




WASHINGTON STATE
DEPARTMENT OF
E C O L O G Y

Data Appendix (Appendix D)

Washington State Dioxin Source Assessment

July 1998

Publication No. 98-321

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Data Appendix (Appendix D)

Washington State Dioxin Source Assessment

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Olympia, Washington 98504-7600

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Appendix D

Dioxin TEQ Load Calculations

This is the data appendix for Publication No. 98-320,
Washington State Dioxin Source Assessment.

Key to Abbreviations

Data Qualifiers

Q	Data Qualifier
U	Analyte was not detected at or above the reported limit (less than the given detection limit).
UJ	Analyte was not detected at or above the reported estimated result (estimated detection limit)
J	Analyte was positively identified. The associated numerical result is an estimate.
B	Analyte was also found in the analytical method blank indicating the sample may have been contaminated (these were treated as "U"s for this report).
EMPC	Estimated Maximum Possible Concentration (these were converted to "J"s for this report).
E	Estimated (these were treated as "J"s for this report).
D	This compound was detected in the method, field, and trip blank (these were treated as "V"s for this report).

Other Abbreviations

DL	Detection Limit
<DL=0	If the reported value is less than the detection limit, the value is assumed to be 0.
<DL=1/2DL	If the reported value is less than the detection limit, the value is assumed to be one-half of the detection limit.
<DL=DL	If the reported value is less than the detection limit, the value is assumed to be the detection limit.
TEQ	Toxic Equivalent
TEF	Toxic Equivalent Factor
ng	nanogram (10^{-9} grams)
pg	picograms (10^{-12} grams)
dscf	dry standard cubic foot
dscm	dry standard cubic meter
ppq	parts per quadrillion
MGD	million gallons/day

Ash Grove Cement

Facility Sample Name Lab Sample ID Date	Ash Grove Cement											
	Cement Kiln, baghouse											
	Quanterra Environmental Services											
	Run 1 8/5/96			Run 2 8/5/96			Run 3 8/5/96					
Congener	Value (ng/dscm)	TEQ (ng/dscm)	<DL= 0	DL	Value (ng/dscm)	TEQ (ng/dscm)	<DL= 0	DL	Value (ng/dscm)	TEQ (ng/dscm)	<DL= 0	DL
TEF	0.00159 U	0.00000	0.00159	0.00212 U	0.00000	0.00212	0.00163 U	0.00000	0.00163	0.00472 U	0.00000	0.00236
2,3,7,8-TCDD	0.00435 U	0.00000	0.00218	0.00374 U	0.00000	0.00374	0.00325 U	0.00000	0.00325	(NA)	0.00000	0.00000
1,2,3,7,8-PCDD	0.00304 U	0.00000	0.00030	(NA)	0.00374 U	0.00000	0.00037	0.00325 U	0.00000	0.00325 U	0.00000	0.00033
1,2,3,4,7,8-HxCDD	(NA)	0.00000	0.00029	0.00260 U	0.00000	0.00037	0.00325 U	0.00000	0.00033	0.00472 U	0.00000	0.00005
1,2,3,6,7,8-HxCDD	0.00290 U	0.00000	0.00003	0.00595 U	0.00000	0.00003	0.00472 U	0.00000	0.00005	0.00862 U	0.00000	0.00001
1,2,3,7,8,9-HxCDD	0.00290 U	0.00000	0.00003	0.00156 U	0.00000	0.00001	0.00862 U	0.00000	0.00001	0.00107 U	0.00000	0.00011
1,2,3,4,6,7,8-HpCD	0.00478 U	0.00000	0.00014	0.00293 U	0.00000	0.00016	0.00107 U	0.00000	0.00011	0.00195 U	0.00000	0.00010
OCDD	0.00139 U	0.00000	0.00014	0.00260 U	0.00000	0.00016	0.00107 U	0.00000	0.00011	0.00189 U	0.00000	0.00009
2,3,7,8-TCDF	0.00261 U	0.00000	0.00013	0.00119 U	0.00000	0.00012	0.00104 U	0.00000	0.00010	0.00104 U	0.00000	0.00010
1,2,3,7,8-PCDF	0.00232 U	0.00000	0.00116	0.00117 U	0.00000	0.00012	0.00104 U	0.00000	0.00010	0.00145 U	0.00000	0.00015
2,3,4,7,8-PCDF	0.00106 U	0.00000	0.00011	0.00163 U	0.00000	0.00016	0.00145 U	0.00000	0.00015	0.00195 U	0.00000	0.00020
1,2,3,4,7,8-HxCDF	0.00104 U	0.00000	0.00010	0.00228 U	0.00000	0.00023	0.00195 U	0.00000	0.00020	0.00314 U	0.00000	0.00003
1,2,3,6,7,8-HxCDF	0.00145 U	0.00000	0.00015	0.00119 U	0.00000	0.00001	0.00314 U	0.00000	0.00003	0.00405 U	0.00000	0.00004
2,3,4,6,7,8-HxCDF	0.00203 U	0.00000	0.00020	0.00085 U	0.00000	0.00001	0.00405 U	0.00000	0.00004	0.00374 U	0.00000	0.00000
1,2,3,7,8,9-HxCDF	0.00166 U	0.00000	0.00001	0.00277 U	0.00000	0.00000	0.00374 U	0.00000	0.00000	0.00000	0.00000	0.00000
1,2,3,4,7,8,9-HpCDF	0.00075 U	0.00000	0.00001	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000
OCDF	0.00246 U	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000
EPA TEQ (ng/kg)	0.00000	0.00640		0.00000	0.00768		0.00000	0.00647		0.00000	0.00647	
Ave. stack volumetric flowrate (dscf/min.)	118,088	118,088		104,153	104,153		117,015	117,015		117,015	117,015	
TEQ Production Rate (mg/d)	0.00000	0.03082		0.00000	0.03260		0.00000	0.03087		0.00000	0.03087	
Ave. of 3 runs (mg TEQ/day)												

<DL=0:	0.000
<DL=1/2DL:	0.0157
<DL=DL:	0.0314

NA = not analyzed

Boise-Cascade Wallula

Facility: Boise-Cascade Wallula
 Lab: Triangle Laboratories, Durham, NC
 Sample Name: Final Effluent
 Sample Number: 158252
 Date: 4/7-8/92

Units	TEF	pg/L Value	Qualifier	TEQ pg/L (<DL=0)	TEQ pg/L (<DL=1/2DL)	TEQ pg/L (<DL=DL)
2,3,7,8-TCDD	1	2.9	E	2.9		2.9
1,2,3,7,8-PCDD	0.5	6.3	U	0		3.15
1,2,3,4,7,8-HxCDD	0.1	12.3	U	0		1.23
1,2,3,6,7,8-HxCDD	0.1	7.7	U	0		0.77
1,2,3,7,8,9-HxCDD	0.1	10.4	U	0		1.04
1,2,3,4,6,7,8-HpCDD	0.01	34.6	B	0		0.346
OCDD	0.001	166	B	0		0.166
2,3,7,8-TCDF	0.1	24.3	B	0		2.43
1,2,3,7,8-PCDF	0.05	7.8	U	0		0.39
2,3,4,7,8-PCDF	0.5	7.9	U	0		3.95
1,2,3,4,7,8-HxCDF	0.1	12.3	U	0		1.23
1,2,3,6,7,8-HxCDF	0.1	8.7	U	0		0.87
2,3,4,6,7,8-HxCDF	0.1	7.3	EB	0		0.73
1,2,3,7,8,9-HxCDF	0.1	13.9	U	0		1.39
1,2,3,4,6,7,8-HpCDF	0.01	14.1	U	0		0.141
1,2,3,4,7,8,9-HpCDF	0.01	24.1	U	0		0.241
OCDF	0.001	44.9	U	0		0.0449

EPA TEQ 2.9 21.0

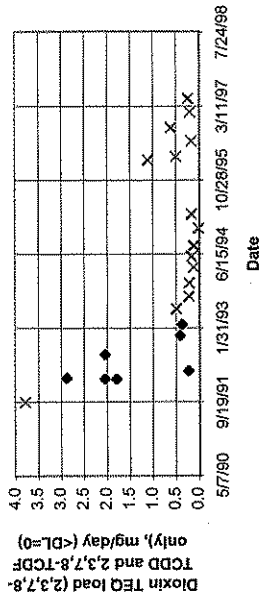
Flow (cubic meters/sec) 1.265 1.265

TEQ load (mg/D) 0.317 1.307 2.30

Boise Cascade, Wallula - Wastewater (2,3,7,8-TCDD and 2,3,7,8-TCDF only)

