304	128,986	84,633	–	24,668
NORTHEAST	51,486	52,107	52,787	53,692	54,836	56,103	57,392	5,927	21,585	18,537	(7,169)	6,830
New England	13,312	13,581	13,843	14,172	14,540	14,938	15,321	2,009	5,448	4,090	(1,041)	1,338
Maine	1,241	1,259	1,285	1,323	1,362	1,398	1,423	181	437	402	86	20
New Hampshire	1,148	1,224	1,281	1,329	1,372	1,410	1,439	291	481	344	84	31
Vermont	585	617	638	651	662	671	678	94	221	180	26	7
Massachusetts	6,074	6,199	6,310	6,431	6,574	6,734	6,902	828	2,520	1,860	(815)	831
Rhode Island	990	998	1,012	1,038	1,070	1,105	1,141	151	423	318	(94)	113
Connecticut	3,276	3,284	3,317	3,400	3,506	3,621	3,739	464	1,368	992	(329)	337
Middle Atlantic	38,163	38,526	38,923	39,520	40,289	41,164	42,071	3,918	16,136	12,441	(6,127)	5,492
New York	18,136	18,146	18,250	18,530	18,916	19,359	19,830	1,694	8,117	5,698	(5,038)	3,886
New Jersey	7,945	8,178	8,392	8,638	8,924	9,238	9,558	1,613	3,535	2,542	(747)	1,201
Pennsylvania	12,072	12,202	12,281	12,352	12,449	12,567	12,683	611	4,484	4,301	(342)	405
MIDWEST	61,604	63,502	64,825	65,916	67,024	68,114	69,109	7,505	29,334	19,534	(3,541)	2,386
East North Central	43,456	44,419	45,151	45,764	46,410	47,063	47,675	4,219	18,512	13,557	(3,653)	1,839
Ohio	11,151	11,319	11,428	11,505	11,588	11,671	11,744	594	4,417	3,626	(758)	247
Indiana	5,803	6,045	6,215	6,318	6,404	6,481	6,546	742	2,377	1,879	(35)	110
Illinois	11,830	12,051	12,266	12,515	12,808	13,121	13,440	1,610	5,672	3,682	(1,699)	1,037
Michigan	9,549	9,679	9,763	9,836	9,917	10,002	10,078	528	3,965	2,874	(1,122)	310
Wisconsin	5,123	5,326	5,479	5,590	5,693	5,788	5,867	744	2,081	1,596	(39)	134
West North Central	18,148	19,082	19,673	20,151	20,615	21,051	21,434	3,286	7,822	5,978	112	528
Minnesota	4,610	4,830	5,005	5,147	5,283	5,406	5,510	900	1,993	1,349	(89)	190
Iowa	2,842	2,900	2,941	2,968	2,994	3,019	3,040	198	1,073	958	(97)	83
Missouri	5,324	5,540	5,718	5,864	6,005	6,137	6,250	927	2,260	1,858	255	105
North Dakota	641	662	677	690	704	717	729	88	270	214	(6)	13
South Dakota	729	777	810	826	840	853	866	137	341	248	6	6
Nebraska	1,637	1,705	1,761	1,806	1,850	1,892	1,930	293	718	543	35	29
Kansas	2,565	2,668	2,761	2,849	2,939	3,026	3,108	543	1,167	810	7	102
SOUTH	91,590	97,613	102,796	107,597	112,384	117,066	121,448	29,858	43,142	32,054	11,087	5,273
South Atlantic	46,995	50,147	52,921	55,457	57,866	60,411	62,675	15,680	20,602	16,583	6,707	3,799
Delaware	717	768	800	817	832	847	861	144	313	249	35	24
Maryland	5,042	5,275	5,467	5,657	5,862	6,071	6,274	1,232	2,295	1,537	(251)	593
District of Columbia	554	523	529	560	594	625	655	101	334	213	(156)	135
Virginia	6,618	6,997	7,324	7,627	7,921	8,204	8,466	1,848	2,839	2,074	299	605
West Virginia	1,828	1,841	1,849	1,851	1,851	1,850	1,845	17	555	715	105	14
North Carolina	7,195	7,777	8,227	8,552	8,840	9,111	9,349	2,154	3,039	2,612	1,295	199
South Carolina	3,673	3,858	4,033	4,205	4,369	4,517	4,645	972	1,566	1,313	548	58
Georgia	7,201	7,875	8,413	8,824	9,200	9,552	9,869	2,669	3,571	2,340	953	306
Florida	14,166	15,233	16,279	17,363	18,497	19,634	20,710	6,544	6,169	5,829	3,879	1,856
East South Central	16,067	16,918	17,804	18,122	18,586	19,002	19,346	3,279	8,593	5,791	1,737	262
Kentucky	3,860	3,995	4,098	4,170	4,231	4,281	4,314	454	1,439	1,344	175	67
Tennessee	5,256	5,657	5,966	6,180	6,365	6,529	6,665	1,409	2,217	1,909	845	97
Alabama	4,253	4,451	4,631	4,798	4,956	5,100	5,224	971	1,759	1,563	577	71
Mississippi	2,697	2,816	2,908	2,974	3,035	3,093	3,142	445	1,179	975	140	27
West South Central	26,528	30,548	32,263	34,019	35,932	37,647	39,427	10,899	15,987	9,680	2,624	1,222
Arkansas	2,484	2,631	2,750	2,840	2,922	2,997	3,055	572	1,000	979	436	31
Louisiana	4,342	4,425	4,535	4,683	4,840	4,991	5,133	790	2,054	1,501	45	90
Oklahoma	3,278	3,373	3,491	3,639	3,789	3,930	4,057	779	1,411	1,224	412	92
Texas	18,724	20,119	21,487	22,857	24,280	25,729	27,183	8,459	11,403	5,676	1,730	1,008
WEST	57,590	61,413	65,603	70,512	75,889	81,465	87,101	29,605	35,925	16,508	(359)	10,199
Mountain	15,645	17,725	19,249	20,221	21,122	22,049	22,962	7,317	8,794	4,938	2,490	648
Montana	870	950	1,006	1,040	1,069	1,097	1,121	251	374	316	143	13
Idaho	1,163	1,347	1,480	1,557	1,622	1,683	1,739	576	627	379	257	33
Wyoming	480	525	568	607	641	670	694	214	244	160	111	2
Colorado	3,747	4,168	4,468	4,658	4,833	5,012	5,188	1,442	1,855	1,122	504	123
New Mexico	1,685	1,860	2,016	2,155	2,300	2,454	2,612	927	1,030	626	403	12
Arizona	4,218	4,798	5,230	5,522	5,808	6,111	6,412	2,195	2,542	1,434	753	276
Utah	1,951	2,207	2,411	2,551	2,670	2,781	2,883	931	1,310	486	(31)	80
Nevada	1,530	1,871	2,070	2,131	2,179	2,241	2,312	782	813	516	351	106
Pacific	41,951	43,687	46,354	50,291	54,768	59,416	64,139	22,188	27,130	11,570	(2,848)	9,553
Washington	5,431	5,858	6,258	6,658	7,058	7,448	7,808	2,377	2,600	1,708	931	394
Oregon	3,141	3,397	3,613	3,803	3,992	4,177	4,349	1,209	1,364	1,169	712	197
California	31,589	32,521	34,441	37,644	41,373	45,278	49,285	17,696	22,035	8,248	(4,429)	8,725
Alaska	604	653	700	745	791	838	885	281	422	105	(84)	28
Hawaii	1,187	1,257	1,342	1,440	1,553	1,677	1,812	625	709	339	21	209

Source: U.S. Bureau of the Census, Population Division, PPL-47.

Table 1. Total Population and Net Change for States: 1995 to 2025—Con.

[Thousands. Resident population]

Region, division, and state	July 1, 1995, to July 1, 2000					July 1, 2000, to July 1, 2005				
		Components of change					Components of change			
				Net migration					Net migration	
	Net change	Births	Deaths	Interstate migration	Immigration	Net change	Births	Deaths	Interstate migration	Immigration
United States	11,879	19,601	12,727	–	4,113	11,347	19,645	13,240	–	4,112
NORTHEAST	841	3,585	2,749	(1,531)	1,106	980	3,497	2,747	(1,333)	1,119
New England	268	896	669	(248)	220	263	853	674	(200)	221
Maine	18	76	64	(4)	3	26	72	64	8	3
New Hampshire	76	78	50	37	5	57	76	53	23	5
Vermont	32	38	27	17	1	21	37	28	9	1
Massachusetts	125	417	311	(148)	136	111	394	311	(138)	137
Rhode Island	8	68	54	(30)	18	15	65	54	(20)	19
Connecticut	10	222	163	(121)	55	33	209	165	(82)	56
Middle Atlantic	573	2,687	2,080	(1,283)	888	397	2,554	2,073	(1,133)	898
New York	10	1,349	962	(1,069)	622	104	1,270	940	(921)	633
New Jersey	233	566	412	(151)	198	214	548	418	(143)	199
Pennsylvania	130	772	706	(64)	66	79	737	716	(69)	66
MIDWEST	1,898	4,383	3,089	(236)	395	1,323	4,307	3,154	(473)	393
East North Central	963	3,101	2,154	(461)	307	732	3,025	2,200	(565)	308
Ohio	168	763	571	(113)	41	109	738	588	(130)	41
Indiana	241	401	288	85	19	171	396	298	30	19
Illinois	221	913	591	(310)	175	216	895	592	(292)	174
Michigan	130	684	456	(187)	51	84	656	467	(193)	51
Wisconsin	203	340	248	64	22	153	342	255	20	22
West North Central	735	1,283	936	224	88	591	1,279	954	92	87
Minnesota	220	316	205	54	31	175	322	212	13	31
Iowa	58	184	155	-	13	41	182	156	(13)	13
Missouri	217	369	292	96	17	177	369	296	63	17
North Dakota	20	43	33	4	2	16	44	34	-	2
South Dakota	48	54	38	27	1	32	57	39	9	1
Nebraska	68	115	84	24	5	56	118	86	12	5
Kansas	103	183	128	18	17	93	187	130	7	17
SOUTH	5,723	6,708	4,647	2,347	694	5,175	6,780	4,855	2,049	885
South Atlantic	3,151	3,254	2,364	1,454	617	2,774	3,256	2,566	1,251	619
Delaware	50	52	36	27	4	33	51	39	13	4
Maryland	232	364	229	(23)	97	193	357	242	(42)	98
District of Columbia	(31)	49	39	(65)	22	5	48	36	(30)	22
Virginia	379	458	291	85	100	327	447	314	66	100
West Virginia	13	105	112	10	2	8	99	114	13	2
North Carolina	582	489	354	382	33	450	490	390	281	33
South Carolina	185	263	179	77	10	175	252	195	91	10
Georgia	674	543	316	371	52	538	562	345	246	51
Florida	1,068	933	831	590	298	1,046	950	891	612	299
East South Central	852	1,110	849	485	44	856	1,094	988	369	44
Kentucky	134	254	201	58	11	104	245	208	39	11
Tennessee	401	357	271	278	16	308	361	289	197	16
Alabama	198	295	230	104	12	181	287	240	103	12
Mississippi	119	205	146	46	4	93	200	151	30	4
West South Central	1,720	2,344	1,315	468	234	1,716	2,430	1,401	429	222
Arkansas	148	170	144	106	5	119	169	150	83	5
Louisiana	82	336	219	(65)	15	111	333	229	(21)	15
Oklahoma	95	224	177	18	15	119	226	185	49	15
Texas	1,395	1,613	776	350	199	1,368	1,703	837	318	187
WEST	3,816	4,946	2,342	(580)	1,719	4,190	5,151	2,484	(243)	1,719
Mountain	2,060	1,261	632	1,285	122	1,523	1,384	723	706	114
Montana	79	58	42	57	2	57	63	47	34	2
Idaho	183	90	48	131	8	133	103	55	75	8
Wyoming	44	35	20	27	1	43	39	22	24	1
Colorado	422	274	140	253	24	299	293	161	134	22
New Mexico	175	144	70	94	5	156	156	77	73	4
Arizona	580	354	188	351	51	433	387	213	201	48
Utah	256	190	60	106	14	204	211	69	42	13
Nevada	341	116	64	266	19	199	132	78	123	18
Pacific	1,756	3,684	1,710	(1,865)	1,598	2,668	3,767	1,761	(949)	1,601
Washington	427	385	228	182	67	399	399	250	163	66
Oregon	257	208	155	156	34	216	216	172	124	33
California	932	2,937	1,268	(2,188)	1,459	1,920	2,987	1,274	(1,225)	1,465
Alaska	50	56	14	-	5	46	62	15	(7)	5
Hawaii	71	99	45	(15)	31	84	103	50	(4)	32

Note: Components do not include adjustments to bring the sum of the state projections by age, sex, and race into agreement with the national population projections. Thus, the net sum of the components will not equal the net change in population. A dash (–) represents a value that equals zero, see U.S. Bureau of the Census, Population Division, PPL-47.

While Americans frequently move among the states...

Florida, Texas, and North Carolina will each gain 1 million or more persons over the 30-year period through net interstate migration, with Florida gaining nearly 4 million. Georgia and Washington will each gain slightly less than 1 million. Four states will have a net loss of at least 1 million persons to other states. New York will lose 5.0 million; California, 4.4 million; Illinois, 1.7 million; and Michigan, 1.1 million. Over the 1995-2025 period, nearly one-quarter billion people are projected to move from one state to another.

Florida, Oregon, New Mexico, Nevada, and Wyoming, (in rank order) will have the highest average annual net internal migration rates from 1995 to 2025 (ranging from 8 persons to 6 persons per 1,000 population). Nearly two-fifths of the 50 states will have negative net interstate migration during 1995 to 2025. The District of Columbia and New York will each lose 10 and 9 persons per 1,000 population respectively, to other states.

Clearly, the net interstate migration for states is relatively small compared with the total number of people entering and leaving each state over the 30-year period. For example, the District of Columbia will have the largest net loss, but it is also expected to have the highest in-migration flow — an average of 88 migrants per 1,000 population — and the highest out-migration flow — an average of 98 migrants per 1,000 population. New York expects the lowest average annual rate of in-migration (15 migrants per 1,000 population), while Wisconsin expects the lowest average annual rate of out-migration (19 migrants per 1,000 population); see Figure 4 on page 2.

...there are also many immigrants coming to America

California is projected to add the largest number of international migrants (more than 8 million). This gain would be more than one-third of the immigrants added to the Nation's population over the 30-year period. Other states projected to have gains of 1 million or more from immigration are New York, Florida, New Jersey, Illinois, and Texas.

States with the highest rates of net international migration (more than 5 people per 1,000 population) were the District of Columbia, California, New York, Hawaii, and New Jersey. The lowest rates are expected for Wyoming, New Mexico, South Dakota, West Virginia, Mississippi, and Arkansas (less than 0.4 persons per 1,000 population); see Figure 5.

Figure 5.
Coming to America

States with the largest projected net increase in immigrants: 1995 to 2025

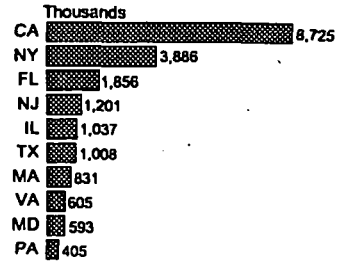
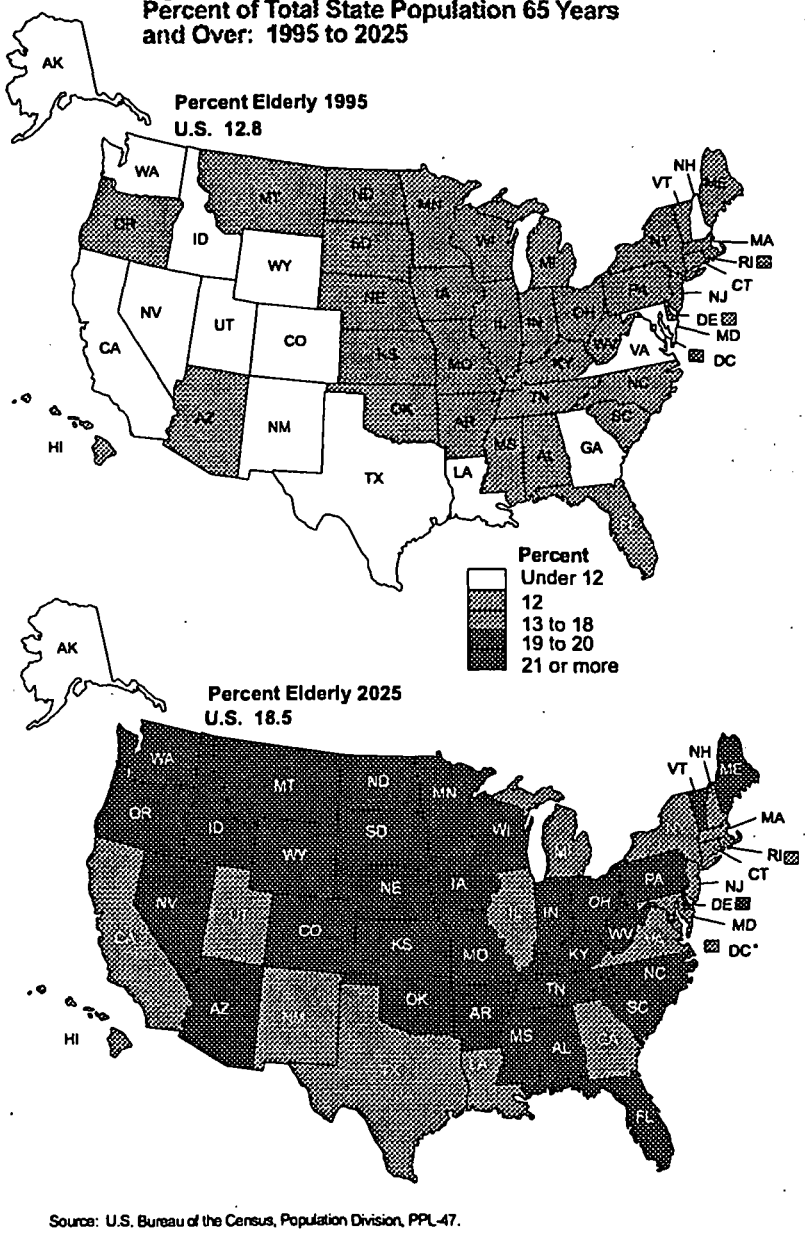


Figure 6.
Percent of Total State Population 65 Years and Over: 1995 to 2025



Source: U.S. Bureau of the Census, Population Division, PPL-47.

The proportion of youth should drop...

The Nation's young (newborns to age 19) are projected to account for a slightly smaller proportion of the population — 27 percent in 2025 compared to 29 percent in 1995. Most states will follow this trend, but California, Hawaii, New York, Rhode Island, and the District of Columbia are expected to be exceptions. Even though the West will have a slight decline in the proportion of youth, it will continue to lead all regions with the greatest proportion of population under 20 years of age, while the South will have the smallest. For example, in 2025, Alaska will be the state with the highest proportion of its population under 20 years of age (34 percent), followed by California (33 percent), while West Virginia and Florida will have the smallest proportion (both with 21 percent).

...as the proportion of elderly increases

As the Baby-Boom generation (those born between 1946 and 1964) starts reaching retirement age in 2011, the size of the elderly population (ages 65 and over) is projected to increase in all states. Over the 30-year period, California and Florida would continue to rank first and second, respectively, in having the largest number of elderly. By 2025, Texas will move up to rank third, passing New York and Pennsylvania. In contrast, before 2011, the number of elderly will remain about the same in most states.

In 1995, Florida had the largest proportion of elderly (19 percent) of any state, and Alaska had the smallest, at 5 percent (see Figure 6 on page 5). By 2025, Florida is expected to remain the "oldest" state with more than 26 percent of its population age 65 or older. Alaska will still rank as the "youngest" state with 10 percent elderly. To further illustrate the rapid growth in elderly populations, only five states had at least 15 percent of their population in the elderly category in 1995. By 2025, that number is expected to grow to 48 states. Only Alaska (10 percent), California (13 percent), and the District of Columbia (14 percent) will not meet or exceed the 15 percent level. From a different perspective, the number of elderly is projected to at least double in 20 states between 1995 and 2025.

Contacts:

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State Projections
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301-457-2428
Paul.R.Campbell@
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Methodology

State population projections were derived using the cohort-component method. These projections were prepared for the 50 states and the District of Columbia by age (single year of age — 0 to 84 years, and 85+), sex, race, and Hispanic origin (non-Hispanic White; non-Hispanic Black; non-Hispanic American Indian, Eskimo and Aleut; non-Hispanic Asian and Pacific Islander; Hispanic White; Hispanic Black; Hispanic American Indian, Eskimo and Aleut; and Hispanic Asian and Pacific Islander). Taking into account various assumptions, historical, and national trends for each year, state populations change through the process of aging, adding births, subtracting deaths, and movement from state-to-state, abroad, or to another country. Two projection series were calculated based on different assumptions about state-to-state migration. This report uses Series A, which is a time-series model that uses state-to-state migration observed from 1975-76 through 1993-94. Also available in report PPL-47 and on the Internet is Series B, based on Bureau of Economic Analysis (BEA) employment projections. For a more thorough discussion of the methodology, see report PPL-47 cited below.

More Information

Detailed information such as results, methodology, and selected data tables is available from the Population Division's Statistical Information Office — 301-457-2422 — in the following formats:

A) Paper Product Listing PPL-47 for $28.50. The author and title are: Campbell, Paul R., 1996, *"Population Projections for States by Age, Sex, Race, and Hispanic Origin: 1995 to 2025,"* PPL-47, U.S. Bureau of the Census, Population Division, 105 pages. This report also identifies alternative sources of state population projections.

B) Diskettes PE-45 (3-1/2 inch diskette ASCII files). A single diskette with both Series A and B for each state or the District of Columbia ($20 each state). The PE-45 diskettes (and Internet files, see below) contain the detailed state populations by single years of age, sex, race, and Hispanic origin. Also included are the components of population change (annual total — births, deaths, state-to-state migrants, and international migrants.)

All of the above information (except for the detailed tables in PPL-47) are available on the Internet. The Internet user should go to the Census Bureau's website — http://www.census.gov/population/www/projections/stproj.html

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HELENA, PHILLIPS COUNTY, ARKANSAS USA

Located at *about* 34.53°N 90.58°W. Height *about* 59m / 193 feet above sea level.

Average Rainfall

	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Year
mm	128.9	123.5	131.9	128.8	129.2	95.4	97.5	74.4	79.7	75.4	120.1	130.8	1316.5
inches	5.1	4.9	5.2	5.1	5.1	3.8	3.8	2.9	3.1	3.0	4.7	5.1	51.8

Source: derived from NCDC Cooperative Stations. 52 complete years between 1931 and 1995

For **current** weather conditions, weather maps and forecasts, see Weather Site dot com.

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Average Rainfall

	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Year
mm	128.9	123.5	131.9	128.8	129.2	95.4	97.5	74.4	79.7	75.4	120.1	130.8	1316.5
inches	5.1	4.9	5.2	5.1	5.1	3.8	3.8	2.9	3.1	3.0	4.7	5.1	51.8

Source: derived from NCDC Cooperative Stations. 52 complete years between 1931 and 1995

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HELENA, PHILLIPS COUNTY, ARKANSAS USA

Located at *about* 34.53°N 90.58°W. Height *about* 59m / 193 feet above sea level.

Heating Degree Days

	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Year
°C	466	353	227	77	19	0	0	0	8	80	223	396	1854
°F	839	635	409	139	34	0	0	0	14	144	401	713	3337

Source: derived from NCDC TD 9641 Clim 81 1961-1990 Normals. 30 years between 1961 and 1990

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HELENA, PHILLIPS COUNTY, ARKANSAS USA

Located at *about* 34.53°N 90.58°W. Height *about* 59m / 193 feet above sea level.

Cooling Degree Days

	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Year
°C	0	0	5	27	105	210	273	244	142	32	0	0	1041
°F	0	0	9	49	189	378	491	439	256	58	0	0	1874

Source: derived from NCDC TD 9641 Clim 81 1961-1990 Normals. 30 years between 1961 and 1990

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HELENA, PHILLIPS COUNTY, ARKANSAS USA

Located at *about* 34.53°N 90.58°W. Height *about* 59m / 193 feet above sea level.

Average Maximum Temperature

	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Year
°C	8.5	11.3	16.8	22.7	27.0	31.2	32.9	32.1	28.8	23.7	16.9	11.0	21.9
°F	47.3	52.3	62.2	72.9	80.6	88.2	91.2	89.8	83.8	74.7	62.4	51.8	71.4

Source: derived from NCDC TD 9641 Clim 81 1961-1990 Normals. 30 years between 1961 and 1990

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HELENA, PHILLIPS COUNTY, ARKANSAS USA

Located at *about* 34.53°N 90.58°W. Height *about* 59m / 193 feet above sea level.

Average Temperature

	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Year
°C	3.2	5.7	11.1	16.6	21.1	25.3	27.1	26.2	22.7	16.7	10.9	5.5	16.0
°F	37.8	42.3	52.0	61.9	70.0	77.5	80.8	79.2	72.9	62.1	51.6	41.9	60.8

Source: derived from NCDC TD 9641 Clim 81 1961-1990 Normals. 30 years between 1961 and 1990

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HELENA, PHILLIPS COUNTY, ARKANSAS USA

Located at *about* 34.53°N 90.58°W. Height *about* 59m / 193 feet above sea level.

Average Minimum Temperature

	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Year
°C	-2.0	0.1	5.4	10.6	15.2	19.3	21.3	20.2	16.6	9.7	4.8	0.1	10.1
°F	28.4	32.2	41.7	51.1	59.4	66.7	70.3	68.4	61.9	49.5	40.6	32.2	50.2

Source: derived from NCDC TD 9641 Clim 81 1961-1990 Normals. 30 years between 1961 and 1990

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Appendix F

Volatilization Factor Calculations

EPA United States Environmental Protection Agency — Superfund Risk Assessment

Equation Values for Inhalation of Volatiles

Volatilization Factor Parameter	Value	Soil Saturation Concentration Parameter	Value	Noncarcinogenic Parameter	Value	Carcinogenic Parameter
Surface Area (acres)	30.0			Target Hazard Quotient (unitless)	1	Target Risk (unitless
City (climate zone)	LittleRock(VI)			Exposure Duration (yr)	30	Exposure Duration (
Q/C (g/m^2-s per kg/m^3)	37.64			Exposure Frequency (day/yr)	350	Exposure Frequency (day/yr)
Fraction organic carbon (unitless)	0.006	Fraction organic carbon (unitless)	0.006			Average Lifetime (yr
Dry soil bulk density (g/cm^3)	1.5	Dry soil bulk density (g/cm^3)	1.5			
Soil particle density (g/cm^3)	2.65	Soil particle density (g/cm^3)	2.65			
Water-filled soil porosity (L_{water}/L_{soil})	0.15	Water-filled soil porosity (L_{water}/L_{soil})	0.15			
Exposure interval (s)	9.5e08					

Soil Screening Levels for Inhalation of Volatiles (mg/kg)

Analyte	Cas Number	Inhalation RfC	Inhalation Unit Risk	Volatilization Factor	Soil Saturation Concentration	Noncarcinogenic	Carci
Carbon Tetrachloride	56235		1.5E-05 a	1.1E+03	1.1E+03		1.8

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SELECTION:

Your **Analytes** are:
Carbon Tetrachloride

Your **Pathways** are
Inhalation of Volatiles

Default Parameters
Each pathway you have selected is given below along with the applicable Equations and its associated Default Parameters. equation, the default values will be used unless you enter a different value.

Inhalation of Volatiles

There are two methods for calculating volatilization factor depending on which parameters are known. Select a surface area, a zone, and a method calculation.

Volatilization Factor - METHOD 1

$$VF\,(m^3/kg) = \frac{Q/C \times (3.14 \times D_A \times T)^{1/2} \times 10^{-4}\,(m^2/cm^2)}{2 \times \rho_b \times D_A}$$

where $$D_A = \frac{\left[(\theta_a^{10/3} D_i H + \theta_w^{10/3} D_w)/n^2\right]}{\rho_b K_d + \theta_w + \theta_a H'}$$

0.006	foc (fraction organic carbon in soil) g/g
1.5	ρ_b (dry soil bulk density) g/cm^3
2.65	ρ_s (soil particle density) g/cm^3
9.5e08	T (exposure interval) s
0.15	θ_w (water-filled soil porosity) L_{water}/L_{soil}

Volatilization Factor - METHOD 2 (mass-limit approach)

$$VF = Q/C \times \frac{\left[T \times (3.15 \times 10^7\,(s/yr))\right]}{\left[\rho_b \times d_s \times 10^3\,(g/Mg)\right]}$$

1.5	ρ_b (dry soil bulk density) kg/L or M
30	T (exposure interval) yr
0	d_s (depth of source) m - site-specific

Do not use this method unless you have values for all of the parameters.

Little Rock (VI) — City (Climatic Zone)

30.0 — Surface Area (acres)

37.64 — Q/C (inverse of the mean conc. at the center of a 0.5-acre-square source) g/m^2-s per kg/m^3

Method for Calculating VF
Method 1 ◉ Method 2 ○

NOTES:

1. VF (volatilization factor) m^3/kg
2. *The Surface Area and City/Climate Zone are used to look up a Q/C. Q/C is the inverse of mean concentration at center* acre-square source (g/m^2-s per kg/m^3). Pick the city with the most similar climatic conditions (map).
3. D_A (apparent diffusivity) cm^2/s

4. θ_a (air-filled soil porosity) $L_{air}/L_{soil} = n - \theta_w$
5. D_i (diffusivity in air) cm^2/s - chemical-specific
6. H' (dimensionless Henry's law constant) - chemical-specific
7. n (total soil porosity) $L_{pore}/L_{soil} = 1-(\rho_b/\rho_s)$
8. D_w (diffusivity in water) - chemical-specific
9. K_d (soil-water partition coefficient) $cm^3/g = K_{oc} \times f_{oc}$ (organics) - chemical-specific
10. K_{oc} (soil organic carbon partition coefficient) cm^3/g - chemical specific

Inhalation of Noncarcinogenic Volatiles in Soil

$$SL(mg/kg) = \frac{THQ \times AT \times 365(d/yr)}{EF \times ED \times \left[\frac{1}{RfC} \times \frac{1}{VF}\right]}$$

1	THQ (target hazard quotient) unitless
30	AT (averaging time) yr
350	EF (exposure frequency) d/yr
30	ED (exposure duration) yr

NOTES:

1. AT=ED for Noncarcinogens.
2. RfC (inhalation reference concentration) mg/m^3 - chemical-specific
3. VF (volatilization factor) m^3/kg

Inhalation of Carcinogenic Volatiles in Soil

$$SL(mg/kg) = \frac{TR \times AT \times 365(d/yr)}{URF \times 1000(ug/mg) \times EF \times ED \times \frac{1}{VF}}$$

1.0E-6	TR (target risk) unitless
70	AT (averaging time) yr
350	EF (exposure frequency) d/yr
30	ED (exposure duration) yr

NOTES:

1. URF (inhalation unit risk factor) $(ug/m^3)^{-1}$ - chemical-specific
2. VF (volatilization factor) m^3/kg

Inhalation of Volatiles - Soil Saturation Concentration

Only applies to chemicals which are liquid at ambient air temperatures.

$$C_{sat} = \frac{S}{\rho_b}(K_d\rho_b + \theta_w + H'\theta_a)$$

0.006	foc (fraction organic carbon in soil) g/g
1.5	ρ_b (dry soil bulk density) kg/L
2.65	ρ_s (soil particle density) kg/L
0.15	θ_w (water-filled soil porosity) L_{water}/L_{soil}

NOTES:

1. C_{sat} (soil saturation concentration) mg/kg
2. S (solubility in water) mg/L-water - chemical-specific
3. θ_a (air-filled soil porosity) $L_{air}/L_{soil} = n - \theta_w$
4. H' (dimensionless Henry's law constant) - chemical-specific
5. n (total soil porosity) $L_{pore}/L_{soil} = 1-(\rho_b/\rho_s)$
6. K_d (soil-water partition coefficient) L/kg = $K_{oc} \times f_{oc}$ (organics) - chemical-specific
7. K_{oc} (soil organic carbon/water partition coefficient) L/kg - chemical specific

clear selection NEXT

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Equation Values for Inhalation of Volatiles

Volatilization Factor Parameter	Value	Soil Saturation Concentration Parameter	Value	Noncarcinogenic Parameter	Value	Carcinogenic Parameter
Surface Area (acres)	30.0			Target Hazard Quotient (unitless)	1	Target Risk (unitless
City (climate zone)	LittleRock(VI)			Exposure Duration (yr)	30	Exposure Duration (
Q/C (g/m^2-s per kg/m^3)	37.64			Exposure Frequency (day/yr)	350	Exposure Frequency (day/yr)
Fraction organic carbon (unitless)	0.006	Fraction organic carbon (unitless)	0.006			Average Lifetime (yr
Dry soil bulk density (g/cm^3)	1.5	Dry soil bulk density (g/cm^3)	1.5			
Soil particle density (g/cm^3)	2.65	Soil particle density (g/cm^3)	2.65			
Water-filled soil porosity (L_{water}/L_{soil})	0.15	Water-filled soil porosity (L_{water}/L_{soil})	0.15			
Exposure interval (s)	9.5e08					

Soil Screening Levels for Inhalation of Volatiles (mg/kg)

Analyte	Cas Number	Inhalation RfC	Inhalation Unit Risk	Volatilization Factor	Soil Saturation Concentration	Noncarcinogenic	Carcino
Chloroform	67663		2.3E-05 a	1.4E+03	2.9E+03		1.5E

URL: http://risk.lsd.ornl.gov/epa/ssl1.htm
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EPA United States Environmental Protection Agency — Superfund Risk Assessment

SELECTION:

Your **Analytes** are:
Chloroform

Your **Pathways** are
Inhalation of Volatiles

Default Parameters
Each pathway you have selected is given below along with the applicable Equations and its associated Default Parameters. equation, the default values will be used unless you enter a different value.