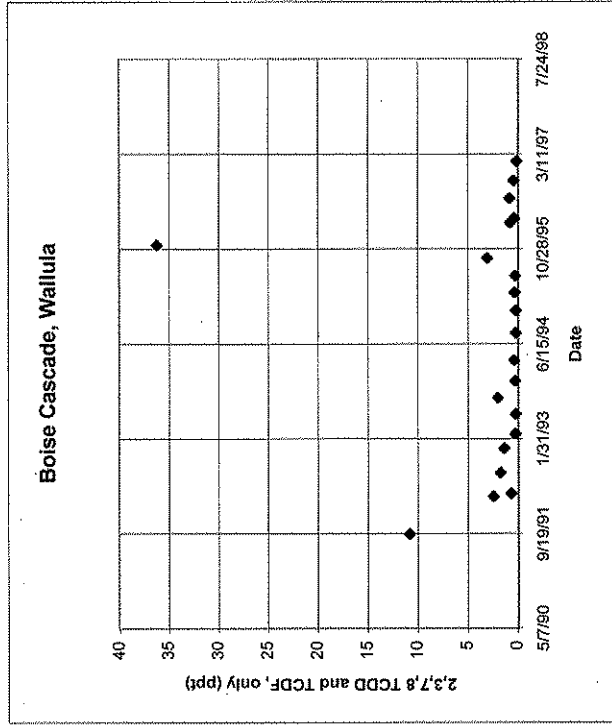
Date	2,3,7,8-TCDD TEF = 1		2,3,7,8-TCDF TEF = 0.1		Flow (MGD)	TEQ Load (mg/day)		
	Value (ppq)	TEQ (ppq) <DL =	Value (ppq)	TEQ (ppq) <DL =		0	1/2 DL	DL
Boise Cascade, Wallula - Final Mill Effluent								
2/20/92	13	13	46	4.6	26.8	1.79	1.79	1.79
2/20/92	15	15	51	5.1	26.8	2.04	2.04	2.04
2/27/92	20	20	72	7.2	27.93	2.88	2.88	2.88
4/15/92	4.1 U	0	20	2	29.11	0.22	0.45	0.67
8/4/92	13	13	55	5.5	29.08	2.04	2.04	2.04
12/9/92	10 U	0	40	4	26.62	0.40	0.91	1.41
2/24/93	3.9 U	0	38	3.8	24.9	0.36	0.54	0.73
Boise Cascade, Wallula - Secondary Effluent								
note: secondary effluent is major portion of final effluent (75-80%)								
9/16/91	40	40	140	14	18.5	3.78	3.78	3.78
6/10/93	6.9 U	0	78	7.8	16.5	0.49	0.70	0.92
9/2/93	3.6 U	0	33	3.3	17.1	0.21	0.33	0.45
12/2/93	10 U	0	33	3.3	16.4	0.20	0.52	0.83
3/19/94	2.4 U	0	15	1.5	20	0.11	0.20	0.30
6/1/94	7.6 U	0	18	1.8	22.5	0.15	0.48	0.80
8/11/94	3.4 U	0	15	1.5	19	0.11	0.23	0.35
12/8/94	3.8 U	0	10 U	0	19.7	0.00	0.18	0.36
3/12/95	10 U	0	23	2.3	18	0.16	0.50	0.84
6/8/95	4.5 U	0	14	1.4	28.95	0.15	0.40	0.65
9/10/95	3.1 U	0	55	5.5	18.3	0.38	0.49	0.60
3/13/96	5.6	5.6	53	5.3	26.7	1.10	1.10	1.10
11/18/95	10	10	74	7.4	18.2	1.20	1.20	1.20
4/6/96	7.1 U	0	72	7.2	18.1	0.49	0.74	0.98
7/20/96	1.2 U	0	18	1.8	22.9	0.16	0.21	0.26
10/19/96	2.9	2.9	29	2.9	27.6	0.61	0.61	0.61
1/31/97	5.0 U	0	28	2.8	17.7	0.19	0.36	0.52
5/2/97	2.9 U	0	28	2.8	21.4	0.23	0.34	0.46
Low						0.00	0.18	0.26
Average						0.78	0.92	1.06
High						3.78	3.78	3.78
Count						25		

Boise Cascade, Wallula



Boise Cascade, Wallula - Sludge (2,3,7,8-TCDD and 2,3,7,8-TCDF only)

Date	2,3,7,8-TCDD TEF = 1		2,3,7,8-TCDF TEF = 0.1		2,3,7,8-TCDD+2,3,7,8-TCDF, only		
	Value (ppt)	<DL = 0 DL	Value (ppt)	<DL = 0 DL	Total TEQ (ppt)	<DL = 0 1/2 DL	DL
Boise Cascade, Wallula - "Clarifier Sludge"							
9/16/91	9.1	9.1	17	1.7	10.8	10.8	10.8
3/31/92	1.3	1.3	11	1.1	2.4	2.4	2.4
4/15/92	0.45	0.45	1.6	0.16	0.61	0.61	0.61
8/4/92	1.3	1.3	3.7	0.37	1.67	1.67	1.67
12/11/92	1.1	1.1	2.3	0.23	1.33	1.33	1.33
2/24/93	0.28	0	1.9	0.19	0.47	0.47	0.47
6/10/93	0.31	0	1.7	0.17	0.17	0.17	0.48
9/2/93	1.6	1.6	3.8	0.38	1.98	1.98	1.98
12/2/93	1	0	2.4	0.24	0.24	0.24	1.24
3/19/94	1	0	3.3	0.33	0.33	0.33	1.33
8/11/94	0.37	0	1.6	0.16	0.16	0.16	0.53
12/8/94	1	0	1.7	0.17	0.17	0.17	1.17
3/12/95	1	0	2.7	0.27	0.27	0.27	1.27
6/8/95	0.55	0	2.4	0.24	0.24	0.24	0.79
9/10/95	1	1	20	2	3	3	3
3/13/96	0.47	0.47	2.5	0.25	0.72	0.72	0.72
11/18/95	14	14	222	22.2	36.2	36.2	36.2
4/6/96	0.65	0	2.8	0.28	0.28	0.28	0.93
7/20/96	0.6	0.6	1.7	0.17	0.77	0.77	0.77
10/22/96	0.28	0.28	0.91	0.091	0.371	0.371	0.371
1/31/97	0.33	0	0.77	0.077	0.077	0.077	0.407
Mean TEQ (ppt)					2.95	2.95	3.26
Production rate (tons/year dry weight)					11,000	11,000	11,000
TEQ load (mg/day)					0.081	0.085	0.089



Facility
Lab
Cameron-Yakima
Alta

Sample Name Date Units Congener	MH4 = Multiple Hearth Furnace						
	MH4 #1 12/1/94		MH4 12/20/94		MH #4 12/21/94		
TEF	mg/hr	TEQ (mg/hr)	mg/hr	TEQ (mg/hr)	mg/hr	TEQ (mg/hr)	
2,3,7,8-TCDD	1	0.0337	0.0337	0.0058	0.0058	0.0006	0.0006
1,2,3,7,8-PCDD	0.5	0.1193	0.0597	0.0219	0.0110	0.0026	0.0013
1,2,3,4,7,8-HxCDD	0.1	0.1683	0.0168	0.0283	0.0028	0.0051	0.0005
1,2,3,6,7,8-HxCDD	0.1	0.2753	0.0275	0.1004	0.0100	0.0105	0.0010
1,2,3,7,8,9-HxCDD	0.1	0.2294	0.0229	0.0593	0.0059	0.0059	0.0006
1,2,3,4,6,7,8-HpCDD	0.01	3.8239	0.0382	1.5517	0.0155	0.1707	0.0017
OCDD	0.001	10.7070	0.0107	4.6552	0.0047	0.7184	0.0007
2,3,7,8-TCDF	0.1	0.0597	0.0060	0.0164	0.0016	0.0046	0.0005
1,2,3,7,8-PCDF	0.05	0.1683	0.0084	0.0347	0.0017	0.0117	0.0006
2,3,4,7,8-PCDF	0.6	0.1683	0.0841	0.0575	0.0288	0.0267	0.0133
1,2,3,4,7,8-HxCDF	0.1	0.3518	0.0352	0.0785	0.0078	0.0309	0.0031
1,2,3,6,7,8-HxCDF	0.1	0.3059	0.0306	0.0832	0.0083	0.0352	0.0035
2,3,4,6,7,8-HxCDF	0.1	0.2141	0.0214	0.1187	0.0119	0.0747	0.0075
1,2,3,7,8,9-HxCDF	0.1	0.0811	0.0081	0.0374	0.0037	0.0245	0.0025
1,2,3,4,6,7,8-HpCDF	0.01	1.4837	0.0148	0.3651	0.0037	0.1921	0.0019
1,2,3,4,7,8,9-HpCDF	0.01	0.1683	0.0017	0.0630	0.0006	0.0448	0.0004
OCDF	0.001	0.5353	0.0005	0.2921	0.0003	0.1814	0.0002
EPA TEQ			0.42		0.12		0.04
TEQ load (mg/D)			10.09		2.98		0.96