Inhalation of Volatiles

There are two methods for calculating volatilization factor depending on which parameters are known. Select a surface area, a zone, and a method calculation.

Volatilization Factor - METHOD 1

$$VF\,(m^3/kg) = \frac{Q/C \times (3.14 \times D_A \times T)^{1/2} \times 10^{-4}\,(m^2/cm^2)}{2 \times \rho_b \times D_A}$$

where $$D_A = \frac{\left[\left(\theta_a^{10/3} D_i H' + \theta_w^{10/3} D_w\right)/n^2\right]}{\rho_b K_d + \theta_w + \theta_a H'}$$

0.006	foc (fraction organic carbon in soil) g/g
1.5	ρ_b (dry soil bulk density) g/cm^3
2.65	ρ_s (soil particle density) g/cm^3
9.5e08	T (exposure interval) s
0.15	θ_w (water-filled soil porosity) L_{water}/L_{soil}

Volatilization Factor - METHOD 2
(mass-limit approach)

$$VF = Q/C \times \frac{\left[T \times (3.15 \times 10^7\,(s/yr))\right]}{\left[\rho_b \times d_s \times 10^6\,(g/Mg)\right]}$$

1.5	ρ_b (dry soil bulk density) kg/L or M
30	T (exposure interval) yr
0	d_s (depth of source) m - site-specific

Do not use this method unless you have values for all of the parameters.

Los Angeles (III) — City (Climatic Zone)

0.5 — Surface Area (acres)

68.81 — Q/C (inverse of the mean conc. at the center of a 0.5-acre-square source) g/m^2-s per kg/m^3

Method for Calculating VF
Method 1 (◉) Method 2 ( )

NOTES:

1. VF (volatilization factor) m^3/kg
2. The Surface Area and City/Climate Zone are used to look up a Q/C. Q/C is the inverse of mean concentration at center acre-square source (g/m^2-s per kg/m^3). Pick the city with the most similar climatic conditions (map).
3. D_A (apparent diffusivity) cm^2/s

4. θ_a (air-filled soil porosity) $L_{air}/L_{soil} = n - \theta_w$
5. D_i (diffusivity in air) cm^2/s - chemical-specific
6. H' (dimensionless Henry's law constant) - chemical-specific
7. n (total soil porosity) $L_{pore}/L_{soil} = 1-(\rho_b/\rho_s)$
8. D_w (diffusivity in water) - chemical-specific
9. K_d (soil-water partition coefficient) $cm^3/g = K_{oc} \times f_{oc}$ (organics) - chemical-specific
10. K_{oc} (soil organic carbon partition coefficient) cm^3/g - chemical specific

Inhalation of Noncarcinogenic Volatiles in Soil

$$SL(mg/kg) = \frac{THQ \times AT \times 365(d/yr)}{EF \times ED \times \left[\frac{1}{RfC} \times \frac{1}{VF}\right]}$$

1	THQ (target hazard quotient) unitless
30	AT (averaging time) yr
350	EF (exposure frequency) d/yr
30	ED (exposure duration) yr

NOTES:

1. AT=ED for Noncarcinogens.
2. RfC (inhalation reference concentration) mg/m^3 - chemical-specific
3. VF (volatilization factor) m^3/kg

Inhalation of Carcinogenic Volatiles in Soil

$$SL(mg/kg) = \frac{TR \times AT \times 365(d/yr)}{URF \times 1{,}000(ug/mg) \times EF \times ED \times \frac{1}{VF}}$$

1.0E-6	TR (target risk) unitless
70	AT (averaging time) yr
350	EF (exposure frequency) d/yr
30	ED (exposure duration) yr

NOTES:

1. URF (inhalation unit risk factor) $(ug/m^3)^{-1}$ - chemical-specific
2. VF (volatilization factor) m^3/kg

Inhalation of Volatiles - Soil Saturation Concentration

Only applies to chemicals which are liquid at ambient air temperatures.

$$C_{sat} = \frac{S}{\rho_b}(K_d\rho_b + \theta_w + H'\theta_a)$$

0.006	foc (fraction organic carbon in soil) g/g
1.5	ρ_b (dry soil bulk density) kg/L
2.65	ρ_s (soil particle density) kg/L
0.15	θ_w (water-filled soil porosity) L_{water}/L_{soil}

NOTES:

1. C_{sat} (soil saturation concentration) mg/kg
2. S (solubility in water) mg/L-water - chemical-specific
3. θ_a (air-filled soil porosity) $L_{air}/L_{soil} = n - \theta_w$
4. H' (dimensionless Henry's law constant) - chemical-specific
5. n (total soil porosity) $L_{pore}/L_{soil} = 1-(\rho_b/\rho_s)$
6. K_d (soil-water partition coefficient) L/kg = $K_{oc} \times f_{oc}$ (organics) - chemical-specific
7. K_{oc} (soil organic carbon/water partition coefficient) L/kg - chemical specific

clear selection NEXT

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Equation Values for Inhalation of Volatiles

Volatilization Factor Parameter	Value	Soil Saturation Concentration Parameter	Value	Noncarcinogenic Parameter	Value	Carcinogenic Parameter
Surface Area (acres)	30.0			Target Hazard Quotient (unitless)	1	Target Risk (unitless
City (climate zone)	LittleRock(VI)			Exposure Duration (yr)	30	Exposure Duration (
Q/C (g/m^2-s per kg/m^3)	37.64			Exposure Frequency (day/yr)	350	Exposure Frequency (day/yr)
Fraction organic carbon (unitless)	0.006	Fraction organic carbon (unitless)	0.006			Average Lifetime (yr
Dry soil bulk density (g/cm^3)	1.5	Dry soil bulk density (g/cm^3)	1.5			
Soil particle density (g/cm^3)	2.65	Soil particle density (g/cm^3)	2.65			
Water-filled soil porosity (L_{water}/L_{soil})	0.15	Water-filled soil porosity (L_{water}/L_{soil})	0.15			
Exposure interval (s)	9.5e08					

Soil Screening Levels for Inhalation of Volatiles (mg/kg)

Analyte	Cas Number	Inhalation RfC	Inhalation Unit Risk	Volatilization Factor	Soil Saturation Concentration	Noncarcinogenic	Carcin
Dichloroethane, 1,2-	107062		2.6E-05 a	2.1E+03	1.8E+03		2.0

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SELECTION:

Your Analytes are:
Dichloroethane, 1,2-

Your Pathways are
Inhalation of Volatiles

Default Parameters
Each pathway you have selected is given below along with the applicable Equations and its associated Default Parameters. equation, the default values will be used unless you enter a different value.

Inhalation of Volatiles

There are two methods for calculating volatilization factor depending on which parameters are known. Select a surface area, a zone, and a method calculation.

Volatilization Factor - METHOD 1

$$VF\,(m^3/kg) = \frac{Q/C \times (3.14 \times D_A \times T)^{1/2} \times 10^{-4}\,(m^2/cm^2)}{2 \times \rho_b \times D_A}$$

where $$D_A = \frac{\left[(\theta_a^{10/3} D_i H' + \theta_w^{10/3} D_w)/n^2\right]}{\rho_b K_d + \theta_w + \theta_a H'}$$

0.006	foc (fraction organic carbon in soil) g/g
1.5	ρ_b (dry soil bulk density) g/cm^3
2.65	ρ_s (soil particle density) g/cm^3
9.5e08	T (exposure interval) s
0.15	θ_w (water-filled soil porosity) L_{water}/L_{soil}

Volatilization Factor - METHOD 2 (mass-limit approach)

$$VF = Q/C \times \frac{\left[T \times (3.15 \times 10^7\,(s/yr))\right]}{\left\{\rho_b \times d_s \times 10^6\,(g/Mg)\right\}}$$

1.5	ρ_b (dry soil bulk density) kg/L or M
30	T (exposure interval) yr
0	d_s (depth of source) m - site-specific

Do not use this method unless you have values for all of the parameters.

Little Rock (VI) — City (Climatic Zone)

30.0 — Surface Area (acres)

37.64 — Q/C (inverse of the mean conc. at the center of a 0.5-acre-square source) g/m^2-s per kg/m^3

Method for Calculating VF
Method 1 ◉ Method 2 ○

NOTES:

1. VF (volatilization factor) m^3/kg
2. The Surface Area and City/Climate Zone are used to look up a Q/C. Q/C is the inverse of mean concentration at center acre-square source (g/m^2-s per kg/m^3). Pick the city with the most similar climatic conditions (map).
3. D_A (apparent diffusivity) cm^2/s

4. θ_a (air-filled soil porosity) $L_{air}/L_{soil} = n - \theta_w$
5. D_i (diffusivity in air) cm^2/s - chemical-specific
6. H' (dimensionless Henry's law constant) - chemical-specific
7. n (total soil porosity) $L_{pore}/L_{soil} = 1-(\rho_b/\rho_s)$
8. D_w (diffusivity in water) - chemical-specific
9. K_d (soil-water partition coefficient) $cm^3/g = K_{oc} \times f_{oc}$ (organics) - chemical-specific
10. K_{oc} (soil organic carbon partition coefficient) cm^3/g - chemical specific

Inhalation of Noncarcinogenic Volatiles in Soil

$$SL(mg/kg) = \frac{THQ \times AT \times 365(d/yr)}{EF \times ED \times \left[\frac{1}{RfC} \times \frac{1}{VF}\right]}$$

1	THQ (target hazard quotient) unitless
30	AT (averaging time) yr
350	EF (exposure frequency) d/yr
30	ED (exposure duration) yr

NOTES:

1. AT=ED for Noncarcinogens.
2. RfC (inhalation reference concentration) mg/m^3 - chemical-specific
3. VF (volatilization factor) m^3/kg

Inhalation of Carcinogenic Volatiles in Soil

$$SL(mg/kg) = \frac{TR \times AT \times 365(d/yr)}{URF \times 1000(ug/mg) \times EF \times ED \times \frac{1}{VF}}$$

1.0E-6	TR (target risk) unitless
70	AT (averaging time) yr
350	EF (exposure frequency) d/yr
30	ED (exposure duration) yr

NOTES:

1. URF (inhalation unit risk factor) $(ug/m^3)^{-1}$ - chemical-specific
2. VF (volatilization factor) m^3/kg

Inhalation of Volatiles - Soil Saturation Concentration

Only applies to chemicals which are liquid at ambient air temperatures.

$$C_{sat} = \frac{S}{\rho_b}(K_d\rho_b + \theta_w + H'\theta_a)$$

0.006	foc (fraction organic carbon in soil) g/g
1.5	ρ_b (dry soil bulk density) kg/L
2.65	ρ_s (soil particle density) kg/L
0.15	θ_w (water-filled soil porosity) L_{water}/L_{soil}

NOTES:

1. C_{sat} (soil saturation concentration) mg/kg
2. S (solubility in water) mg/L-water - chemical-specific
3. θ_a (air-filled soil porosity) $L_{air}/L_{soil} = n - \theta_w$
4. H' (dimensionless Henry's law constant) - chemical-specific
5. n (total soil porosity) $L_{pore}/L_{soil} = 1-(\rho_b/\rho_s)$
6. K_d (soil-water partition coefficient) L/kg = $K_{oc} \times f_{oc}$ (organics) - chemical-specific
7. K_{oc} (soil organic carbon/water partition coefficient) L/kg - chemical specific

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Equation Values for Inhalation of Volatiles

Volatilization Factor Parameter	Value	Soil Saturation Concentration Parameter	Value	Noncarcinogenic Parameter	Value	Carcinogenic Parameter
Surface Area (acres)	30.0			Target Hazard Quotient (unitless)	1	Target Risk (unitless
City (climate zone)	LittleRock(VI)			Exposure Duration (yr)	30	Exposure Duration (
Q/C (g/m^2-s per kg/m^3)	37.64			Exposure Frequency (day/yr)	350	Exposure Frequency (day/yr)
Fraction organic carbon (unitless)	0.006	Fraction organic carbon (unitless)	0.006			Average Lifetime (yr
Dry soil bulk density (g/cm^3)	1.5	Dry soil bulk density (g/cm^3)	1.5			
Soil particle density (g/cm^3)	2.65	Soil particle density (g/cm^3)	2.65			
Water-filled soil porosity (L_{water}/L_{soil})	0.15	Water-filled soil porosity (L_{water}/L_{soil})	0.15			
Exposure interval (s)	9.5e08					

Soil Screening Levels for Inhalation of Volatiles (mg/kg)

Analyte	Cas Number	Inhalation RfC	Inhalation Unit Risk	Volatilization Factor	Soil Saturation Concentration	Noncarcinogenic	Carcin
Methylene Chloride	75092	3.0E+00 [b]	4.7E-07 [a]	1.3E+03	2.4E+03	4.2E+03	7.0

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SELECTION:

Your Analytes are:
Methylene Chloride

Your Pathways are
Inhalation of Volatiles

Default Parameters
Each pathway you have selected is given below along with the applicable Equations and its associated Default Parameters. equation, the default values will be used unless you enter a different value.

Inhalation of Volatiles

There are two methods for calculating volatilization factor depending on which parameters are known. Select a surface area, a zone, and a method calculation.

Volatilization Factor - METHOD 1

$$VF\,(m^3/kg) = \frac{Q/C \times (3.14 \times D_A \times T)^{1/2} \times 10^{-4}\,(m^2/cm^2)}{2 \times \rho_b \times D_A}$$

where $$D_A = \frac{\left[(\theta_a^{10/3} D_i H + \theta_w^{10/3} D_w)/n^2\right]}{\rho_b K_d + \theta_w + \theta_a H'}$$

0.006	foc (fraction organic carbon in soil) g/g
1.5	ρ_b (dry soil bulk density) g/cm^3
2.65	ρ_s (soil particle density) g/cm^3
9.5e08	T (exposure interval) s
0.15	θ_w (water-filled soil porosity) L_{water}/L_{soil}

Volatilization Factor - METHOD 2 (mass-limit approach)

$$VF = Q/C \times \frac{\left[T \times (3.15 \times 10^7\,(s/yr)\right]}{\left(\rho_b \times d_s \times 10^6\,(g/Mg)\right)}$$

1.5	ρ_b (dry soil bulk density) kg/L or M
30	T (exposure interval) yr
0	d_s (depth of source) m - site-specific

Do not use this method unless you have values for all of the parameters.