Average of 3 runs:	4.68
<DL=0	4.68
<DL=1/2DL	4.68
<DL=DL	4.68

Facility
Lab

		RK3 = Rotary Kiln Furnace					
Sample Name		RK3 12/6/94		RK3 12/7/94		RK3 12/19/94	
Date		mg/hr	TEQ (mg/hr)	mg/hr	TEQ (mg/hr)	mg/hr	TEQ (mg/hr)
Units							
Congener	TEF						
2,3,7,8-TCDD	1	0.0378	0.0378	0.0922	0.0922	0.0620	0.0620
1,2,3,7,8-PCDD	0.5	0.1227	0.0613	0.3121	0.1561	0.2306	0.1153
1,2,3,4,7,8-HxCDD	0.1	0.1302	0.0130	0.3134	0.0313	0.1888	0.0189
1,2,3,6,7,8-HxCDD	0.1	0.1252	0.0125	0.3690	0.0369	0.2678	0.0268
1,2,3,7,8,9-HxCDD	0.1	0.1110	0.0111	0.2160	0.0216	0.2098	0.0210
1,2,3,4,6,7,8-HpCDD	0.01	1.3225	0.0132	4.4404	0.0444	4.1142	0.0411
OCDD	0.001	4.7554	0.0048	15.4170	0.0154	16.4210	0.0164
2,3,7,8-TCDF	0.1	0.1222	0.0122	0.4111	0.0411	0.2731	0.0273
1,2,3,7,8-PCDF	0.05	0.4461	0.0223	1.4418	0.0721	0.9892	0.0495
2,3,4,7,8-PCDF	0.5	0.3990	0.1995	1.4173	0.7087	0.8681	0.4340
1,2,3,4,7,8-HxCDF	0.1	0.8702	0.0870	2.7347	0.2735	2.1177	0.2118
1,2,3,6,7,8-HxCDF	0.1	0.7761	0.0776	2.9100	0.2910	1.8518	0.1852
2,3,4,6,7,8-HxCDF	0.1	0.3999	0.0400	1.2251	0.1225	0.9747	0.0975
1,2,3,7,8,9-HxCDF	0.1	0.1631	0.0163	0.4312	0.0431	0.3653	0.0365
1,2,3,4,6,7,8-HpCDF	0.01	3.0492	0.0305	7.5766	0.0758	5.5338	0.0553
1,2,3,4,7,8,9-HpCDF	0.01	0.2846	0.0028	0.7426	0.0074	0.5389	0.0054
OCDF	0.001	0.7492	0.0007	1.3438	0.0013	1.7542	0.0018
EPA TEQ			0.64		2.03		1.41
TEQ load (mg/D)			15.43		48.82		33.74

Average of 3 runs:
 <DL=0 32.66
 <DL=1/2DL 32.66
 <DL=DL 32.66

Conrad Industries (page 1 of 2)

Facility Conrad Industries, Inc. Advanced Recycling Technology System, Chelalis, WA

Sample Name		Air Emissions - Retort Exhaust Stack													
Lab		Run 1						Run 2						Run 3	
Sample Number		LB604\REPCDRSM													
File Name		2/24/94													
Date		2/24/94													
Congener	TEF	TEQ (ng/min)			Value (ng/min)			TEQ (ng/min)			Value (ng/min)			TEQ (ng/min)	
		Q	<DL=	1/2 DL	Q	<DL=	DL	Q	<DL=	DL	Q	<DL=	DL	Q	<DL=
2,3,7,8-TCDD	0.001	0.025	UB	0	0.01250	0.025	0.030	U	0	0.03	0.032	U	0	0.032	
1,2,3,7,8-PCDD	0.5	0.178		0.089	0.08900	0.089	0.030	U	0	0.015	0.042	U	0	0.021	
1,2,3,4,7,8-HxCDD	0.1	0.130	U	0	0.00650	0.013	0.030	U	0	0.003	0.038	U	0	0.0038	
1,2,3,6,7,8-HxCDD	0.1	0.051		0.0051	0.00510	0.0051	0.058		0.0058	0.0058	0.040	U	0	0.004	
1,2,3,7,8,9-HxCDD	0.1	0.040	U	0	0.00200	0.004	0.026	U	0	0.0026	0.064	U	0	0.0064	
1,2,3,4,6,7,8-HpCD	0.01	0.110		0.0011	0.00110	0.0011	0.299		0.00299	0.00299	0.055		0.00055	0.00055	
OCDD	0.001	0.794	B	0	0.00040	0.000794	1.25	B	0	0.00125	0.493		0.000493	0.000493	
2,3,7,8-TCDF	0.1	0.012	*	0	0.00060	0.0012	0.026	*	0	0.0026	0.015	*	0	0.0015	
1,2,3,7,8-PCDF	0.05	0.036	U	0	0.00090	0.0018	0.077	U	0	0.00385	0.025		0.00125	0.00125	
2,3,4,7,8-PCDF	0.5	0.025	U	0	0.00625	0.0125	0.060		0.03	0.03	0.021		0.0105	0.0105	
1,2,3,4,7,8-HxCDF	0.1	0.021	U	0	0.00105	0.0021	0.030		0.003	0.003	0.019	U	0	0.0019	
1,2,3,6,7,8-HxCDF	0.1	0.014	U	0	0.00070	0.0014	0.030		0.003	0.003	0.015	U	0	0.0015	
2,3,4,6,7,8-HxCDF	0.1	0.015		0.0015	0.00150	0.0015	0.037		0.0037	0.0037	0.019	U	0	0.0019	
1,2,3,7,8,9-HxCDF	0.1	0.019	U	0	0.00095	0.0019	0.030	U	0	0.003	0.023	U	0	0.0023	
1,2,3,4,6,7,8-HpCDF	0.01	0.034	U	0	0.00017	0.00034	0.097		0.00097	0.00097	0.034	U	0	0.00034	
1,2,3,4,7,8,9-HpCDF	0.01	0.034	U	0	0.00017	0.00034	0.032	U	0	0.00032	0.025	U	0	0.00025	
OCDF	0.001	0.047		0.000047	0.00005	0.000047	0.073		0.000073	0.000073	0.034		0.000034	0.000034	
EPA TEQ (ng/min)		0.097		0.129	0.161		0.05		0.11		0.01		0.01	0.09	
TEQ Production Rate (mg/d)		0.000139		0.000186	0.000232		0.000071		0.000160		0.000018		0.000129		
TEQ load (mg/D)		Sum of 2 sources:													
Ave. of 3 runs (mg TEQ/day)		<DL=0: 0.000406													
<DL=0:		<DL=1/2DL: 0.000524													
<DL=1/2DL:		<DL=DL: 0.000643													

* Value may include contributions from other TCDF isomers (treated like a "U")

Daishowa

Facility Daishowa America -- Port Angeles Mill
 Lab Quanterra
 Sample Name Boiler Ash
 Sample Number 087893-0001-SA
 Date 5/23/96