Little Rock (VI) — City (Climatic Zone)

30.0 — Surface Area (acres)

37.64 — Q/C (inverse of the mean conc. at the center of a 0.5-acre-square source) g/m^2-s per kg/m^3

Method for Calculating VF
Method 1 (●) Method 2 ( )

NOTES:

1. VF (volatilization factor) m^3/kg
2. The Surface Area and City/Climate Zone are used to look up a Q/C. Q/C is the inverse of mean concentration at center acre-square source (g/m^2-s per kg/m^3). Pick the city with the most similar climatic conditions (map).
3. D_A (apparent diffusivity) cm^2/s

4. θ_a (air-filled soil porosity) $L_{air}/L_{soil} = n - \theta_w$
5. D_i (diffusivity in air) cm^2/s - chemical-specific
6. H' (dimensionless Henry's law constant) - chemical-specific
7. n (total soil porosity) $L_{pore}/L_{soil} = 1-(\rho_b/\rho_s)$
8. D_w (diffusivity in water) - chemical-specific
9. K_d (soil-water partition coefficient) $cm^3/g = K_{oc} \times f_{oc}$ (organics) - chemical-specific
10. K_{oc} (soil organic carbon partition coefficient) cm^3/g - chemical specific

Inhalation of Noncarcinogenic Volatiles in Soil

$$SL(mg/kg) = \frac{THQ \times AT \times 365(d/yr)}{EF \times ED \times \left[\frac{1}{RfC} \times \frac{1}{VF}\right]}$$

1	THQ (target hazard quotient) unitless
30	AT (averaging time) yr
350	EF (exposure frequency) d/yr
30	ED (exposure duration) yr

NOTES:

1. AT=ED for Noncarcinogens.
2. RfC (inhalation reference concentration) mg/m^3 - chemical-specific
3. VF (volatilization factor) m^3/kg

Inhalation of Carcinogenic Volatiles in Soil

$$SL(mg/kg) = \frac{TR \times AT \times 365(d/yr)}{URF \times 1000(ug/mg) \times EF \times ED \times \frac{1}{VF}}$$

1.0E-6	TR (target risk) unitless
70	AT (averaging time) yr
350	EF (exposure frequency) d/yr
30	ED (exposure duration) yr

NOTES:

1. URF (inhalation unit risk factor) $(ug/m^3)^{-1}$ - chemical-specific
2. VF (volatilization factor) m^3/kg

Inhalation of Volatiles - Soil Saturation Concentration

Only applies to chemicals which are liquid at ambient air temperatures.

$$C_{sat} = \frac{S}{\rho_b}(K_d\rho_b + \theta_w + H'\theta_a)$$

0.006	foc (fraction organic carbon in soil) g/g
1.5	ρ_b (dry soil bulk density) kg/L
2.65	ρ_s (soil particle density) kg/L
0.15	θ_w (water-filled soil porosity) L_{water}/L_{soil}

NOTES:

1. C_{sat} (soil saturation concentration) mg/kg
2. S (solubility in water) mg/L-water - chemical-specific
3. θ_a (air-filled soil porosity) $L_{air}/L_{soil} = n - \theta_w$
4. H' (dimensionless Henry's law constant) - chemical-specific
5. n (total soil porosity) $L_{pore}/L_{soil} = 1-(\rho_b/\rho_s)$
6. K_d (soil-water partition coefficient) L/kg = $K_{oc} \times f_{oc}$ (organics) - chemical-specific
7. K_{oc} (soil organic carbon/water partition coefficient) L/kg - chemical specific

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Toxicity References

a Source: Integrated Risk Information System (IRIS)

b Source: Health Effects and Environmental Affects Summary Table (HEAST)

c These subchronic and chronic non-cancer toxicity values are found in Agency documents, but were calculated by alternative methods that are not currently practiced by the RfD/RfC Work Group. These values are considered to be adequate provisional values for risk assessment purposes at Superfund and RCRA sites, but are subject to be reviewed by the RfD/RfC Work Group and revised when necessary to reflect current work group practices.

d Lead Alkyls - See IRIS cover sheet for further explanation

e Contact the Superfund Health Risk Technical Support Center: (513)569-7300

f HEAST concluded that toxicity data were inadequate for calculation of oral RfDs for copper and substituted the current drinking water standard (MCLG) of 1.3 mg/L.

g Listed as "Dinitrotoluene mixture, 2,4-/2,6-" in IRIS. The value is based on a study using technical grade DNT.

h Value expressed as fibers/mL.

i (pg/m3)-1

j The oral toxicity values for "Cadmium (Diet)" are to be used for soil and food uses while the oral toxicity values for "Cadmium (Water)" are to be used for water uses only.

k This chemical is a criteria pollutant regulated by National Ambient Air Quality Standards under the Clean Air Act. The NAAQS are not included in the table because they represent different levels of review and different methods of calculation and must be interpreted and used differently. A list of NAAQS is appended to the table.

m IRIS no longer separates manganese values for chronic oral RfDs into water and diet RfDs. The chronic oral RfD for the total oral intake of manganese is 1.40E-01. However, when assessing exposure to manganese from drinking water or soil, IRIS recommends using a modifying factor of 3, thereby lowering the RfD to 4.67E-02, which has been rounded to 4.6E-02. Rounding to 4.7E-02 is more accurate, but makes the value less conservative. HEAST values remain separated into water and diet subchronic RfDs.

n The cancer potency of PCB mixtures is determined using a three tiered approach that depends on the information available. Criteria for use of the High Risk and Persistence Tier include: food chain exposure; sediment or soil ingestion; dust or aerosol inhalation; dermal exposure if an absorption factor has been applied; any early-life exposure; and the presence of dioxin-like, tumor-promoting, or persistent congeners. This value, 2.00e+00 per (mg/kg)/day, is the upper-bound slope factor for the High Risk and Persistence Tier. The central-estimate slope factor for this tier is 1.00+00 per (mg/kg)/day.

o Criteria for use of the Low Risk and Persistence Tier includes: ingestion of water-soluble congeners; inhalation of evaporated congeners; and dermal exposure if no absorption factor has been applied. The value of 4.00E-01 per (mg/kg/day) is the upper-bound Oral Slope Factor for the Low Risk and Persistence Tier. The central-estimate Oral Slope Factor for the Low Risk and Persistence Tier is 3.00E-01 per (mg/kg/day). For ingestion of water-soluble congeners, the middle tier upper-bound slope factor can be converted to a unit risk of 1.00E-05 per (ug/L/day).

p This value is the upper-bound Oral Slope Factor for the Lowest Risk and Persistence Tier. Criteria for use of this tier include situations in which congener or isomer analyses verify that congeners with more than 4 chlorines comprise less than 0.5% of the total PCBs. The central-estimate Oral Slope Factor for the Lowest Risk and Persistence Tier is 4.00E-02 per (mg/kg/day).

q For inhalation of evaporated congeners, the middle tier (Low Risk and Persistence Tier) slope factor can be converted to a unit risk estimate. The value 4.00E-01 per (mg/kg/day) is the upper-bound Inhalation Slope Factor for the Low Risk and Persistence Tier. The value 1.00E-04 per (ug/m3/day) is the upper-bound Inhalation Unit Risk. For inhalation of an aerosol or dust contaminated with PCBs, the slope factor for the High Risk and persistence Tier should be used.

s The chemical name "Mercury (inorganic)" was replaced with the name "Mercury (elemental)" in 9/95. Note: because "Mercuric Chloride" was used in the studies from which the toxicity values for "Mercury (inorganic)" were derived and because "Mercuric Chloride" is a specific inorganic form/compound of "Mercury (inorganic)", the oral RfD values have been assigned to "Mercuric Chloride".

t This entry was formerly listed as Nickel (metallic) with the CAS number 7440-02-0. The chemical name was changed so that it more accurately indicates the chemicals used in the studies from which the values were derived. The values remain unchanged.

v Provisional toxicity values have been developed by the National Center for Environmental Assessment (NCEA). These values should be clearly marked as provisional. For questions, contact the Superfund Health Risk Technical Support Center directly at (513)569-7300.

y The value of 34 mg/L is a concentration in drinking water given to both chronic and subchronic RfDs. Specifically related to organoleptic threshold. Safe concentration may be higher, but data are inadequate to assess.

z The value of 400 mg/kg is a guideline value given to the chronic RfD. Specifically related to organoleptic threshold. Safe concentration may be higher, but data are inadequate to assess.

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Appendix G

Central Tendency Intake Factor Calculations

TABLE G1
INGESTION-SPECIFIC INTAKE FACTOR
CENTRAL TENDENCY EXPOSURE
CONSTRUCTION WORKER EXPOSURE: INGESTION OF CHEMICALS IN SOIL AND DUST
CEDAR CHEMICAL CORPORATION, WEST HELENA, ARKANSAS

EQUATION UNITS	IF oral kg/kg-day	= ((	IR mg/day	)x(	EF days/yr	)x(	ED yr	)x(	FI Unitless	)x(	CF kg/mg	) + ((	BW kg	)x(	AT days	)))
NONCARCINOGENIC	3.91E-08	= ((	50	)x(	20	)x(	1	)x(	1	)x(	1.00E-06	) + ((	70	)x(	365	)))
CARCINOGENIC	5.59E-10	= ((	50	)x(	20	)x(	1	)x(	1	)x(	1.00E-06	) + ((	70	)x(	25,550	)))

See Table 33 for definitions and sources of equation variables identified as follows:

IF = intake factor
AT = averaging time
BW = body weight
FI = fraction ingested
IR = ingestion rate
EF = exposure frequency
ED = exposure duration
CF = conversion factor

TABLE G2
INHALATION-SPECIFIC INTAKE FACTOR
CENTRAL TENDENCY EXPOSURE
CONSTRUCTION WORKER EXPOSURE: INHALATION OF AIRBORNE CHEMICALS FROM SOIL
CEDAR CHEMICAL CORPORATION, WEST HELENA, ARKANSAS

EQUATION UNITS	IFInh kg/kg-day	= ((	Inh R m^3/day	)x(	EF days/yr	)x(	ED yr	)x(1 /	PEF m^3/kg	+ 1 /	VF m^3/kg	)) + ((	BW kg	)x(	AT days	)))
NONCARCINOGENIC EFFECTS																
Metals	9.01E-12	= ((	15.2	)x(	20	)x(	1	)x(1 /	1.32E+09	+ 1 /	N/A	)) + ((	70	)x(	365	)))
Aldrin	9.01E-12	= ((	15.2	)x(	20	)x(	1	)x(1 /	1.32E+09	+ 1 /	N/A	)) + ((	70	)x(	365	)))
Dieldrin	9.01E-12	= ((	15.2	)x(	20	)x(	1	)x(1 /	1.32E+09	+ 1 /	N/A	)) + ((	70	)x(	365	)))
Methoxychlor	9.01E-12	= ((	15.2	)x(	20	)x(	1	)x(1 /	1.32E+09	+ 1 /	N/A	)) + ((	70	)x(	365	)))
Heptachlor	9.01E-12	= ((	15.2	)x(	20	)x(	1	)x(1 /	1.32E+09	+ 1 /	N/A	)) + ((	70	)x(	365	)))
Dinoseb	9.01E-12	= ((	15.2	)x(	20	)x(	1	)x(1 /	1.32E+09	+ 1 /	N/A	)) + ((	70	)x(	365	)))
Toxaphene	9.01E-12	= ((	15.2	)x(	20	)x(	1	)x(1 /	1.32E+09	+ 1 /	N/A	)) + ((	70	)x(	365	)))
3,4-Dichloroaniline	9.01E-12	= ((	15.2	)x(	20	)x(	1	)x(1 /	1.32E+09	+ 1 /	N/A	)) + ((	70	)x(	365	)))
Propanil	9.01E-12	= ((	15.2	)x(	20	)x(	1	)x(1 /	1.32E+09	+ 1 /	N/A	)) + ((	70	)x(	365	)))
1,2-Dichloroethane	5.67E-06	= ((	15.2	)x(	20	)x(	1	)x(1 /	1.32E+09	+ 1 /	2.10E+03	)) + ((	70	)x(	365	)))
Carbon tetrachloride	1.08E-05	= ((	15.2	)x(	20	)x(	1	)x(1 /	1.32E+09	+ 1 /	1.10E+03	)) + ((	70	)x(	365	)))
Chloroform	8.50E-06	= ((	15.2	)x(	20	)x(	1	)x(1 /	1.32E+09	+ 1 /	1.40E+03	)) + ((	70	)x(	365	)))
Methylene chloride	9.15E-06	= ((	15.2	)x(	20	)x(	1	)x(1 /	1.32E+09	+ 1 /	1.30E+03	)) + ((	70	)x(	365	)))
CARCINOGENIC EFFECTS																
Metals	1.29E-13	= ((	15.2	)x(	20	)x(	1	)x(1 /	1.32E+09	+ 1 /	N/A	)) + ((	70	)x(	25,550	)))
Aldrin	1.29E-13	= ((	15.2	)x(	20	)x(	1	)x(1 /	1.32E+09	+ 1 /	N/A	)) + ((	70	)x(	25,550	)))
Dieldrin	1.29E-13	= ((	15.2	)x(	20	)x(	1	)x(1 /	1.32E+09	+ 1 /	N/A	)) + ((	70	)x(	25,550	)))
Methoxychlor	1.29E-13	= ((	15.2	)x(	20	)x(	1	)x(1 /	1.32E+09	+ 1 /	N/A	)) + ((	70	)x(	25,550	)))
Heptachlor	1.29E-13	= ((	15.2	)x(	20	)x(	1	)x(1 /	1.32E+09	+ 1 /	N/A	)) + ((	70	)x(	25,550	)))
Dinoseb	1.29E-13	= ((	15.2	)x(	20	)x(	1	)x(1 /	1.32E+09	+ 1 /	N/A	)) + ((	70	)x(	25,550	)))
Toxaphene	1.29E-13	= ((	15.2	)x(	20	)x(	1	)x(1 /	1.32E+09	+ 1 /	N/A	)) + ((	70	)x(	25,550	)))
3,4-Dichloroaniline	1.29E-13	= ((	15.2	)x(	20	)x(	1	)x(1 /	1.32E+09	+ 1 /	N/A	)) + ((	70	)x(	25,550	)))
Propanil	1.29E-13	= ((	15.2	)x(	20	)x(	1	)x(1 /	1.32E+09	+ 1 /	N/A	)) + ((	70	)x(	25,550	)))
1,2-Dichloroethane	8.09E-08	= ((	15.2	)x(	20	)x(	1	)x(1 /	1.32E+09	+ 1 /	2.10E+03	)) + ((	70	)x(	25,550	)))
Carbon tetrachloride	1.55E-07	= ((	15.2	)x(	20	)x(	1	)x(1 /	1.32E+09	+ 1 /	1.10E+03	)) + ((	70	)x(	25,550	)))
Chloroform	1.21E-07	= ((	15.2	)x(	20	)x(	1	)x(1 /	1.32E+09	+ 1 /	1.40E+03	)) + ((	70	)x(	25,550	)))
Methylene chloride	1.31E-07	= ((	15.2	)x(	20	)x(	1	)x(1 /	1.32E+09	+ 1 /	1.30E+03	)) + ((	70	)x(	25,550	)))

See Table 33 for definitions and sources of equation variables identified as follows:

IF = Intake factor
IR = Inhalation Rate
EF = Exposure frequency
ED = Exposure duration
PEF= Particulate emission factor
VF = Volatilization factor
BW = Body weight
AT = Averaging time

TABLE G3
DERMAL-SPECIFIC INTAKE FACTOR
CENTRAL TENDENCY EXPOSURE
CONSTRUCTION WORKER EXPOSURE: DERMAL CONTACT WITH CHEMICALS IN SOIL
CEDAR CHEMICAL CORPORATION, WEST HELENA, ARKANSAS

EQUATION UNITS	IF derm = ((	SA)x(	AF)x(	ABS)x(	EF)x(	ED)x(	CF) + ((	BW)x(	AT)))
	kg/kg-day	cm^2/event	mg/cm^2	unitless	events/year	years	kg/mg	kg	days
NONCARCINOGENIC									
Arsenic	3.10E-09 = ((	3.60E+03)x(	0.0367)x(	3.00E-02)x(	20)x(	1)x(	1.00E-06) + ((	70)x(	365)))
Other Metals	1.03E-09 = ((	3.60E+03)x(	0.0367)x(	1.00E-02)x(	20)x(	1)x(	1.00E-06) + ((	70)x(	365)))
Dieldrin	1.03E-08 = ((	3.60E+03)x(	0.0367)x(	1.00E-01)x(	20)x(	1)x(	1.00E-06) + ((	70)x(	365)))
1,2-Dichloroethane	1.03E-08 = ((	3.60E+03)x(	0.0367)x(	1.00E-01)x(	20)x(	1)x(	1.00E-06) + ((	70)x(	365)))
Methoxychlor	1.03E-08 = ((	3.60E+03)x(	0.0367)x(	1.00E-01)x(	20)x(	1)x(	1.00E-06) + ((	70)x(	365)))
Heptachlor	1.03E-08 = ((	3.60E+03)x(	0.0367)x(	1.00E-01)x(	20)x(	1)x(	1.00E-06) + ((	70)x(	365))
Dinoseb	1.03E-08 = ((	3.60E+03)x(	0.0367)x(	1.00E-01)x(	20)x(	1)x(	1.00E-06) + ((	70)x(	365))
Toxaphene	1.03E-08 = ((	3.60E+03)x(	0.0367)x(	1.00E-01)x(	20)x(	1)x(	1.00E-06) + ((	70)x(	365))
3,4-Dichloroaniline	1.03E-08 = ((	3.60E+03)x(	0.0367)x(	1.00E-01)x(	20)x(	1)x(	1.00E-06) + ((	70)x(	365))
Propanil	1.03E-08 = ((	3.60E+03)x(	0.0367)x(	1.00E-01)x(	20)x(	1)x(	1.00E-06) + ((	70)x(	365)))
1,2-Dichloroethane	1.03E-08 = ((	3.60E+03)x(	0.0367)x(	1.00E-01)x(	20)x(	1)x(	1.00E-06) + ((	70)x(	365))
Carbon Tetrachloride	1.03E-08 = ((	3.60E+03)x(	0.0367)x(	1.00E-01)x(	20)x(	1)x(	1.00E-06) + ((	70)x(	365))
CARCINOGENIC									
Arsenic	4.43E-11 = ((	3.60E+03)x(	0.0367)x(	3.00E-02)x(	20)x(	1)x(	1.00E-06) + ((	70)x(	25,550)))
Other Metals	1.48E-11 = ((	3.60E+03)x(	0.0367)x(	1.00E-02)x(	20)x(	1)x(	1.00E-06) + ((	70)x(	25,550)))
Dieldrin	1.48E-10 = ((	3.60E+03)x(	0.0367)x(	1.00E-01)x(	20)x(	1)x(	1.00E-06) + ((	70)x(	25,550)))
1,2-Dichloroethane	1.48E-10 = ((	3.60E+03)x(	0.0367)x(	1.00E-01)x(	20)x(	1)x(	1.00E-06) + ((	70)x(	25,550)))
Methoxychlor	1.48E-10 = ((	3.60E+03)x(	0.0367)x(	1.00E-01)x(	20)x(	1)x(	1.00E-06) + ((	70)x(	25,550)))
Heptachlor	1.48E-10 = ((	3.60E+03)x(	0.0367)x(	1.00E-01)x(	20)x(	1)x(	1.00E-06) + ((	70)x(	25,550)))
Dinoseb	1.48E-10 = ((	3.60E+03)x(	0.0367)x(	1.00E-01)x(	20)x(	1)x(	1.00E-06) + ((	70)x(	25,550)))
Toxaphene	1.48E-10 = ((	3.60E+03)x(	0.0367)x(	1.00E-01)x(	20)x(	1)x(	1.00E-06) + ((	70)x(	25,550)))
3,4-Dichloroaniline	1.48E-10 = ((	3.60E+03)x(	0.0367)x(	1.00E-01)x(	20)x(	1)x(	1.00E-06) + ((	70)x(	25,550)))
Propanil	1.48E-10 = ((	3.60E+03)x(	0.0367)x(	1.00E-01)x(	20)x(	1)x(	1.00E-06) + ((	70)x(	25,550)))
1,2-Dichloroethane	1.48E-10 = ((	3.60E+03)x(	0.0367)x(	1.00E-01)x(	20)x(	1)x(	1.00E-06) + ((	70)x(	25,550)))
Carbon tetrachloride	1.48E-10 = ((	3.60E+03)x(	0.0367)x(	1.00E-01)x(	20)x(	1)x(	1.00E-06) + ((	70)x(	25,550)))