Units	TEF	pg/g	Qualifier	TEQ pg/L (<DL=0)	DL	TEQ pg/L (<DL=1/2)	TEQ pg/L (<DL=DL)
2,3,7,8-TCDD	1	0.048	U	0	0	0.048	0.048
1,2,3,7,8-PCDD	0.5	2	U	0	0	1	1
1,2,3,4,7,8-HxCDD	0.1	0.91	U	0	0	0.091	0.091
1,2,3,6,7,8-HxCDD	0.1	2.2	U	0	0	0.22	0.22
1,2,3,7,8,9-HxCDD	0.1	2.9	U	0	0	0.29	0.29
1,2,3,4,6,7,8-HpC	0.01	19	J	0.19	0.19	0.19	0.19
OCDD	0.001	120		0.12	0.12	0.12	0.12
2,3,7,8-TCDF	0.1	1.7	U	0	0	0.17	0.17
1,2,3,7,8-PCDF	0.05	0.81	U	0	0	0.0405	0.0405
2,3,4,7,8-PCDF	0.5	0.84	U	0	0	0.42	0.42
1,2,3,4,7,8-HxCDF	0.1	0.92	U	0	0	0.092	0.092
1,2,3,6,7,8-HxCDF	0.1	0.54	U	0	0	0.054	0.054
2,3,4,6,7,8-HxCDF	0.1	0.45	U	0	0	0.045	0.045
1,2,3,7,8,9-HxCDF	0.1	0.31	U	0	0	0.031	0.031
1,2,3,4,6,7,8-HpC	0.01	1.7	U	0	0	0.017	0.017
1,2,3,4,7,8,9-HpC	0.01	0.48	U	0	0	0.0048	0.0048
OCDF	0.001	4	U	0	0	0.004	0.004
EPA TEQ				0.31		2.84	2.84

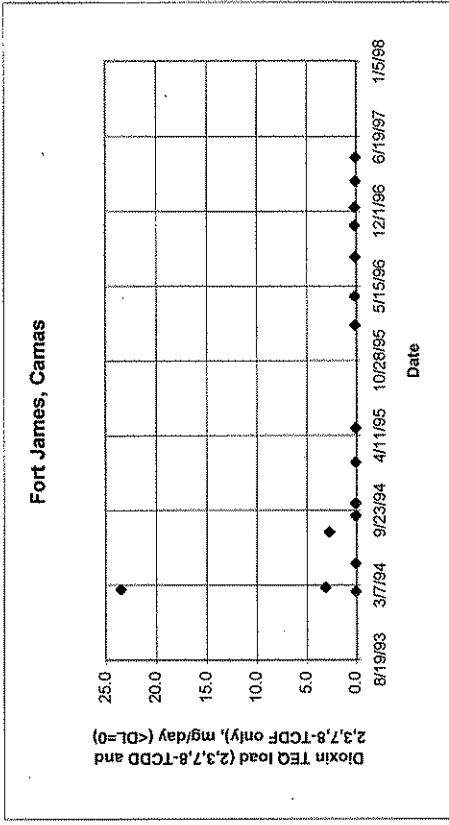
Waste Production Rate (tons/day) 41.3
 TEQ Production Rate (mg/d) 0.0116 0.059 0.107

Fort James - Ash

Facility	Ft. James				
Lab	Quanterra				
Sample Name	Ft. James				
Sample Number	095839-0002-SA				
Date	10/20/97				
	TEQ (ng/dscm)				
	<DL=				
Units	pg/g	Q	0	1/2 DL	DL
Congener	TEF				
2,3,7,8-TCDD	1	3.2	3.20000	3.20000	3.20000
1,2,3,7,8-PCDD	0.5	15	7.50000	7.50000	7.50000
1,2,3,4,7,8-HxCDD	0.1	20	2.00000	2.00000	2.00000
1,2,3,6,7,8-HxCDD	0.1	40	4.00000	4.00000	4.00000
1,2,3,7,8,9-HxCDD	0.1	28	2.80000	2.80000	2.80000
1,2,3,4,6,7,8-HpCDD	0.01	160	1.60000	1.60000	1.60000
OCDD	0.001	99	0.09900	0.09900	0.09900
2,3,7,8-TCDF	0.1	17	1.70000	1.70000	1.70000
1,2,3,7,8-PCDF	0.05	11 U	0.00000	0.55000	0.55000
2,3,4,7,8-PCDF	0.5	20	10.00000	10.00000	10.00000
1,2,3,4,7,8-HxCDF	0.1	11	1.10000	1.10000	1.10000
1,2,3,6,7,8-HxCDF	0.1	7.1	0.71000	0.71000	0.71000
2,3,4,6,7,8-HxCDF	0.1	5.8 J	0.58000	0.58000	0.58000
1,2,3,7,8,9-HxCDF	0.1	1.4 U	0.00000	0.14000	0.14000
1,2,3,4,7,8-HpCDF	0.01	9.3	0.09300	0.09300	0.09300
1,2,3,4,7,8,9-HpCDF	0.01	3.7 J	0.03700	0.03700	0.03700
OCDF	0.001	2.8 U	0.00000	0.00280	0.00280
EPA TEQ			35.4	35.8	36.1
Waste Production Rate (tons/day)			16.894	16.894	16.894
TEQ Load (mg/d)			0.544	0.549	0.555

Fort James - Wastewater (2,3,7,8-TCDD and 2,3,7,8-TCDF only)

Date	2,3,7,8-TCDD TEF = 1		2,3,7,8-TCDF TEF = 0.1		TEQ Load (mg/day) <DL= DL		
	Value (ppq)	TEQ (ppq) <DL = DL	Value (ppq)	TEQ (ppq) <DL = DL	0	1/2 DL	DL
Fort James, Camas - "ASB Effluent"							
Duplicate:							
2/23/94	92.0	92	240	24	23.71	23.71	23.71
2/23/94	84.0	84	300	30	23.30	23.30	23.30
Ave. of dup:	88.0	88	270	27	23.50	23.50	23.50
2/18/94	3.3 U	0	3.3	0	0.00	0.37	0.74
2/23/94	88	88	270	27	23.50	23.50	23.50
2/28/94	12.0	12	31	3.1	3.09	3.09	3.09
5/4/94	4.1 U	0	4.1	0	0.00	0.44	0.88
7/27/94	11.0	11	10	1	2.68	2.68	2.68
9/9/94	5.5 U	0	5.5	0	0.00	0.67	1.33
10/12/94	2.8 U	0	2.8	0	0.00	0.35	0.70
1/30/95	2.7 U	0	2.7	0	0.00	0.33	0.66
5/1/95	1.5 U	0	1.5	0	0.00	0.19	0.37
1/31/96	3.8 U	0	3.8	0	0.08	0.46	0.84
4/17/96	4.3 U	0	4.3	0	0.09	0.51	0.94
7/31/96	3.2 U	0	3.2	0	0.07	0.41	0.75
10/23/96	4.6 U	0	4.6	0	0.10	0.58	1.06
12/11/96	2.8 U	0	2.8	0	0.06	0.37	0.68
2/19/97	2.7 U	0	2.7	0	0.00	0.27	0.54
4/23/97	1.8 U	0	2.5	0	0.00	0.18	0.35
Low					0.00	0.18	0.35
Average					1.85	2.15	2.44
High					23.50	23.50	23.50
Count					16		



Fort Lewis - Air Emissions (page 1 of 3)

Facility		No. 1 Incinerator											
Sample Name		11505-001-001											
Weston W.O. No.		Unknown											
Lab													
Sample ID		Run 1				Run 2				Run 3			
Date		7/19/97				7/19/97				7/20/97			
Congener		Value	Value	TEQ (ng/dscm)	Value	Value	TEQ (ng/dscm)	Value	Value	TEQ (ng/dscm)	Value	Value	TEQ (ng/dscm)
		(lb/hr)	(mg/day)	<DL=	(lb/hr)	(mg/day)	<DL=	(lb/hr)	(mg/day)	<DL=	(lb/hr)	(mg/day)	<DL=
		0	DL	0	DL	0	DL	0	DL	0	DL	0	DL
TEF	2,3,7,8-TCDD	9.73E-11	0.0010615 U	0.000	7.88E-11	0.0008375 U	0.000	9.24E-11	0.001008 U	0.000	9.24E-11	0.001008 U	0.001
	1,2,3,4,7,8-PeCDD	3.12E-10	0.0034036 U	0.000	2.75E-10	0.003 U	0.000	2.85E-10	0.0031091 U	0.000	2.85E-10	0.0031091 U	0.002
	1,2,3,4,7,8-HxCDD	4.61E-10	0.0050291 U	0.000	4.01E-10	0.0043745 U	0.000	4.24E-10	0.0046235 U	0.000	4.24E-10	0.0046235 U	0.000
	1,2,3,6,7,8-HxCDD	1.09E-09	0.0118909 U	0.000	9.43E-10	0.0102873 U	0.000	9.24E-10	0.01008 U	0.000	9.24E-10	0.01008 U	0.001
	1,2,3,7,8,9-HxCDD	1.25E-09	0.0138364 U	0.000	9.43E-10	0.0102873 U	0.000	9.24E-10	0.01008 U	0.000	9.24E-10	0.01008 U	0.001
	1,2,3,4,6,7,8-HpCDD	1.09E-08	0.1189091 U	0.001	1.02E-08	0.1112727 U	0.001	8.47E-09	0.0924 U	0.001	8.47E-09	0.0924 U	0.001
	OCDD	2.34E-08	0.2552727 U	0.000	1.96E-08	0.2138182 U	0.000	1.54E-08	0.168 U	0.000	1.54E-08	0.168 U	0.000
	2,3,7,8-TCDF	2.65E-10	0.0028909 U	0.000	2.51E-10	0.0027382 U	0.000	3.31E-10	0.0036109 U	0.000	3.31E-10	0.0036109 U	0.000
	1,2,3,7,8-PeCDF	4.21E-10	0.0045927 U	0.000	3.46E-10	0.0037745 U	0.000	4.08E-10	0.0044509 U	0.000	4.08E-10	0.0044509 U	0.000
	2,3,4,7,8-PeCDF	7.49E-10	0.0081709 U	0.000	7.07E-10	0.0077427 U	0.000	7.70E-10	0.0084 U	0.000	7.70E-10	0.0084 U	0.001
	1,2,3,4,7,8-HxCDF	5.70E-10	0.0062182 U	0.000	6.44E-10	0.0070255 U	0.000	7.70E-10	0.0084 U	0.000	7.70E-10	0.0084 U	0.001
	1,2,3,6,7,8-HxCDF	8.59E-10	0.0093709 U	0.000	7.86E-10	0.0085745 U	0.000	7.70E-10	0.0084 U	0.000	7.70E-10	0.0084 U	0.001
	2,3,4,6,7,8-HxCDF	1.64E-09	0.0178909 U	0.002	1.41E-09	0.0153818 U	0.002	1.31E-09	0.0142909 U	0.001	1.31E-09	0.0142909 U	0.001
	1,2,3,7,8,9-HxCDF	1.56E-10	0.0017018 U	0.000	1.89E-10	0.0020618 U	0.000	9.24E-11	0.001008 U	0.000	9.24E-11	0.001008 U	0.000
	1,2,3,4,6,7,8-HpCDF	4.21E-09	0.0459273 U	0.000	4.09E-09	0.0446182 U	0.000	3.93E-09	0.0428727 U	0.000	3.93E-09	0.0428727 U	0.000
	1,2,3,4,7,8,9-HpCDF	7.65E-10	0.0083455 U	0.000	6.44E-10	0.0070255 U	0.000	5.78E-10	0.0063055 U	0.000	5.78E-10	0.0063055 U	0.000
OCDF		3.98E-09	0.0434182 U	0.000	3.54E-09	0.0386182 U	0.000	2.70E-09	0.0294545 U	0.000	2.70E-09	0.0294545 U	0.000
TEQ Production Rate (mg/d)			0.00195	0.01597			0.0018			0.0018			0.0015
Ave. of 3 runs (mg TEQ/day)													

0.0017	0.0028
0.0084	0.018
0.015	0.034

Two highest incinerator loads added together (at most 2 can operate at once): <DL=0;
<DL=1/2DL;
<DL=DL;

0.0017
0.0084
0.015

<DL=0;
<DL=1/2DL;
<DL=DL;

Fort Lewis - Air Emissions (page 2 of 3)

Fort Lewis Incinerator		No. 2 Incinerator 11505-001-001 Unknown		Run 1 7/23/97		Run 2 7/23/97		Run 3 7/24/97	
Sample Name	Sample ID	Value (lb/hr)	Value (mg/day)	Value (lb/hr)	Value (mg/day)	Value (lb/hr)	Value (mg/day)	Value (lb/hr)	Value (mg/day)
Sample Date	Lab	TEQ (ng/dscm)	TEQ (ng/dscm)	TEQ (ng/dscm)	TEQ (ng/dscm)	TEQ (ng/dscm)	TEQ (ng/dscm)	TEQ (ng/dscm)	TEQ (ng/dscm)
Congener	TEF	<DL=	<DL=	<DL=	<DL=	<DL=	<DL=	<DL=	<DL=
2,3,7,8-TCDD	0.001	1.15E-10	0.0012545 U	0.000	0.000	9.23E-11	0.0010069 U	0.000	0.001
1,2,3,7,8-PCDD	0.5	2.61E-10	0.0028473 U	0.000	0.000	2.00E-10	0.0021818 U	0.000	0.001
1,2,3,4,7,8-HxCDD	0.1	3.90E-10	0.0036 U	0.000	0.000	2.61E-10	0.0028473 U	0.000	0.000
1,2,3,6,7,8-HxCDD	0.1	7.06E-10	0.0070318 U	0.000	0.000	7.54E-10	0.0082255 U	0.000	0.001
1,2,3,7,8,9-HxCDD	0.1	6.45E-10	0.0070364 U	0.000	0.000	5.46E-10	0.0059564 U	0.000	0.001
1,2,3,4,6,7,8-HpCD	0.01	4.76E-09	0.0519273 U	0.001	0.001	4.23E-09	0.0461455 U	0.000	0.000
OCDD	0.001	6.52E-09	0.0711273 U	0.000	0.000	6.38E-09	0.0695 U	0.000	0.000
2,3,7,8-TCDF	0.1	4.07E-10	0.0044 U	0.000	0.000	3.38E-10	0.0036873 U	0.000	0.000
1,2,3,7,8-PCDF	0.05	5.91E-10	0.0064473 U	0.000	0.000	4.84E-10	0.00528 U	0.000	0.000
2,3,4,7,8-PCDF	0.5	9.21E-10	0.009473 U	0.000	0.000	7.30E-10	0.0079636 U	0.000	0.004
1,2,3,4,7,8-HxCDF	0.1	6.91E-10	0.0075382 U	0.000	0.001	6.61E-10	0.0072109 U	0.000	0.001
1,2,3,6,7,8-HxCDF	0.1	8.44E-10	0.0092073 U	0.000	0.001	6.92E-10	0.0075491 U	0.000	0.001
2,3,4,6,7,8-HxCDF	0.1	1.15E-09	0.0125455 U	0.000	0.001	1.00E-09	0.0109091 U	0.000	0.001
1,2,3,7,8,9-HxCDF	0.1	6.45E-11	0.0007036 U	0.000	0.000	8.46E-11	0.0009229 U	0.000	0.000
1,2,3,4,6,7,8-HpCDF	0.01	3.15E-09	0.0343636 U	0.000	0.000	2.77E-09	0.0302182 U	0.000	0.000
1,2,3,4,7,8,9-HpCDF	0.01	3.76E-10	0.0041016 U	0.000	0.000	2.61E-10	0.0028473 U	0.000	0.000
OCDF	0.001	1.15E-09	0.0125455 U	0.000	0.000	9.23E-10	0.0100691 U	0.0000	0.000
TEQ Production Rate (mg/d)			0.00	0.00	0.0143			0.0011	0.012
Ave. of 3 runs (mg TEQ/day)									

0.0010
0.0063
0.012

<DL=0:
<DL=1/2DL:
<DL=DL:

Fort Lewis - Air Emissions (page 3 of 3)