See Table 33 for definitions and sources of equation variables identified as follows:

IF = intake factor
CF = conversion factor
SA = skin surface area available for contact
AF = soil to skin adherence factor
ABS = absorption factor
EF = exposure frequency
ED = exposure duration
BW = body weight
AT = averaging time

TABLE G4
INGESTION-SPECIFIC INTAKE FACTOR
CENTRAL TENDENCY EXPOSURE
CONSTRUCTION WORKER EXPOSURE: INGESTION OF CHEMICALS IN GROUNDWATER
CEDAR CHEMICAL CORPORATION, WEST HELENA, ARKANSAS

EQUATION UNITS	IF oral kg/kg-day	= ((	IR mg/hour	)x(	ET hours/event	)x(	EF days/ yr	)x(	ED yr	) ÷ ((	BW kg	)x(	AT days	)))
NONCARCINOGENIC	3.13E-05	= ((	0.01	)x(	4	)x(	20	)x(	1	) ÷ ((	70	)x(	365	)))
CARCINOGENIC	4.47E-07	= ((	0.01	)x(	4	)x(	20	)x(	1	) ÷ ((	70	)x(	25,550	)))

See Table 40 for definitions and sources of equation variables identified as follows:

IF = intake factor
IR = ingestion rate
ET = exposure time
EF = exposure frequency
ED = exposure duration
BW = body weight
AT = averaging time

TABLE G5
DERMAL-SPECIFIC INTAKE FACTOR
CENTRAL TENDENCY EXPOSURE
CONSTRUCTION WORKER EXPOSURE: DERMAL CONTACT WITH CHEMICALS IN GROUNDWATER
CEDAR CHEMICAL CORPORATION, WEST HELENA, ARKANSAS

EQUATION UNITS	IF derm = ((	CF)x(	SA)x(	PC)x(	ET)x(	EF)x(	ED) + ((	BW)x(	AT)))
	kg/kg-day	L/cm^3	cm^2/event	cm/hr	hours/day	events/year	years	kg	days
NONCARCINOGENIC									
Arsenic	1.13E-05 = ((	1.00E-03)x(	3.6E+03)x(	1.00E-03)x(	4)x(	20)x(	1) + ((	70)x(	365)))
Chromium	1.13E-05 = ((	1.00E-03)x(	3.6E+03)x(	1.00E-03)x(	4)x(	20)x(	1) + ((	70)x(	365)))
4,4-DDT	4.85E-03 = ((	1.00E-03)x(	3.6E+03)x(	4.30E-01)x(	4)x(	20)x(	1) + ((	70)x(	365)))
alpha-BHC	2.14E-04 = ((	1.00E-03)x(	3.6E+03)x(	1.90E-02)x(	4)x(	20)x(	1) + ((	70)x(	365)))
4-Chloroaniline	3.49E-04 = ((	1.00E-03)x(	3.6E+03)x(	3.10E-02)x(	4)x(	20)x(	1) + ((	70)x(	365)))
Dinoseb	3.16E-04 = ((	1.00E-03)x(	3.6E+03)x(	2.80E-02)x(	4)x(	20)x(	1) + ((	70)x(	365)))
1,2-Dichloroethane	5.97E-05 = ((	1.00E-03)x(	3.6E+03)x(	5.30E-03)x(	4)x(	20)x(	1) + ((	70)x(	365)))
Chloroform	1.00E-04 = ((	1.00E-03)x(	3.6E+03)x(	8.90E-03)x(	4)x(	20)x(	1) + ((	70)x(	365)))
Methylene chloride	5.07E-05 = ((	1.00E-03)x(	3.6E+03)x(	4.50E-03)x(	4)x(	20)x(	1) + ((	70)x(	365)))
Vinyl chloride	8.23E-05 = ((	1.00E-03)x(	3.6E+03)x(	7.30E-03)x(	4)x(	20)x(	1) + ((	70)x(	365)))
CARCINOGENIC									
Arsenic	1.61E-07 = ((	1.00E-03)x(	3.6E+03)x(	1.00E-03)x(	4)x(	20)x(	1) + ((	70)x(	25,550)))
Chromium	1.61E-07 = ((	1.00E-03)x(	3.6E+03)x(	1.00E-03)x(	4)x(	20)x(	1) + ((	70)x(	25,550)))
4,4-DDT	6.92E-05 = ((	1.00E-03)x(	3.6E+03)x(	4.30E-01)x(	4)x(	20)x(	1) + ((	70)x(	25,550)))
alpha-BHC	3.06E-06 = ((	1.00E-03)x(	3.6E+03)x(	1.90E-02)x(	4)x(	20)x(	1) + ((	70)x(	25,550)))
4-Chloroaniline	4.99E-06 = ((	1.00E-03)x(	3.6E+03)x(	3.10E-02)x(	4)x(	20)x(	1) + ((	70)x(	25,550)))
Dinoseb	4.51E-06 = ((	1.00E-03)x(	3.6E+03)x(	2.80E-02)x(	4)x(	20)x(	1) + ((	70)x(	25,550)))
1,2-Dichloroethane	8.53E-07 = ((	1.00E-03)x(	3.6E+03)x(	5.30E-03)x(	4)x(	20)x(	1) + ((	70)x(	25,550)))
Chloroform	1.43E-06 = ((	1.00E-03)x(	3.6E+03)x(	8.90E-03)x(	4)x(	20)x(	1) + ((	70)x(	25,550)))
Methylene chloride	7.25E-07 = ((	1.00E-03)x(	3.6E+03)x(	4.50E-03)x(	4)x(	20)x(	1) + ((	70)x(	25,550)))
Vinyl chloride	1.18E-06 = ((	1.00E-03)x(	3.6E+03)x(	7.30E-03)x(	4)x(	20)x(	1) + ((	70)x(	25,550)))

See Table 40 for definitions and sources of equation variables identified as follows:

IF = intake factor
CF = conversion factor
SA = skin surface area available for contact
PC = permeability constant
EF = exposure frequency
ED = exposure duration
BW = body weight
AT = averaging time

TABLE G6
INGESTION-SPECIFIC INTAKE FACTOR
CENTRAL TENDENCY EXPOSURE
SITE WORKER EXPOSURE: INGESTION OF CHEMICALS IN SOIL
CEDAR CHEMICAL CORPORATION, WEST HELENA, ARKANSAS

EQUATION UNITS	IF oral kg/kg-day	= ((	IR mg/day	)x(	EF days/yr	)x(	ED yr	)x(	FI unitless	)x(	CF kg/mg	) ÷ ((	BW kg	)x(	AT days	)))
NONCARCINOGENIC	4.89E-08	= ((	50	)x(	250	)x(	6.6	)x(	0.1	)x(	1.00E-06	) ÷ ((	70	)x(	2,409	)))
CARCINOGENIC	4.61E-09	= ((	50	)x(	250	)x(	6.6	)x(	0.1	)x(	1.00E-06	) ÷ ((	70	)x(	25,550	)))

See Table 43 for definitions and sources of equation variables identified as follows:

IF = intake factor
IR = ingestion rate
AT = averaging time
EF = exposure frequency
BW = body weight
ED = exposure duration
FI = fraction ingested
CF = conversion factor

TABLE G7
DERMAL-SPECIFIC INTAKE FACTOR
CENTRAL TENDENCY EXPOSURE
SITE WORKER EXPOSURE: DERMAL CONTACT WITH CHEMICALS IN SOIL
CEDAR CHEMICAL CORPORATION, WEST HELENA, ARKANSAS

EQUATION UNITS	IF derm = ((	SA)x(	AF)x(	ABS)x(	EF)x(	ED)x(	CF) + ((	BW)x(	AT)))
	kg/kg-day	cm2/event	mg/cm2	unitless	events/year	years	kg/mg	kg	days
NONCARCINOGENIC									
Arsenic	3.88E-08	3600	0.0367	3.00E-02	250	6.6	1E-06	70	2,409
Aldrin	1.29E-07	3600	0.0367	1.00E-01	250	6.6	1E-06	70	2,409
Dieldrin	1.29E-07	3600	0.0367	1.00E-01	250	6.6	1E-06	70	2,409
Heptachlor	1.29E-07	3600	0.0367	1.00E-01	250	6.6	1E-06	70	2,409
Methoxychlor	1.29E-07	3600	0.0367	1.00E-01	250	6.6	1E-06	70	2,409
3,4-Dichloroaniline	1.29E-07	3600	0.0367	1.00E-01	250	6.6	1E-06	70	2,409
Dinoseb	1.29E-07	3600	0.0367	1.00E-01	250	6.6	1E-06	70	2,409
Propanil	1.29E-07	3600	0.0367	1.00E-01	250	6.6	1E-06	70	2,409
Toxaphene	1.29E-07	3600	0.0367	1.00E-01	250	6.6	1E-06	70	2,409
1,2-Dichloroethane	1.29E-07	3600	0.0367	1.00E-01	250	6.6	1E-06	70	2,409
CARCINOGENIC									
Arsenic	3.66E-09	3600	0.0367	3.00E-02	250	6.6	1E-06	70	25,550
Aldrin	1.22E-08	3600	0.0367	1.00E-01	250	6.6	1E-06	70	25,550
Dieldrin	1.22E-08	3600	0.0367	1.00E-01	250	6.6	1E-06	70	25,550
Heptachlor	1.22E-08	3600	0.0367	1.00E-01	250	6.6	1E-06	70	25,550
Methoxychlor	1.22E-08	3600	0.0367	1.00E-01	250	6.6	1E-06	70	25,550
3,4-Dichloroaniline	1.22E-08	3600	0.0367	1.00E-01	250	6.6	1E-06	70	25,550
Dinoseb	1.22E-08	3600	0.0367	1.00E-01	250	6.6	1E-06	70	25,550
Propanil	1.22E-08	3600	0.0367	1.00E-01	250	6.6	1E-06	70	25,550
Toxaphene	1.22E-08	3600	0.0367	1.00E-01	250	6.6	1E-06	70	25,550
1,2-Dichloroethane	1.22E-08	3600	0.0367	1.00E-01	250	6.6	1E-06	70	25,550

See Table 43 for definitions and sources of equation variables identified as follows:

IF = intake factor
CF = conversion factor
SA = skin surface area available for contact
AF = soil to skin adherence factor
ABS = absorption factor
EF = exposure frequency
ED = exposure duration
BW = body weight
AT = averaging time

TABLE G8
INHALATION-SPECIFIC INTAKE FACTOR
CENTRAL TENDENCY EXPOSURE
SITE WORKER EXPOSURE: INHALATION OF AIRBORNE CHEMICALS FROM SOIL
CEDAR CHEMICAL CORPORATION, WEST HELENA, ARKANSAS

EQUATION UNITS	IFinh kg/kg-day	=	((	IR m3/day	)x(	EF days/yr	)x(	ED yr	)x(	1	/	PEF m3/kg	+	1	/	VF m3/kg	))	+	((	BW kg	)x(	AT days	)))
NONCARCINOGENIC EFFECTS																							
Arsenic	8.38E-11	=	((	11.3	)x(	250	)x(	6.6	)x(	1	/	1.32E+09	+	1	/	N/A	))	+	((	70	)x(	2,409	)))
Aldrin	8.38E-11	=	((	11.3	)x(	250	)x(	6.6	)x(	1	/	1.32E+09	+	1	/	N/A	))	+	((	70	)x(	2,409	)))
Dieldrin	8.38E-11	=	((	11.3	)x(	250	)x(	6.6	)x(	1	/	1.32E+09	+	1	/	N/A	))	+	((	70	)x(	2,409	)))
Heptachlor	8.38E-11	=	((	11.3	)x(	250	)x(	6.6	)x(	1	/	1.32E+09	+	1	/	N/A	))	+	((	70	)x(	2,409	)))
Methoxychlor	8.38E-11	=	((	11.3	)x(	250	)x(	6.6	)x(	1	/	1.32E+09	+	1	/	N/A	))	+	((	70	)x(	2,409	)))
3,4-Dichloroaniline	8.38E-11	=	((	11.3	)x(	250	)x(	6.6	)x(	1	/	1.32E+09	+	1	/	N/A	))	+	((	70	)x(	2,409	)))
Dinoseb	8.38E-11	=	((	11.3	)x(	250	)x(	6.6	)x(	1	/	1.32E+09	+	1	/	N/A	))	+	((	70	)x(	2,409	)))
Propanil	8.38E-11	=	((	11.3	)x(	250	)x(	6.6	)x(	1	/	1.32E+09	+	1	/	N/A	))	+	((	70	)x(	2,409	)))
Toxaphene	8.38E-11	=	((	11.3	)x(	250	)x(	6.6	)x(	1	/	1.32E+09	+	1	/	N/A	))	+	((	70	)x(	2,409	)))
1,2-Dichloroethane	5.27E-05	=	((	11.3	)x(	250	)x(	6.6	)x(	1	/	1.32E+09	+	1	/	2.10E+03	))	+	((	70	)x(	2,409	)))
CARCINOGENIC EFFECTS																							
Arsenic	7.90E-12	=	((	11.3	)x(	250	)x(	6.6	)x(	1	/	1.32E+09	+	1	/	N/A	))	+	((	70	)x(	25,550	)))
Aldrin	7.90E-12	=	((	11.3	)x(	250	)x(	6.6	)x(	1	/	1.32E+09	+	1	/	N/A	))	+	((	70	)x(	25,550	)))
Dieldrin	7.90E-12	=	((	11.3	)x(	250	)x(	6.6	)x(	1	/	1.32E+09	+	1	/	N/A	))	+	((	70	)x(	25,550	)))
Heptachlor	7.90E-12	=	((	11.3	)x(	250	)x(	6.6	)x(	1	/	1.32E+09	+	1	/	N/A	))	+	((	70	)x(	25,550	)))
Methoxychlor	7.90E-12	=	((	11.3	)x(	250	)x(	6.6	)x(	1	/	1.32E+09	+	1	/	N/A	))	+	((	70	)x(	25,550	)))
3,4-Dichloroaniline	7.90E-12	=	((	11.3	)x(	250	)x(	6.6	)x(	1	/	1.32E+09	+	1	/	N/A	))	+	((	70	)x(	25,550	)))
Dinoseb	7.90E-12	=	((	11.3	)x(	250	)x(	6.6	)x(	1	/	1.32E+09	+	1	/	N/A	))	+	((	70	)x(	25,550	)))
Propanil	7.90E-12	=	((	11.3	)x(	250	)x(	6.6	)x(	1	/	1.32E+09	+	1	/	N/A	))	+	((	70	)x(	25,550	)))
Toxaphene	7.90E-12	=	((	11.3	)x(	250	)x(	6.6	)x(	1	/	1.32E+09	+	1	/	N/A	))	+	((	70	)x(	25,550	)))
1,2-Dichloroethane	4.96E-06	=	((	11.3	)x(	250	)x(	6.6	)x(	1	/	1.32E+09	+	1	/	2.10E+03	))	+	((	70	)x(	25,550	)))

See Table 43 for definitions and sources of equation variables identified as follows:
IF = Intake factor
IR = Inhalation Rate
EF = Exposure frequency
ED = Exposure duration
ET = Exposure time

TABLE G9
INGESTION-SPECIFIC INTAKE FACTOR
CENTRAL TENDENCY EXPOSURE
TRESPASSER EXPOSURE: INGESTION OF CHEMICALS IN SOIL AND DUST
CEDAR CHEMICAL CORPORATION, WEST HELENA, ARKANSAS