Fort Lewis Incinerator		No. 3 Incinerator		Unknown			
Sample Name Weston W.O. No.		11505-001-001		Unknown			
Lab		Run 1 7/15/97		Run 2 7/15/97		Run 3 7/16/97	
Sample ID		Value (lb/hr)	Value (mg/day)	Value (lb/hr)	Value (mg/day)	Value (lb/hr)	Value (mg/day)
Date		TEQ (ng/dscm) <DL=		TEQ (ng/dscm) <DL=		TEQ (ng/dscm) <DL=	
Congener		0	DL	0	DL	0	DL
TEF	2,3,7,8-TCDD	8.69E-11	0.000948 U	3.31E-10	0.003611 U	2.73E-10	0.002978 U
	1,2,3,7,8-PCDD	2.53E-10	0.00276 U	4.65E-10	0.005073 U	4.13E-10	0.004505 U
	1,2,3,4,7,8-HxCDD	2.86E-10	0.003109 U	3.62E-10	0.003949 U	3.50E-10	0.003818 U
	1,2,3,6,7,8-HxCDD	6.88E-10	0.007505 U	6.54E-10	0.007135 U	6.00E-10	0.006545 U
	1,2,3,7,8,9-HxCDD	8.69E-10	0.00948 U	1.10E-09	0.012 U	7.79E-10	0.008498 U
	1,2,3,4,6,7,8-HpCDD	4.51E-09	0.0492	5.51E-09	0.060109	4.05E-09	0.044182
	OCDD	5.14E-09	0.056073 U	6.14E-09	0.066982 U	5.30E-09	0.057618 U
	2,3,7,8-TCDF	4.35E-10	0.004745 U	3.39E-10	0.003698 U	4.21E-10	0.004593 U
	1,2,3,7,8-PCDF	6.16E-10	0.00672 U	5.59E-10	0.006098 U	7.55E-10	0.008236 U
	2,3,4,7,8-PeCDF	1.11E-09	0.012109 U	1.18E-09	0.012873 U	1.01E-09	0.011018 U
	1,2,3,4,7,8-HxCDF	9.48E-10	0.010342 U	1.73E-09	0.018873 U	1.40E-09	0.015273 U
	1,2,3,6,7,8-HxCDF	9.48E-10	0.010342 U	1.02E-09	0.011127 U	7.24E-10	0.007898 U
	2,3,4,6,7,8-HxCDF	1.74E-09	0.018982 U	1.73E-09	0.018873 U	1.17E-09	0.012764 U
	1,2,3,7,8,9-HxCDF	2.21E-10	0.002411 U	4.88E-10	0.005324 U	2.73E-10	0.002978 U
	1,2,3,4,6,7,8-HpCDF	4.11E-09	0.044836	4.41E-09	0.048109	2.65E-09	0.028309
	1,2,3,4,7,8,9-HpCDF	2.85E-10	0.003109 U	8.66E-10	0.009447 U	3.27E-10	0.003567 U
	OCDF	7.35E-10	0.008018 U	1.81E-09	0.019745 U	1.01E-09	0.011018 U
TEQ Production Rate (mg/d)		0.00	0.01645	0.00	0.0108	0.00073	0.018
Ave. of 3 runs (mg TEQ/day)							

0.00092
0.0099
0.019

<DL=0;
<DL=1/2DL;
<DL=DL;

Fort Lewis Incinerator - Ash

Fort Lewis Incinerator		Anatek Labs, Inc.				Anatek Labs, Inc.			
Lab		Ash, Fly				Ash, Bottom			
Sample Name	Sample Number	1996		1996		1996		1996	
Date	Units	Value (ppb)	Q	TEQ (ppb) <DL=	DL	Value (ppb)	Q	TEQ (ppb) <DL=	DL
Congener	TEF	0	1/2	DL	DL	0	1/2	DL	DL
2,3,7,8-TCDD	1	0.18		0.18	0.10	0.1	U	-	0.10
1,2,3,7,8-PCDD	0.5	1.6		0.80	0.40	0.8	U	-	0.40
1,2,3,4,7,8-HxCDD	0.1	0.9		0.09	0.06	0.6	U	-	0.06
1,2,3,6,7,8-HxCDD	0.1	1.3		0.13	0.05	0.5	U	-	0.05
1,2,3,7,8,9-HxCDD	0.1	2.0		0.20	0.04	0.4	U	-	0.04
1,2,3,4,6,7,8-HpCDD	0.01	14.2		0.14	0.01	0.9	U	-	0.01
OCDD	0.001	16.2		0.02	0.00	1.0	U	-	0.00
2,3,7,8-TCDF	0.1	4.5		0.45	0.01	0.1	U	-	0.01
1,2,3,7,8-PCDF	0.05	2.1		0.11	0.03	0.6	U	-	0.03
2,3,4,7,8-PeCDF	0.5	3.3		1.65	0.30	0.6	U	-	0.30
1,2,3,4,7,8-HxCDF	0.1	5.0		0.50	0.07	0.7	U	-	0.07
1,2,3,6,7,8-HxCDF	0.1	2.4		0.24	0.07	0.7	U	-	0.07
2,3,4,6,7,8-HxCDF	0.1	3.6		0.36	0.05	0.5	U	-	0.05
1,2,3,7,8,9-HxCDF	0.1	0.2	U	-	0.03	0.3	U	-	0.03
1,2,3,4,6,7,8-HpCDF	0.01	9.3		0.09	0.01	0.5	U	-	0.01
1,2,3,4,7,8,9-HpCDF	0.01	1.3		0.01	0.01	0.5	U	-	0.01
OCDF	0.001	3.4		0.00	0.00	0.9	U	-	0.00
EPA TEQ				4.98	5.00				1.23
Total		Fly Ash				Bottom Ash			
Waste Production Rate (tons/yr)	1,192	61	61	61	61	1,131	1,131	1,131	1,131
TEQ Production Rate (mg/yr)		0.76	0.76	0.76	0.76	0.00	1.73	0.76	3.47
						Total - 1996			
						<DL=0 <DL=1/2D <DL=DL			
						2.49 4.23			

Georgia-Pacific

Facility: Georgia-Pacific Corporation, Bellingham
 Lab: Triangle Laboratories
 Sample Name: Eff-E, composite (Ecology effluent sample)
 Sample Number: 168142
 Date: 4/14/93-4/15/93
 Units: pg/L

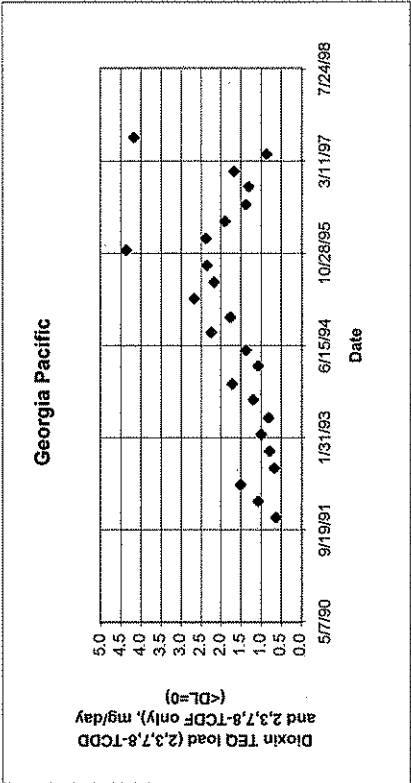
Congener	TEF	Value	Qualifier	pg/L	pg/L	pg/L	pg/L	pg/L	pg/L
				TEQ	TEQ	TEQ	TEQ	TEQ	TEQ
2,3,7,8-TCDD	1	6.9	UJ	0	0	0	0	0	6.9
1,2,3,7,8-PCDD	0.5	11.0	U	0	0	0	0	0	5.5
1,2,3,4,7,8-HxCDD	0.1	14.5	UJ	0	0	0	0	0	1.45
1,2,3,6,7,8-HxCDD	0.1	9.9	UJ	0	0	0	0	0	0.99
1,2,3,7,8,9-HxCDD	0.1	11.6	U	0	0	0	0	0	1.16
1,2,3,4,6,7,8-HpCD	0.01	123	UJ	0	0	0	0	0	1.23
OCDD	0.001	639	UJ	0	0	0	0	0	0.639
2,3,7,8-TCDF	0.1	23.2	UJ	0	0	0	0	0	2.32
1,2,3,7,8-PCDF	0.05	7.0	U	0	0	0	0	0	0.35
2,3,4,7,8-PCDF	0.5	7.1	U	0	0	0	0	0	3.55
1,2,3,4,7,8-HxCDF	0.1	9.2	U	0	0	0	0	0	0.92
1,2,3,6,7,8-HxCDF	0.1	5.8	U	0	0	0	0	0	0.58
2,3,4,6,7,8-HxCDF	0.1	6.2	UJ	0	0	0	0	0	0.62
1,2,3,7,8,9-HxCDF	0.1	9.4	U	0	0	0	0	0	0.94
1,2,3,4,6,7,8-HpCDF	0.01	9.1	U	0	0	0	0	0	0.091
1,2,3,4,7,8,9-HpCDF	0.01	15.4	U	0	0	0	0	0	0.154
OCDF	0.001	43.0	U	0	0	0	0	0	0.043

EPA TEQ (pg/L) 0.00 13.72 27.44

Flow (MGD) 34.8
 TEQ load (mg/D) 0.00 1.81 3.61

Georgia-Pacific - Wastewater (2,3,7,8-TCDD and 2,3,7,8-TCDF only)

Date	2,3,7,8-TCDD TEF = 1		2,3,7,8-TCDF TEF = 0.1		Flow (MGD)	TEQ Load (mg/day)		
	Value (ppq)	TEQ (ppq) <DL =	Value (ppq)	TEQ (ppq) <DL =		0	1/2 DL	DL
Georgia Pacific - "Effluent"								
11/25/91	10 U	0	50	5	32.6	0.6	1.2	1.9
2/19/92	10 U	0	90	9	31.3	1.1	1.7	2.3
5/20/92	20 U	0	110	11	36.2	1.5	2.9	4.2
8/19/92	10 U	0	50	5	35	0.7	1.3	2.0
11/18/92	10 U	0	60	6	34.4	0.8	1.4	2.1
2/17/93	10 U	0	80	8	32.6	1.0	1.6	2.2
5/19/93	10 U	0	60	6	35.5	0.8	1.5	2.1
8/25/93	10 U	0	80	8	39.3	1.2	1.9	2.7
11/18/93	10 U	0	150	15	30.1	1.7	2.3	2.8
2/23/94	10 U	0	80	8	35.3	1.1	1.7	2.4
5/19/94	10 U	0	90	9	40.1	1.4	2.1	2.9
8/25/94	10 U	0	180	18	32.9	2.2	2.9	3.5
11/16/94	10 U	0	110	11	42.3	1.8	2.6	3.4
2/22/95	10 U	0	260	26	27.1	2.7	3.2	3.7
5/24/95	10 U	0	180	18	31.9	2.2	2.8	3.4
8/23/95	10 U	0	160	16	38.8	2.3	3.1	3.8
11/15/95	10 U	0	280	28	41.2	4.4	5.1	5.9
1/17/96	10 U	0	150	15	41.7	2.4	3.2	3.9
4/17/96	10	10	70	7	29.5	1.9	1.9	1.9
7/17/96	10 U	0	110	11	33	1.4	2.0	2.6
10/23/96	10 U	0	90	9	38.3	1.3	2.0	2.8
1/15/97	10 U	0	130	13	33.8	1.7	2.3	2.9
4/16/97	10 U	0	60	6	37.6	0.9	1.6	2.3
7/16/97	10 U	0	280	28	39.4	4.2	4.9	5.7
Low						0.62	1.23	1.85
Average						1.71	2.38	3.06
High						4.37	5.15	4.25
Count						24		



Hoinam Cement Kiln - Cement Kiln Dust

Facility Lab Sample Name Date	Hoinam Cement Kiln Triangle via Ecology Cement Kiln Dust Conducted 5/15/96				Hoinam Quanterra HLMN Bin, 095839-0003-SA 10/21/97				Hoinam Quanterra HLMN Final, 095839-0004-SA 10/21/97			
	TEF	ng/kg Qual.	TEQ (ng/dscm) <DL=	DL	pg/g Qual.	TEQ (ng/dscm) <DL=	DL	pg/g Qual.	TEQ (ng/dscm) <DL=	DL		
2,3,7,8-TCDD	1	0.4 U	0	0.4	0.17 U	0.00000	0.17000	0.3 U	0.00000	0.30000		
1,2,3,7,8-PCDD	0.5	0.7 U	0	0.35	0.49 U	0.00000	0.24500	0.3 U	0.00000	0.15000		
1,2,3,4,7,8-HxCDD	0.1	0.6 U	0	0.06	0.58 U	0.00000	0.05800	0.53 U	0.00000	0.05300		
1,2,3,6,7,8-HxCDD	0.1	0.6 U	0	0.06	0.49 U	0.00000	0.04900	1.2 U	0.00000	0.12000		
1,2,3,7,8,9-HxCDD	0.1	0.6 U	0	0.06	0.5 U	0.00000	0.05000	1.2 U	0.00000	0.12000		
1,2,3,4,6,7,8-HpCD	0.01	5.9 UJ	0	0.059	3.6 J	0.03600	0.03600	27 J	0.27000	0.27000		
OCDD	0.001	37.2	0.0372	0.0372	18 J	0.01800	0.01800	210 J	0.21000	0.21000		
2,3,7,8-TCDF	0.1	0.89 UJ	0	0.089	6.2 g	0.62000	0.62000	4.6 g	0.46000	0.46000		
1,2,3,7,8-PCDF	0.05	0.5 U	0	0.025	1.4 U	0.00000	0.07000	1 U	0.00000	0.05000		
2,3,4,7,8-PCDF	0.5	0.4 U	0	0.2	1.3 U	0.00000	0.65000	1.9 U	0.00000	0.95000		
1,2,3,4,7,8-HxCDF	0.1	0.5 U	0	0.05	0.23 U	0.00000	0.02300	0.56 U	0.00000	0.05600		
1,2,3,6,7,8-HxCDF	0.1	0.4 U	0	0.04	0.2 U	0.00000	0.02000	0.23 U	0.00000	0.02300		
2,3,4,6,7,8-HxCDF	0.1	0.29 UJ	0	0.029	0.29 U	0.00000	0.02900	0.54 U	0.00000	0.05400		
1,2,3,7,8,9-HxCDF	0.1	0.5 U	0	0.05	0.26 U	0.00000	0.02600	0.27 U	0.00000	0.02700		
1,2,3,4,6,7,8-HpCDF	0.01	0.39 UJ	0	0.0039	0.25 U	0.00000	0.00250	1.4 U	0.00000	0.01400		
1,2,3,4,7,8,9-HpCDF	0.01	0.6 U	0	0.006	0.32 U	0.00000	0.00320	0.25 U	0.00000	0.00250		
OCDF	0.001	0.76 J	0.00076	0.00076	1.3 U	0.00000	0.00130	8 J	0.00800	0.00800		
EPA TEQ		0.0380	1.5		0.67	1.37	2.07	0.95	1.91	2.87		
Waste Production Rate (tons/day)		110	110		110	110	110	110	110	110		
TEQ Production Rate (mg/d)		0.0038	0.0779	0.1520	0.0674	0.137	0.207	0.0948	0.191	0.287		

Holnam Cement Kiln - Air Emissions (page 1 of 5)

Holnam Cement Kiln

Facility
Lab

Sample Name
Sample Number
Date

Units Congener	Air Emissions -- Sterifuel Off Conducted 7/24-28/95				Air Emissions-- Sterifuel On Conducted 7/24-28/95			
	ng/min	Q (<DL=0)	TEQ ng/min (<DL=DL)	TEQ ng/min	ng/min	Q (<DL=0)	TEQ ng/min (<DL=DL)	TEQ ng/min
TEF								
2,3,7,8-TCDD	157	157	157	353.9	353.9	353.9	353.9	353.9
1,2,3,7,8-PCDD	71.6 U	0	35.8	164.7	82.35	82.35	82.35	82.35
1,2,3,4,7,8-HxCDD	71.5 U	0	7.15	65.4 U	0	6.54	6.54	6.54
1,2,3,6,7,8-HxCDD	71.5 U	0	7.15	206.3	20.63	20.63	20.63	20.63
1,2,3,7,8,9-HxCDD	71.5 U	0	7.15	126	12.6	12.6	12.6	12.6
1,2,3,4,6,7,8-HpCD	351.4	3.514	3.514	706.4	7.064	7.064	7.064	7.064
OCDD	571.4	0.5714	0.5714	960.9	0.9609	0.9609	0.9609	0.9609
2,3,7,8-TCDF	2597 J	259.7	259.7	6112	611.2	611.2	611.2	611.2
1,2,3,7,8-PCDF	230.6	11.53	11.53	1183 U	0	59.15	59.15	59.15
2,3,4,7,8-PCDF	622.8	311.4	311.4	1724	862	862	862	862
1,2,3,4,7,8-HxCDF	250.8 U	0	25.08	410.6 U	0	41.06	41.06	41.06
1,2,3,6,7,8-HxCDF	71.6 U	0	7.16	187.3	18.73	18.73	18.73	18.73
2,3,4,6,7,8-HxCDF	82.2 J	8.22	8.22	282.9	28.29	28.29	28.29	28.29
1,2,3,7,8,9-HxCDF	71.6 U	0	7.16	65.4 U	0	6.54	6.54	6.54
1,2,3,4,6,7,8-HpCDF	155.1 J	1.551	1.551	370.5	3.705	3.705	3.705	3.705
1,2,3,4,7,8,9-HpCDF	71.6 U	0	0.716	69.8 U	0	0.698	0.698	0.698
OCDF	143.1 U	0	0.1431	130.7 U	0	0.1307	0.1307	0.1307
EPA TEQ		753.5	851.0		2001.4	2115.5		
TEQ load (mg/D)		1.09	1.23		2.88	3.05		
Final load (mg/day)		1.09	1.23		2.88	3.05		