EQUATION UNITS	IF oral kg/kg-day	= ((	IR mg/day	)x(	EF days/yr	)x(	ED yr	)x(	FI Unitless	)x(	CF kg/mg	) + ((	BW kg	)x(	AT days	)))
NONCARCINOGENIC	7.91E-09	= ((	50	)x(	26	)x(	10	)x(	0.1	)x(	1.00E-06	) + ((	45	)x(	3,650	)))
CARCINOGENIC	1.13E-09	= ((	50	)x(	26	)x(	10	)x(	0.1	)x(	1.00E-06	) + ((	45	)x(	25,550	)))

See Table 47 for definitions and sources of equation variables identified as follows:

IF = intake factor
AT = averaging time
BW = body weight
FI = fraction ingested
IR = ingestion rate
EF = exposure frequency
ED = exposure duration
CF = conversion factor

TABLE G10
DERMAL-SPECIFIC INTAKE FACTOR
CENTRAL TENDENCY EXPOSURE
TRESPASSER EXPOSURE: DERMAL CONTACT WITH CHEMICALS IN SOIL
CEDAR CHEMICAL CORPORATION, WEST HELENA, ARKANSAS

EQUATION UNITS	IF derm kg/kg-day	= ((	SA cm2/event	)x(	AF mg/cm2	)x(	ABS unitless	)x(	EF events/year	)x(	ED years	)x(	CF kg/mg	) + ((	BW kg	)x(	AT days	)))
NONCARCINOGENIC																		
Arsenic	7.15E-09	= ((	4100	)x(	0.0367	)x(	3.00E-02	)x(	26	)x(	10	)x(	1.00E-06	) + ((	45	)x(	3,650	)))
Dieldrin	2.38E-08	= ((	4100	)x(	0.0367	)x(	1.00E-01	)x(	26	)x(	10	)x(	1.00E-06	) + ((	45	)x(	3,650	)))
1,2-Dichloroethane	2.38E-08	= ((	4100	)x(	0.0367	)x(	1.00E-01	)x(	26	)x(	10	)x(	1.00E-06	) + ((	45	)x(	3,650	)))
Heptachlor	2.38E-08	= ((	4100	)x(	0.0367	)x(	1.00E-01	)x(	26	)x(	10	)x(	1.00E-06	) + ((	45	)x(	3,650	)))
Methoxychlor	2.38E-08	= ((	4100	)x(	0.0367	)x(	1.00E-01	)x(	26	)x(	10	)x(	1.00E-06	) + ((	45	)x(	3,650	)))
3,4-Dichloroaniline	2.38E-08	= ((	4100	)x(	0.0367	)x(	1.00E-01	)x(	26	)x(	10	)x(	1.00E-06	) + ((	45	)x(	3,650	)))
Dinoseb	2.38E-08	= ((	4100	)x(	0.0367	)x(	1.00E-01	)x(	26	)x(	10	)x(	1.00E-06	) + ((	45	)x(	3,650	)))
Propanil	2.38E-08	= ((	4100	)x(	0.0367	)x(	1.00E-01	)x(	26	)x(	10	)x(	1.00E-06	) + ((	45	)x(	3,650	)))
Toxaphene	2.38E-08	= ((	4100	)x(	0.0367	)x(	1.00E-01	)x(	26	)x(	10	)x(	1.00E-06	) + ((	45	)x(	3,650	)))
1,2-Dichloroethane	2.38E-08	= ((	4100	)x(	0.0367	)x(	1.00E-01	)x(	26	)x(	10	)x(	1.00E-06	) + ((	45	)x(	3,650	)))
CARCINOGENIC																		
Arsenic	1.02E-09	= ((	4100	)x(	0.0367	)x(	3.00E-02	)x(	26	)x(	10	)x(	1.00E-06	) + ((	45	)x(	25,550	)))
Dieldrin	3.40E-09	= ((	4100	)x(	0.0367	)x(	1.00E-01	)x(	26	)x(	10	)x(	1.00E-06	) + ((	45	)x(	25,550	)))
1,2-Dichloroethane	3.40E-09	= ((	4100	)x(	0.0367	)x(	1.00E-01	)x(	26	)x(	10	)x(	1.00E-06	) + ((	45	)x(	25,550	)))
Heptachlor	3.40E-09	= ((	4100	)x(	0.0367	)x(	1.00E-01	)x(	26	)x(	10	)x(	1.00E-06	) + ((	45	)x(	25,550	)))
Methoxychlor	3.40E-09	= ((	4100	)x(	0.0367	)x(	1.00E-01	)x(	26	)x(	10	)x(	1.00E-06	) + ((	45	)x(	25,550	)))
3,4-Dichloroaniline	3.40E-09	= ((	4100	)x(	0.0367	)x(	1.00E-01	)x(	26	)x(	10	)x(	1.00E-06	) + ((	45	)x(	25,550	)))
Dinoseb	3.40E-09	= ((	4100	)x(	0.0367	)x(	1.00E-01	)x(	26	)x(	10	)x(	1.00E-06	) + ((	45	)x(	25,550	)))
Propanil	3.40E-09	= ((	4100	)x(	0.0367	)x(	1.00E-01	)x(	26	)x(	10	)x(	1.00E-06	) + ((	45	)x(	25,550	)))
Toxaphene	3.40E-09	= ((	4100	)x(	0.0367	)x(	1.00E-01	)x(	26	)x(	10	)x(	1.00E-06	) + ((	45	)x(	25,550	)))
1,2-Dichloroethane	3.40E-09	= ((	4100	)x(	0.0367	)x(	1.00E-01	)x(	26	)x(	10	)x(	1.00E-06	) + ((	45	)x(	25,550	)))

See Table 47 for definitions and sources of equation variables identified as follows:

IF = intake factor
CF = conversion factor
SA = skin surface area available for contact
AF = soil to skin adherence factor
ABS = absorption factor
EF = exposure frequency
ED = exposure duration
BW = body weight
AT = averaging time

TABLE G11
INHALATION-SPECIFIC INTAKE FACTOR
CENTRAL TENDENCY EXPOSURE
TRESPASSER EXPOSURE: INHALATION OF AIRBORNE CHEMICALS FROM SOIL
CEDAR CHEMICAL CORPORATION, WEST HELENA, ARKANSAS

EQUATION	IFinh	= ((	Inh R	)x(	EF	)x(	ED	)x(1 /	PEF	+ 1 /	VF	)) + ((	BW	)x(	AT	)))
UNITS	kg/kg-day		m3/day		days/yr		yr		m3/kg		m3/kg		kg		days	
NONCARCINOGENIC EFFECTS																
Arsenic	8.71E-12	= ((	11.3	)x(	26	)x(	10	)x(1 /	1.32E+09	+ 1 /	N/A	)) + ((	70	)x(	3,650	)))
Aldrin	8.71E-12	= ((	11.3	)x(	26	)x(	10	)x(1 /	1.32E+09	+ 1 /	N/A	)) + ((	70	)x(	3,650	)))
Dieldrin	8.71E-12	= ((	11.3	)x(	26	)x(	10	)x(1 /	1.32E+09	+ 1 /	N/A	)) + ((	70	)x(	3,650	)))
Heptachlor	8.71E-12	= ((	11.3	)x(	26	)x(	10	)x(1 /	1.32E+09	+ 1 /	N/A	)) + ((	70	)x(	3,650	)))
Methoxychlor	8.71E-12	= ((	11.3	)x(	26	)x(	10	)x(1 /	1.32E+09	+ 1 /	N/A	)) + ((	70	)x(	3,650	)))
3,4-Dichloroaniline	8.71E-12	= ((	11.3	)x(	26	)x(	10	)x(1 /	1.32E+09	+ 1 /	N/A	)) + ((	70	)x(	3,650	)))
Dinoseb	8.71E-12	= ((	11.3	)x(	26	)x(	10	)x(1 /	1.32E+09	+ 1 /	N/A	)) + ((	70	)x(	3,650	)))
Propanil	8.71E-12	= ((	11.3	)x(	26	)x(	10	)x(1 /	1.32E+09	+ 1 /	N/A	)) + ((	70	)x(	3,650	)))
Toxaphene	8.71E-12	= ((	11.3	)x(	26	)x(	10	)x(1 /	1.32E+09	+ 1 /	N/A	)) + ((	70	)x(	3,650	)))
1,2-Dichloroethane	5.48E-06	= ((	11.3	)x(	26	)x(	10	)x(1 /	1.32E+09	+ 1 /	2.10E+03	)) + ((	70	)x(	3,650	)))
CARCINOGENIC EFFECTS																
Arsenic	1.24E-12	= ((	11.3	)x(	26	)x(	10	)x(1 /	1.32E+09	+ 1 /	N/A	)) + ((	70	)x(	25,550	)))
Aldrin	1.24E-12	= ((	11.3	)x(	26	)x(	10	)x(1 /	1.32E+09	+ 1 /	N/A	)) + ((	70	)x(	25,550	)))
Dieldrin	1.24E-12	= ((	11.3	)x(	26	)x(	10	)x(1 /	1.32E+09	+ 1 /	N/A	)) + ((	70	)x(	25,550	)))
Heptachlor	1.24E-12	= ((	11.3	)x(	26	)x(	10	)x(1 /	1.32E+09	+ 1 /	N/A	)) + ((	70	)x(	25,550	)))
Methoxychlor	1.24E-12	= ((	11.3	)x(	26	)x(	10	)x(1 /	1.32E+09	+ 1 /	N/A	)) + ((	70	)x(	25,550	)))
3,4-Dichloroaniline	1.24E-12	= ((	11.3	)x(	26	)x(	10	)x(1 /	1.32E+09	+ 1 /	N/A	)) + ((	70	)x(	25,550	)))
Dinoseb	1.24E-12	= ((	11.3	)x(	26	)x(	10	)x(1 /	1.32E+09	+ 1 /	N/A	)) + ((	70	)x(	25,550	)))
Propanil	1.24E-12	= ((	11.3	)x(	26	)x(	10	)x(1 /	1.32E+09	+ 1 /	N/A	)) + ((	70	)x(	25,550	)))
Toxaphene	1.24E-12	= ((	11.3	)x(	26	)x(	10	)x(1 /	1.32E+09	+ 1 /	N/A	)) + ((	70	)x(	25,550	)))
1,2-Dichloroethane	7.82E-07	= ((	11.3	)x(	26	)x(	10	)x(1 /	1.32E+09	+ 1 /	2.10E+03	)) + ((	70	)x(	25,550	)))

See Table 47 for definitions and sources of equation variables identified as follows:

IF = Intake factor
IR = Inhalation Rate
EF = Exposure frequency
ED = Exposure duration
ET = Exposure time
PEF = Particulate Emission Factor
VF= Volatilization Factor

TABLE G12
INHALATION-SPECIFIC INTAKE FACTOR
CENTRAL TENDENCY EXPOSURE
FFSITE AGRICULTURAL WORKER EXPOSURE: INHALATION OF AIRBORNE (VAPOR PHASE) CHEMICALS FROM GROUNDWATE
CEDAR CHEMICAL CORPORATION, WEST HELENA, ARKANSAS

EQUATION UNITS	IFinh m^3/kg-day	=	((	IR m^3/hour	)x(	EF days/yr	)x(	ED yr	)x(	ET hr/day	))	÷	((	BW kg	)x(	AT days	)))
NONCARCINOGENIC EFFECTS	1.64E-03	=	((	0.47	)x(	44.6	)x(	25	)x(	2	))	+	((	70	)x(	9,125	)))
CARCINOGENIC EFFECTS	5.87E-04	=	((	0.47	)x(	44.6	)x(	25	)x(	2	))	+	((	70	)x(	25,550	)))

See Table 5b for definitions and sources of equation variables identified as follows:
IF = Intake factor
IR = Inhalation Rate
EF = Exposure frequency
ED = Exposure duration
ET = Exposure time
BW = Body weight
AT = Averaging time

TABLE G13
VALUES USED FOR DAILY INTAKE CALCULATIONS
CEDAR CHEMICAL CORPORATION, WEST HELENA, ARKANSAS

Scenario Timeframe: Current/Future
Medium: Soil
Exposure Medium: Surface Soil
Exposure Point: Site 4
Receptor Population: Site Worker
Receptor Age: Adult

Exposure Route	Parameter Code	Parameter Definition	Units	RME Value	RME Rationale/ Reference	CT[a] Value	CT Rationale/ Reference	Intake Equation/ Model Name
Ingestion	IR-S	Ingestion Rate of Soil	mg/day	50	U.S. EPA, 1989	-	-	CDI ing = (IR)(CF)(FI)(EF)(ED) / (BW)(AT)
	EF	Exposure Frequency	days/year	93.75[b]	Conservative assumption	-	-	
	ED	Exposure Duration	years	25	U.S. EPA, 1989	-	-	
	FI	Fraction Ingested from contaminated source	unitless	1	Conservative assumption	-	-	
	CF	Conversion Factor	kg/mg	1.00E-06	SI system	-	-	
	BW	Body Weight	kg	70	U.S. EPA, 1989	-	-	
	AT-C	Averaging Time (Cancer)	days	25,550	U.S. EPA, 1989	-	-	
	AT-N	Averaging Time (Noncancer)	days	9,125	U.S. EPA, 1989	-	-	
Inhalation	InR-S	Inhalation Rate of Soil	m^3/day	20	U.S. EPA, 1989	-	-	CDI inh = (IR)(EF)(ED)[(1/VF)+(1/PEF)] / (BW)(AT)
	EF	Exposure Frequency	days/year	93.75b	Conservative assumption	-	-	
	ED	Exposure Duration	years	25	U.S. EPA, 1989	-	-	
	BW	Body Weight	kg	70	U.S. EPA, 1989	-	-	
	AT-C	Averaging Time (Cancer)	days	25550	U.S. EPA, 1989	-	-	
	AT-N	Averaging Time (Noncancer)	days	9125	U.S. EPA, 1989	-	-	
	PEF	Particulate Emission Factor	m^3/kg	1.32E+09	U.S. EPA, 1996	-	-	
	VF	Volatilization Factor	m^3/kg	Chemical specific	U.S. EPA, 1998	-	-	
Dermal	EF	Exposure Frequency	days/year	93.75b	Conservative assumption	-	-	CDI derm = (CF)(SA)(AF)(ABSd)(EF)(ED) / (BW)(AT)
	ED	Exposure Duration	years	25	U.S. EPA, 1989	-	-	
	CF	Conversion Factor	kg/mg	1.00E-06	SI system	-	-	
	SA	Skin Surface Area Available for Contact	cm^2	4,100	U.S. EPA, 1997	-	-	
	ABSd	Dermal Absorption Factor	unitless	Chemical specific	U.S. EPA, 1998	-	-	
	AF	Soil to Skin Adherence Factor	mg/cm^2/event	1	U.S. EPA, 1995	-	-	
	AT-C	Averaging Time (Cancer)	days	25,550	U.S. EPA, 1989	-	-	
	AT-N	Averaging Time (Noncancer)	days	9,125	U.S. EPA, 1989	-	-	

RME = Reasonable Maximum Exposure
CT = Central Tendency
mg = milligram
kg = kilogram
m^3 = cubic meters
cm^2 = square centimeters

a = The central tendency exposure was not evaluated for this site.
b = This exposure frequency assumes the site worker is present at this site 3 hours per day rather than 8 hours per day: (0.375 * 250 days year = 93.75 days/year).

U.S. EPA. 1989. Risk Assessment Guidance for Superfund - Volume I: Human Health Evaluation Manual (Part A) Interim Final. (EPA/540/1/89/002). Washington, DC. Office of Emergency and Remedial Response.
U.S. EPA. 1997. Exposure Factors Handbook. Washington, DC. Office of Emergency and Remedial Response.
U.S. EPA. 1996. *Soil Screening Guidance: User's Guide. 2nd Edition*. Washington, DC. Office of Solid Waste and Emergency Response. (Publication 9355.4-23).
U.S. EPA. 1998. EPA Region 6 Human Health Medium-Specific Screening Levels. October.
U.S. EPA. 1995. EPA Region 4: Supplemental Guidance to RAGS: Bulletin 3. Exposure Assessment. Atlanta, GA. Office of Health Assessment - Waste Management Division.

TABLE G14
INGESTION-SPECIFIC INTAKE FACTOR
SITE WORKER EXPOSURE: INGESTION OF CHEMICALS IN SOIL
SITE 4
CEDAR CHEMICAL CORPORATION, WEST HELENA, ARKANSAS

EQUATION UNITS	IF oral kg/kg-day	= ((	IR mg/day	)x(	EF days/yr	)x(	ED yr	)x(	FI unitless	)x(	CF kg/mg	) ÷ ((	BW kg	)x(	AT days	)))
NONCARCINOGENIC	1.83E-07	= ((	50	)x(	93.75	)x(	25	)x(	1	)x(	1.00E-06	) ÷ ((	70	)x(	9,125	)))
CARCINOGENIC	6.55E-08	= ((	50	)x(	93.75	)x(	25	)x(	1	)x(	1.00E-06	) ÷ ((	70	)x(	25,550	)))

See Table G13 for definitions and sources of equation variables identified as follows:

IF = intake factor
IR = ingestion rate
AT = averaging time
EF = exposure frequency
BW = body weight
ED = exposure duration
FI = fraction ingested
CF = conversion factor

TABLE G15
DERMAL-SPECIFIC INTAKE FACTOR
SITE WORKER EXPOSURE: DERMAL CONTACT WITH CHEMICALS IN SOIL
SITE 4
CEDAR CHEMICAL CORPORATION, WEST HELENA, ARKANSAS

EQUATION UNITS	IF derm = ((SA)x(AF)x(ABS)x(EF)x(ED)x(CF) + ((BW)x(AT)))
	kg/kg-day cm²/event mg/cm² unitless events/year years kg/mg kg days
NONCARCINOGENIC	
Dieldrin	1.50E-06 = ((4.10E+03)x(1)x(1.00E-01)x(93.75)x(25)x(1.00E-06) + ((70)x(9,125)))
Dinoseb	1.50E-06 = ((4.10E+03)x(1)x(1.00E-01)x(93.75)x(25)x(1.00E-06) + ((70)x(9,125)))
CARCINOGENIC	
Dieldrin	5.37E-07 = ((4.10E+03)x(1)x(1.00E-01)x(93.75)x(25)x(1.00E-06) + ((70)x(25,550)))
Dinoseb	5.37E-07 = ((4.10E+03)x(1)x(1.00E-01)x(93.75)x(25)x(1.00E-06) + ((70)x(25,550)))

See Table G13 for definitions and sources of equation variables identified as follows:

IF = intake factor
CF = conversion factor
SA = skin surface area available for contact
AF = soil to skin adherence factor
ABS = absorption factor
EF = exposure frequency
ED = exposure duration
BW = body weight
AT = averaging time

TABLE G16
INHALATION-SPECIFIC INTAKE FACTOR
SITE WORKER EXPOSURE: INHALATION OF AIRBORNE CHEMICALS FROM SOIL
SITE 4
CEDAR CHEMICAL CORPORATION, WEST HELENA, ARKANSAS

EQUATION UNITS	IFinh kg/kg-day	=	((	IR m^3/day	)x(	EF days/yr	)x(	ED yr	)x(	1	/	PEF m^3/kg	+	1	/	VF m^3/kg	))	+	((	BW kg	)x(	AT days	)))
NONCARCINOGENIC EFFECTS																							
Dieldrin	5.56E-11	=	((	20	)x(	93.75	)x(	25	)x(	1	/	1.32E+09	+	1	/	N/A	))	+	((	70	)x(	9,125	)))
Dinoseb	5.56E-11	=	((	20	)x(	93.75	)x(	25	)x(	1	/	1.32E+09	+	1	/	N/A	))	+	((	70	)x(	9,125	)))
CARCINOGENIC EFFECTS																							
Dieldrin	1.99E-11	=	((	20	)x(	93.75	)x(	25	)x(	1	/	1.32E+09	+	1	/	N/A	))	+	((	70	)x(	25,550	)))
Dinoseb	1.99E-11	=	((	20	)x(	93.75	)x(	25	)x(	1	/	1.32E+09	+	1	/	N/A	))	+	((	70	)x(	25,550	)))

See Table G13 for definitions and sources of equation variables identified as follows:

IF = Intake factor
IR = Inhalation Rate
EF = Exposure frequency
ED = Exposure duration
PEF = Particulate emission factor
VF = Volatilization factor
BW = Body weight
AT = Averaging time

Appendix H

Threatened and Endangered Species and

Arkansas Natural Heritage Commission Study Results

The Department of
Arkansas Heritage

Mike Huckabee, Governor
Cathie Matthews, Director

Arkansas Arts Council
•
Arkansas Historic Preservation Program
•
Arkansas Territorial Restoration
•
Delta Cultural Center
•
Old State House Museum

Arkansas Natural Heritage Commission

1500 Tower Building
323 Center Street
Little Rock, AR 72201
(501) 324-9619
fax: (501) 324-9618
tdd: (501) 324-9811
e-mail: info@dah.state.ar.us
website:
http://naturalheritage.com

Equal Opportunity Employer

Date: July 17, 2000
Subject: Elements of Special Concern
RTE Survey, Phillips County, Arkansas
ANHC No.: P-CF..-00-069

Mr. Fred Swan
EnSAfe Inc.
5724 Summer Trees Drive
Memphis, TN 38134

Dear Mr. Swan:

Staff members of the Arkansas Natural Heritage Commission have reviewed our files for records indicating the occurrence of rare plants and animals, outstanding natural communities, natural or scenic rivers, or other elements of special concern within a 1 mile radius of the Cedar Chemical Company site in West Helena, Arkansas. We find no records at the present time.

Please keep in mind that the project area may contain important natural features of which we are unaware. Staff members of the Arkansas Natural Heritage Commission have not conducted a field survey of the project site. Our review is based on data available to the program at the time of the request. It should not be regarded as a final statement on the elements or areas under consideration, nor should it be substituted for on-site surveys required for environmental assessments. Because our files are updated constantly, you may want to check with us again at a later time.

Thank you for consulting us. It has been a pleasure to work with you on this study.

Sincerely,

Cindy Osborne

Cindy Osborne
Data Manager

Enclosure: Invoice

MAY 1999

ARKANSAS NATURAL HERITAGE COMMISSION
DEPARTMENT OF ARKANSAS HERITAGE
INVENTORY RESEARCH PROGRAM
ELEMENTS OF SPECIAL CONCERN
PHILLIPS COUNTY, ARKANSAS

ELEMENT NAME	FEDERAL STATUS	STATE STATUS	GLOBAL RANK	STATE RANK
** Animals				
* Vertebrates				
ACIPENSER FULVESCENS, LAKE STURGEON	-	INV	G3	S1
AMMODRAMUS SAVANNARUM, GRASSHOPPER SPARROW	-	INV	G5	S3B
ATRACTOSTEUS SPATULA, ALLIGATOR GAR	-	INV	G5	S2?
ELAPHE OBSOLETA SPILOIDES, GRAY RAT SNAKE	-	INV	G5T5	S2?
HALIAEETUS LEUCOCEPHALUS, BALD EAGLE	LT	INV	G4	S2B,S3N
HYLA AVIVOCA, BIRD-VOICED TREEFROG	-	INV	G5	S2?
LIMNOTHLYPIS SWAINSONII, SWAINSON'S WARBLER	-	INV	G4	S3B
NOTURUS FLAVUS, STONECAT	-	INV	G5	S1
SCAPHIRHYNCHUS ALBUS, PALLID STURGEON	LE	INV	G1G2	S1
STERNA ANTILLARUM ATHALASSOS, INTERIOR LEAST TERN	LE	INV	G4T2Q	S2B
** Plants				
* Vascular Plants				
CAREX HITCHCOCKIANA, HITCHCOCK'S SEDGE	-	INV	G5	S1
JUGLANS CINEREA, BUTTERNUT	-	INV	G3G4	S3
MARIA VIRGINICA, VIRGINIA PENNYWORT	-	INV	G5	S2
OSMORHIZA CLAYTONII, HAIRY SWEET-CICELY	-	INV	G5	S1S3
SCHISANDRA GLABRA, CLIMBING MAGNOLIA	-	INV	G3	S2S3
ZANNICHELLIA PALUSTRIS, HORNED PONDWEED	-	INV	G5	S2S3
** Natural Communities				
MIXED MESOPHYTIC FOREST	-	INV	-	S4
RIVER FRONT FOREST	-	INV	-	S3

LEGEND

STATUS CODES

FEDERAL STATUS CODES

C = Candidate species. The U.S. Fish and Wildlife Service has enough scientific information to warrant proposing these species for listing as endangered or threatened under the Endangered Species Act.

LE = Listed Endangered; the U.S. Fish and Wildlife Service has listed these species as endangered under the Endangered Species Act.

LT = Listed Threatened; the U.S. Fish and Wildlife Service has listed these species as threatened under the Endangered Species Act.

LELT = Listed Endangered and Threatened; the U.S. Fish and Wildlife Services has listed these species as endangered and threatened in different parts of the breeding range.

PE = Proposed Endangered; the U.S. Fish and Wildlife Service has proposed these species for listing as endangered.

PT = Proposed Threatened; the U.S. Fish and Wildlife Service has proposed these species for listing as threatened.

T/SA = Threatened (or Endangered) because of similarity of appearance.
E/SA

STATE STATUS CODES

INV = Inventory Element; The Arkansas Natural Heritage Commission is currently conducting inventory work on these elements to determine their status in the state. These elements may include outstanding examples of Natural Communities, colonial nesting sites, outstanding scenic and geologic features as well as plants and animals which, according to current information, may be rare, peripheral, or of an undetermined status in the state.

SE = State Endangered; The Arkansas Natural Heritage Commission applies this term to native taxa which are in danger of being extirpated from the state.

ST = State Threatened; The Arkansas Natural Heritage Commission applies this term to native taxa which are believed likely to become endangered in Arkansas in the foreseeable future, based on current inventory information.

DEFINITION OF RANKS

Global Ranks

G1 = Critically imperiled globally because of extreme rarity (5 or fewer occurrences or very few remaining individuals or acres) or because of some factor(s) making it especially vulnerable to extinction.

G2 = Imperiled globally because of rarity (6-20 occurrences or few remaining individuals or acres) or because of some factor(s) making it especially vulnerable to extinction.

G3 = Either very rare and local throughout its range or found locally (even abundantly at some of its locations) in a restricted range (e.g., a single western state, a physiographic region in the East) or because of other factors making it vulnerable to extinction throughout its range; in terms of occurrences, in the range of 21 - 100.

G4 = Apparently secure globally, though it may be quite rare in parts of its range, especially at the periphery.

G5 = Demonstrably secure globally, though it may be quite rare in parts of its range, especially at the periphery.

GH = Of historical occurrence throughout its range, i.e., formerly part of the established biota, with the expectation that it may be rediscovered (e.g., Bachman's Warbler).

GU = Possibly in peril range-wide but status uncertain; more information needed.

GX = Believed to be extinct throughout range (e.g., Passenger Pigeon) with virtually no likelihood that it will be rediscovered.

T-RANKS = T subranks are given to global ranks when a subspecies, variety, or race is considered at the state level. The subrank is made up of a "T" plus a number or letter (1, 2, 3, 4, 5, H, U, X) with the same ranking rules as a full species.

State Ranks

S1 = Extremely rare. Typically 5 or fewer estimated occurrences in the state, or only a few remaining individuals, may be especially vulnerable to extirpation.

S2 = Very rare. Typically between 5 and 20 estimated occurrences or with many individuals in fewer occurrences, often susceptible to becoming extirpated.

S3 = Rare to uncommon. Typically between 20 and 100 estimated occurrences, may have fewer occurrences but with large number of individuals in some populations, may be susceptible to large-scale disturbances.

S4 = Common, apparently secure under present conditions. Typically 100 or more estimated occurrences, but may be fewer with many large populations, may be restricted to only a portion of the state, usually not susceptible to immediate threats.

S5 = Demonstrably widespread, common, and secure in the state and essentially ineradicable under present conditions.

SA = Accidental.

SH = Historically known from the state, but not verified for an extended period, usually 15 years.

SU = Possibly in peril in the state, but status uncertain, more information is needed.

SX = Apparently extirpated from state.

SZ = Zero occurrences. Not of practical conservation concern in the state because there are no definable occurrences, although the taxa is native and appears regularly in the state.

General Ranking Notes

Q = A "Q" in the global rank indicates the element's taxonomic classification as a species is a matter of conjecture among scientists.

RANGES = Ranges are used temporarily until a final rank decision can be made.

? = A question mark is used temporarily when there is some indecision regarding the rank assignment or when an element has not been ranked.

B = Breeding status

N = Non-breeding status

Appendix I

Cedar Chemical Corporation Biomonitoring Reports

AMERICAN INTERPLEX CORPORATION

48-Hour Static Renewal Definitive Acute Toxicity Test
Cedar Chemical Corporation 5/99 Outfall 002 AR0036412

May 14, 1999
Control No. 42802

Daphnia pulex

Permitee: Cedar Chemical Corporation NPDES NO.: AR003641

Composite Collected From: 5/9/99 0800 To: 5/10/99 0803
From: 5/10/99 0810 To: 5/11/99 0810

Test Initiated: 5/11/99 1705
Dilution water: Moderately Hard

PERCENT SURVIVAL

TIME	REP	Control	0.001%	0.01%	0.1%	1.0%	10%
24 hours	A	100	100	87.5	87.5	100	75.0
	B	100	100	100	87.5	100	75.0
	C	100	100	100	100	100	100
	D	100	100	100	87.5	100	100
	E	87.5	100	87.5	75.0	87.5	87.5
48 hours	A	87.5	100	87.5	87.5	62.5	37.5
	B	100	100	100	87.5	75.0	25.0
	C	100	100	100	75.0	75.0	37.5
	D	87.5	100	75.0	87.5	87.5	50.0
	E	87.5	100	100	75.0	75.0	50.0

1. Dunnett's Procedure or Steel's Many-One Rank Test as appropriate. Is the mean survival at 48 hours significantly different (p=0.05) than the control survival for the % effluent corresponding to:
   a) Low Flow (0.01 %): ____ Yes X No
   b) 1/2 Low Flow (NA): ____ Yes ____ No

2. If you answered No to 1a) enter [0], otherwise enter [1]: 0

3. If you answered No to 1b) enter [0], otherwise enter [1]: NA

4. Enter response to item 2 on the DMR Form, parameter #TEM3D.

5. Enter response to item 3 on the DMR Form, parameter #TFM3D.

6. Enter percent effluent corresponding to the LC-50 below.
   LC-50 = 5.2 % effluent
   Method of LC-50 calculation: Trimmed Spearman-Karber

AMERICAN INTERPLEX CORPORATION
48-Hour Static Renewal Definitive Acute Toxicity Test
Cedar Chemical Corporation 5/99 Outfall 002 AR0036412

May 14, 199
Control No. 4280

CHEMICAL PARAMETERS CHART
Daphnia pulex

PERMITTEE: Cedar Chemical Corporation

NPDES NO : AR0036412

CONTACT: Dr. Peter Fields

ANALYST 181, 182, 193, 208, 209, 210, 211

SAMPLE COLLECTED: DATE: 5/9-10/99 TIME: 0803
DATE: 5/10-11/99 TIME: 0810

TEST BEGIN: DATE: 5/11/99 TIME: 1609

TEST END: DATE: 5/13/99 TIME: 1609

PARAMETER	D.O.			TEMPERATURE			ALKALINITY			HARDNESS			pH		
DILUT./Time	0 hrs.	24 hrs.	48 hrs.	0 hrs.	24 hrs.	48 hrs.	0 hrs.	24 hrs.	48 hrs.	0 hrs.	24 hrs.	48 hrs.	0 hrs.	24 hrs.	48 hrs.
Control	8.2	8.2	7.9	20	20	20	63	64		100	101		8.2	7.9	8.1
0.001%	8.0	8.2	7.9	20	20	20							8.3	7.9	8.1
0.01%	8.1	8.2	7.9	20	20	20	64	64		8.1	8.1		8.3	7.9	8.1
0.1%	8.4	8.2	7.9	20	20	20							8.1	7.9	8.1
1.0%	8.4	8.1	7.6	20	20	20							8.3	8.0	8.3
10%	8.3	8.1	6.0	20	20	20							8.4	8.1	--

AMERICAN INTERPLEX CORPORATION

48-Hour Static Renewal Definitive Acute Toxicity Test
Cedar Chemical Corporation 5/99 Outfall 002 AR0036412

May 14, 1999
Control No. 42802

Pimephales promelas

PERMITTEE: Cedar Chemical Corporation NPDES NO.: AR003641

Composite Collected
From: 5/9/99 0800 To: 5/10/99 0803
From: 5/10/99 0810 To: 5/11/99 0810

Test Initiated: 5/11/99 1705
Dilution water: Moderately Hard

PERCENT SURVIVAL

TIME	REP	Control	0.001%	0.01%	0.1%	1.0%	10%
24 hours	A	100	100	100	87.5	100	62 5
	B	100	100	100	87.5	100	100
	C	100	100	100	100	100	100
	D	100	100	100	87.5	100	100
	E	100	100	100	75.0	100	100
48 hours	A	100	100	100	100	100	62.5
	B	100	100	100	100	100	87.5
	C	100	100	100	87.5	100	100
	D	100	100	75.0	87.5	100	87.5
	E	100	100	100	100	100	87.5

1. Dunnett's Procedure or Steel's Many-One Rank Test as appropriate. Is the mean survival at 48 hours significantly different (p=0.05) than the control survival for the % effluent corresponding to:
   a) Low Flow (0.01 %): ____ Yes ___X___ No
   b) 1/2 Low Flow (N/A). ____ Yes ____ No

2. If you answered No to 1a) enter [0], otherwise enter [1]: 0

3. If you answered No to 1b) enter [0], otherwise enter [1]: NA

4. Enter response to item 2 on the DMR Form, parameter #TEM6C.

5. Enter response to item 3 on the DMR Form, parameter #TFM6C.

6. Enter percent effluent corresponding to the LC-50 below.
   LC-50 = >10% effluent
   Method of LC-50 calculation: not applicable

Aug-10-99 13:25 From-CEDAR CHEMICAL +8705723785 T-882 P.06/10 F-845

AMERICAN INTERPLEX CORPORATION
48-Hour Static Renewal Definitive Acute Toxicity Test
Cedar Chemical Corporation 5/99 Outfall 002 AR0036412

May 14, 1999
Control No. 4280:

CHEMICAL PARAMETERS CHART
Pimephales promelas

PERMITTEE: Cedar Chemical Corporation

NPDES NO.: AR0036412

CONTACT: Dr. Peter Fields

ANALYST 181, 182, 193, 208, 209, 210, 211

SAMPLE COLLECTED: DATE: 5/9-10/99 TIME: 0800
DATE: 5/10-11/99 TIME: 0810

TEST BEGIN: DATE: 5/11/99 TIME: 1609

TEST END: DATE: 5/13/99 TIME: 1609

PARAMETER	D.O.			TEMPERATURE			ALKALINITY			HARDNESS			pH		
DILUT./Time	0 hrs.	24 hrs.	48 hrs.	0 hrs.	24 hrs.	48 hrs.	0 hrs.	24 hrs.	48 hrs.	0 hrs.	24 hrs.	48 hrs.	0 hrs	24 hrs.	48 hrs
Control	8.2	8.2	8.5	25	25	25	63	64		100	101		8.2	7.9	8.2
0.001%	8.0	8.2	8.5	25	25	25							8.3	7.9	8.2
0.01%	8.1	8.2	8.6	25	25	25	8.2	8.2		8.1	8.1		8.3	7.9	8.2
0.1%	8.4	8.2	8.8	25	25	25							8.1	7.9	8.1
1.0%	8.4	8.1	8.7	25	25	25							8.3	8.0	8.2
10%	8.3	8.1	8.6	25	25	25							8.4	8.1	–

4 RESULTS SUMMARY

PIMEPHALES PROMELAS, Fathead Minnow, 48-Hour Static Non-Renewal Definitive Toxicity Test

Larvae are exposed in a static non-renewal system for 48 hours to different concentrations of effluent and dilution water. Effluent dilutions selected for this test were 0 75%, 1 25%, 2.5%, 5 0%, and 10% effluent Test results are based on the survival of the larvae

The test was initiated June 13, 1997, and continued through June 15, 1997. Statistical analyses were performed on the observed data The sample did exhibit toxicity Steel's Many-One Rank Test was used to determine the NOEC (No Observable Effects Concentration) The NOEC was 0.75% effluent. The 48-hour LC_{50} was determined to be 1.59% effluent A summary of the data is outlined in the table below.

SUMMARY OF THE 48-HOUR DEFINITIVE TOXICITY TEST
WITH FATHEAD MINNOWS (*Pimephales promelas*)

Concentration	Percent survival after 24 hours	Percent survival after 48 hours
Control	100	100
0.75%	100	100
1.25%	100	65.0*
2.5%	90.0	15 0*
5.0%	20.0	0 0*
10%	0.0	0 0*

*Significant difference when compared to the control (p=0.05)

5 RESULTS SUMMARY

DAPHNIA PULEX, 48-Hour Static Non-Renewal Definitive Toxicity Test

Daphnia pulex are exposed in a static non-renewal system to different concentrations of effluent and dilution water Effluent dilutions for this test were 0 05%, 0 1%, 0.25%, 0.5%, and 1 0%. Test results are based on survival

The test was initiated June 13, 1997, and continued through June 15, 1997. The sample did exhibit toxicity. Statistical analyses were performed on the observed data Using Steel's Many-One Rank Test, the NOEC was determined to be 0 1% effluent The 48 hour LC_{50} was determined to be 0 35% effluent. A summary of the data is outlined in the table below

SUMMARY OF 48-HOUR DEFINITIVE TOXICITY TEST
WITH *DAPHNIA PULEX*

Concentration (% effluent)	Percent Survival at 24 hours	Percent Survival at 48 hours
Control	100	100
0.05%	100	100
0.1%	100	100
0.25%	75.0	70 0*
0.5%	65.0	35 0*
1.0%	70.0	0.0*

* Significant difference compared to the control (p=0 05)

24 Hour Acute Static Range Finding Toxicity Test
Cedar Chemical Corporation 6/97 Control No. 27888

4 RESULTS SUMMARY

PIMEPHALES PROMELAS, Fathead Minnow, 24-Hour Static Range Finding Toxicity Test

Larvae are exposed in a static non-renewal system for 24 hours to different concentrations of effluent and dilution water. Test results are based on the survival of the larvae Effluent dilutions selected for this test were 0.001%, 0 1%, 1 0%, 10%, and 100%

The test was initiated June 12, 1997, and continued through June 13, 1997 Statistical analyses were performed on the observed data. The sample did exhibit toxicity Steel's Many-One Rank Test was used to determine the NOEC (No Observable Effects Concentration). The NOEC was 1 0% effluent. The 24-hour LC_{50} was 3 16 % effluent A summary of the data is outlined in the table below

SUMMARY OF THE 24-HOUR DEFINITIVE TOXICITY TEST
WITH FATHEAD MINNOWS (*Pimephales promelas*)

Concentration	Percent survival 0 hours	Percent survival after 24 hours
Control 0%	100	100
0.001%	100	100
0.1%	100	100
1.0%	100	100
10%	100	0.0*
100%	100	0 0*

*Significant difference when compared to the control. (p=0 05)

5 RESULTS SUMMARY

DAPHNIA PULEX, 24-Hour Static Range Finding Test

Daphnia pulex are exposed in a static non-renewal system to different concentrations of effluent and dilution water Effluent dilutions for this test were 0 001%, 0 1%, 1 0%, 10%, and 100% Test results are based on survival

The test was initiated June 12, 1997, and continued through June 13, 1997 The sample did not exhibit toxicity Statistical analyses were performed on the observed data Using Steel's Many-One Rank Test, the NOEC was determined to be 0 1% effluent The 24-hour LC_{50} was 0 56% effluent. A summary of the data is outlined in the table below

SUMMARY OF 24-HOUR DEFINITIVE TOXICITY TEST
WITH *DAPHNIA PULEX*

Concentration (% effluent)	Percent Survival 0 hours	Percent Survival at 24 hours
Control 0%	100	100
0.001%	100	100
0.1%	100	100
1.0%	100	25 0*
10%	100	0 0*
100%	100	0 0*

* Significant difference compared to the control (p=0 05).

AMERICAN INTERPLEX CORPORATION

48-Hour Static Renewal Definitive Acute Toxicity Test
Cedar Chemical Corporation 5/99 Outfall 002 AR0036412

May 14, 1999
Control No. 42802

Daphnia pulex

Permitee: Cedar Chemical Corporation NPDES NO.: AR003641
Composite Collected From: 5/9/99 0800 To: 5/10/99 0803
From: 5/10/99 0810 To: 5/11/99 0810

Test Initiated: 5/11/99 1705
Dilution water: Moderately Hard

PERCENT SURVIVAL

TIME	REP	Control	0.001%	0.01%	0.1%	1.0%	10%
24 hours	A	100	100	87.5	87.5	100	75.0
	B	100	100	100	87.5	100	75.0
	C	100	100	100	100	100	100
	D	100	100	100	87.5	100	100
	E	87.5	100	87.5	75.0	87.5	87.5
48 hours	A	87.5	100	87.5	87.5	62.5	37.5
	B	100	100	100	87.5	75.0	25.0
	C	100	100	100	75.0	75.0	37.5
	D	87.5	100	75.0	87.5	87.5	50.0
	E	87.5	100	100	75.0	75.0	50.0

1. Dunnett's Procedure or Steel's Many-One Rank Test as appropriate. Is the mean survival at 48 hours significantly different (p=0.05) than the control survival for the % effluent corresponding to:
   a) Low Flow (0.01 %): ____ Yes X No
   b) 1/2 Low Flow (NA): ____ Yes ____ No

2. If you answered No to 1a) enter [0], otherwise enter [1]: 0

3. If you answered No to 1b) enter [0], otherwise enter [1]: NA

4. Enter response to item 2 on the DMR Form, parameter #TEM3D.

5. Enter response to item 3 on the DMR Form, parameter #TFM3D.

6. Enter percent effluent corresponding to the LC-50 below.
   LC-50 = 5.2 % effluent
   Method of LC-50 calculation: Trimmed Spearman-Karber

Aug-10-99 13:25 From-CEDAR CHEMICAL +8705723705 T-882 P.04/10 F-945

AMERICAN INTERPLEX CORPORATION
48-Hour Static Renewal Definitive Acute Toxicity Test
Cedar Chemical Corporation 5/99 Outfall 002 AR0036412

May 14, 199
Control No. 4280

CHEMICAL PARAMETERS CHART
Daphnia pulex

PERMITTEE: Cedar Chemical Corporation

NPDES NO : AR0036412

CONTACT: Dr. Peter Fields

ANALYST 181, 182, 193, 208, 209, 210, 211

SAMPLE COLLECTED: DATE: 5/9-10/99 TIME: 0803
DATE: 5/10-11/99 TIME: 0810

TEST BEGIN: DATE: 5/11/99 TIME: 1609

TEST END: DATE: 5/13/99 TIME: 1609

PARAMETER	D.O.			TEMPERATURE			ALKALINITY			HARDNESS			pH		
DILUT./Time	0 hrs.	24 hrs.	48 hrs.	0 hrs.	24 hrs.	48 hrs.	0 hrs.	24 hrs.	48 hrs.	0 hrs.	24 hrs.	48 hrs.	0 hrs.	24 hrs.	48 hrs.
Control	8.2	8.2	7.9	20	20	20	63	64		100	101		8.2	7.9	8.1
0.001%	8.0	8.2	7.9	20	20	20							8.3	7.9	8.1
0.01%	8.1	8.2	7.9	20	20	20	64	64		8.1	8.1		8.3	7.9	8.1
0.1%	8.4	8.2	7.9	20	20	20							8.1	7.9	8.1
1.0%	8.4	8.1	7.6	20	20	20							8.3	8.0	8.3
10%	8.3	8.1	6.0	20	20	20							8.4	8.1	--

AMERICAN INTERPLEX CORPORATION

48-Hour Static Renewal Definitive Acute Toxicity Test
Cedar Chemical Corporation 5/99 Outfall 002 AR0036412

May 14, 1999
Control No. 42802

Pimephales promelas

PERMITTEE: Cedar Chemical Corporation NPDES NO.: AR003641

Composite Collected
From: 5/9/99 0800 To: 5/10/99 0803
From: 5/10/99 0810 To: 5/11/99 0810

Test Initiated: 5/11/99 1705
Dilution water: Moderately Hard

PERCENT SURVIVAL

TIME	REP	Control	0.001%	0.01%	0.1%	1.0%	10%
24 hours	A	100	100	100	87.5	100	62 5
	B	100	100	100	87.5	100	100
	C	100	100	100	100	100	100
	D	100	100	100	87.5	100	100
	E	100	100	100	75.0	100	100
48 hours	A	100	100	100	100	100	62.5
	B	100	100	100	100	100	87.5
	C	100	100	100	87.5	100	100
	D	100	100	75.0	87.5	100	87.5
	E	100	100	100	100	100	87.5

1. Dunnett's Procedure or Steel's Many-One Rank Test as appropriate. Is the mean survival at 48 hours significantly different (p=0.05) than the control survival for the % effluent corresponding to:
   a) Low Flow (0.01 %): ____ Yes X No
   b) 1/2 Low Flow (N/A). ____ Yes ____ No

2. If you answered No to 1a) enter [0], otherwise enter [1]: 0

3. If you answered No to 1b) enter [0], otherwise enter [1]: NA

4. Enter response to item 2 on the DMR Form, parameter #TEM6C.

5. Enter response to item 3 on the DMR Form, parameter #TFM6C.

6. Enter percent effluent corresponding to the LC-50 below.
   LC-50 = >10% effluent
   Method of LC-50 calculation: not applicable

Aug-10-99 13:25 From-CEDAR CHEMICAL +8705723785 T-882 P.06/10 F-845

AMERICAN INTERPLEX CORPORATION
48-Hour Static Renewal Definitive Acute Toxicity Test
Cedar Chemical Corporation 5/99 Outfall 002 AR0036412

May 14, 199!
Control No. 4280:

CHEMICAL PARAMETERS CHART
Pimephales promelas

PERMITTEE: Cedar Chemical Corporation

NPDES NO.: AR0036412

CONTACT: Dr. Peter Fields

ANALYST 181, 182, 193, 208, 209, 210, 211

SAMPLE COLLECTED: DATE: 5/9-10/99 TIME: 0800
DATE: 5/10-11/99 TIME: 0810

TEST BEGIN: DATE: 5/11/99 TIME: 1609

TEST END: DATE: 5/13/99 TIME: 1609

PARAMETER	D.O.			TEMPERATURE			ALKALINITY			HARDNESS			pH		
DILUT./Time	0 hrs.	24 hrs.	48 hrs.	0 hrs.	24 hrs.	48 hrs.	0 hrs.	24 hrs.	48 hrs.	0 hrs.	24 hrs.	48 hrs.	0 hrs	24 hrs.	48 hrs
Control	8.2	8.2	8.5	25	25	25	63	64		100	101		8.2	7.9	8.2
0.001%	8.0	8.2	8.5	25	25	25							8.3	7.9	8.2
0.01%	8.1	8.2	8.6	25	25	25	8.2	8.2		8.1	8.1		8.3	7.9	8.2
0.1%	8.4	8.2	8.8	25	25	25							8.1	7.9	8.1
1.0%	8.4	8.1	8.7	25	25	25							8.3	8.0	8.2
10%	8.3	8.1	8 6	25	25	25							8.4	8.1	–

AMERICAN INTERPLEX CORPORATION
48 Hour Static Non-Renewal Definitive Toxicity Test
Cedar Chemical Corporation AR0036412 6/97 Control No 27888

4 RESULTS SUMMARY

PIMEPHALES PROMELAS, Fathead Minnow, 48-Hour Static Non-Renewal Definitive Toxicity Test

Larvae are exposed in a static non-renewal system for 48 hours to different concentrations of effluent and dilution water. Effluent dilutions selected for this test were 0 75%, 1 25%, 2 5%, 5 0%, and 10% effluent Test results are based on the survival of the larvae

The test was initiated June 13, 1997, and continued through June 15, 1997. Statistical analyses were performed on the observed data The sample did exhibit toxicity Steel's Many-One Rank Test was used to determine the NOEC (No Observable Effects Concentration) The NOEC was 0 75% effluent. The 48-hour LC_{50} was determined to be 1 59% effluent A summary of the data is outlined in the table below.

SUMMARY OF THE 48-HOUR DEFINITIVE TOXICITY TEST
WITH FATHEAD MINNOWS (*Pimephales promelas*)

Concentration	Percent survival after 24 hours	Percent survival after 48 hours
Control	100	100
0.75%	100	100
1.25%	100	65.0*
2.5%	90.0	15 0*
5.0%	20.0	0 0*
10%	0.0	0 0*

*Significant difference when compared to the control (p=0.05)

AMERICAN INTERPLEX CORPORATION
48 Hour Static Non-Renewal Definitive Toxicity Test
Cedar Chemical Corporation AR0036412 6/97 Control No 27888

5 RESULTS SUMMARY

DAPHNIA PULEX, 48-Hour Static Non-Renewal Definitive Toxicity Test

Daphnia pulex are exposed in a static non-renewal system to different concentrations of effluent and dilution water Effluent dilutions for this test were 0 05%, 0 1%, 0.25%, 0.5%, and 1 0%. Test results are based on survival

The test was initiated June 13, 1997, and continued through June 15, 1997. The sample did exhibit toxicity. Statistical analyses were performed on the observed data Using Steel's Many-One Rank Test, the NOEC was determined to be 0 1% effluent The 48 hour LC_{50} was determined to be 0 35% effluent. A summary of the data is outlined in the table below

SUMMARY OF 48-HOUR DEFINITIVE TOXICITY TEST
WITH *DAPHNIA PULEX*

Concentration (% effluent)	Percent Survival at 24 hours	Percent Survival at 48 hours
Control	100	100
0.05%	100	100
0.1%	100	100
0.25%	75.0	70 0*
0.5%	65.0	35 0*
1.0%	70.0	0.0*

* Significant difference compared to the control (p=0 05)