<DL=0
<DL=1/2DL
<DL=DL

<DL=0
<DL=1/2DL
<DL=DL

Holnam Cement Kiln - Air Emissions (page 2 of 5)

Holnam Cement Kiln

Facility

Lab

Sample Name

Sample Number

Date

Congener	TEF	Run1 Conducted 5/26-27/94			Run2 Conducted 5/26-27/94			Run3 Conducted 5/26-27/94		
		ng/min	Q (<DL=0)	TEQ ng/min (<DL=DL)	ng/min	Q (<DL=0)	TEQ ng/min (<DL=DL)	ng/min	Q (<DL=0)	TEQ ng/min (<DL=DL)
2,3,7,8-TCDD	1	86.4	86.4	86.4	81	81	81	91.6	91.6	91.6
1,2,3,7,8-PCDD	0.5	79.5	39.75	39.75	91.9 U	0	45.95	98.5 U	0	49.25
1,2,3,4,7,8-HxCDD	0.1	76.5	7.65	7.65	40.5	4.05	4.05	36.4	3.64	3.64
1,2,3,6,7,8-HxCDD	0.1	129.2	12.92	12.92	128.4	12.84	12.84	118.1	11.81	11.81
1,2,3,7,8,9-HxCDD	0.1	78.5	7.85	7.85	98.8	9.88	9.88	88.6	8.86	8.86
1,2,3,4,6,7,8-HpCD	0.01	864.5 J	8.645	8.645	859.3	8.593	8.593	945.1	9.451	9.451
OCDD	0.001	1789	1.789	1.789	1975	1.975	1.975	5710	5.71	5.71
2,3,7,8-TCDF	0.1	1689	168.9	168.9	1383	138.3	138.3	984.5	98.45	98.45
1,2,3,7,8-PCDF	0.05	904.2 U	0	45.21	177.8 U	0	8.89	639.9 U	0	31.995
2,3,4,7,8-PCDF	0.5	536.6	268.3	268.3	375.3	187.65	187.65	265.8	132.9	132.9
1,2,3,4,7,8-HxCDF	0.1	168.9	16.89	16.89	158	15.8	15.8	91.6	9.16	9.16
1,2,3,6,7,8-HxCDF	0.1	51.7	5.17	5.17	53.3	5.33	5.33	43.3	4.33	4.33
2,3,4,6,7,8-HxCDF	0.1	75.5 U	0	7.55	88.9	8.89	8.89	57.1	5.71	5.71
1,2,3,7,8,9-HxCDF	0.1	26.8 U	0	2.68	33.6 U	0	3.36	32.5 U	0	3.25
1,2,3,4,6,7,8-HpCDF	0.01	96.4	0.964	0.964	118.5	1.185	1.185	157.5 U	0	1.575
1,2,3,4,7,8,9-HpCDF	0.01	34.8 U	0	0.348	31.6 U	0	0.316	91.6 U	0	0.916
OCDF	0.001	63.6	0.0636	0.0636	80	0.08	0.08	275.7	0.2757	0.2757
EPA TEQ		625.3	681.1	681.1	475.6	534.1	534.1	381.9	468.9	468.9
TEQ load (mg/D)		0.90	0.98	0.98	0.68	0.77	0.77	0.55	0.68	0.68
Final load (mg/day)		Average of 3 runs (5/26-27/94):								
		<DL=0	0.71							
		<DL=1/2DL	0.76							
		<DL=DL	0.81							

Holnam Cement Kiln - Air Emissions (page 3 of 5)

Holnam Cement Kiln

Facility
Lab

Sample Name
Sample Number
Date

		"Baseline" (before Sterifuel)					
		Run 1 Conducted 7/8/96			Run 2 Conducted 7/8/96		
Units	Congener	ng/min	TEQ ng/min	Q (<DL=0)	ng/min	TEQ ng/min	Q (<DL=0)
TEF							
	2,3,7,8-TCDD	187.5	187.5	187.5	140.9	140.9	140.9
	1,2,3,7,8-PCDD	97.8 U	0	48.9	65.5 U	0	32.75
	1,2,3,4,7,8-HxCDD	43.2 U	0	4.32	53.1 U	0	5.31
	1,2,3,6,7,8-HxCDD	97.8 U	0	9.78	82.9 U	0	8.29
	1,2,3,7,8,9-HxCDD	97.8 U	0	9.78	82.9 U	0	8.29
	1,2,3,4,6,7,8-HpCD	391.3 J	3.913	3.913	323.3	3.233	3.233
	OCDD	635.9 J	0.6359	0.6359	489.1 U	0	0.4891
	2,3,7,8-TCDF	978.3	97.83	97.83	1078	107.8	107.8
	1,2,3,7,8-PCDF	481 J	24.05	24.05	505.7 J	25.285	25.285
	2,3,4,7,8-PCDF	676.7	338.35	338.35	663.2	331.6	331.6
	1,2,3,4,7,8-HxCDF	733.8	73.38	73.38	671.5	67.15	67.15
	1,2,3,6,7,8-HxCDF	676.7	67.67	67.67	563.7 J	56.37	56.37
	2,3,4,6,7,8-HxCDF	521.8 J	52.18	52.18	489.1 J	48.91	48.91
	1,2,3,7,8,9-HxCDF	114.1 U	0	11.41	99.5 U	0	9.95
	1,2,3,4,6,7,8-HpCDF	3098	30.98	30.98	2901	29.01	29.01
	1,2,3,4,7,8,9-HpCDF	366.9 J	3.669	3.669	339.9 J	3.399	3.399
	OCDF	5055	5.055	5.055	4642	4.642	4.642
	EPA TEQ	885.2	969.4		818.3	883.4	
	TEQ load (mg/D)	1.27	1.40		1.18	1.27	
	Final load (mg/day)	Average of 2 runs, 7/8/96, baseline:					
		<DL=0	1.23				
		<DL=1/2DL	1.28				
		<DL=DL	1.33				

Holnam Cement Kiln - Air Emissions (page 5 of 5)

Holnam Cement Kiln

Facility		"After Sterifuel"											
Lab	Sample Name	Conducted 7/11/96					Conducted 7/11/96						
Sample Number	Date	ng/min	Q (<DL=0)	TEQ ng/min	TEQ (<DL=DL)	ng/min	Q (<DL=0)	TEQ ng/min	TEQ (<DL=DL)	ng/min	Q (<DL=0)	TEQ ng/min	TEQ (<DL=DL)
Units	Congener	TEF											
	2,3,7,8-TCDD	1	98	98	98	122.1	122.1	122.1	122.1	122.1	122.1	122.1	122.1
	1,2,3,7,8-PCDD	0.5	54.9 U	0	27.45	70.7 U	0	0	0	0	0	35.35	35.35
	1,2,3,4,7,8-HxCDD	0.1	26.8 U	0	2.68	32.1 U	0	0	0	0	0	3.21	3.21
	1,2,3,6,7,8-HxCDD	0.1	54.2 U	0	5.42	96.4 U	0	0	0	0	0	9.64	9.64
	1,2,3,7,8,9-HxCDD	0.1	57.5 U	0	5.75	102.8 U	0	0	0	0	0	10.28	10.28
	1,2,3,4,6,7,8-HpCD	0.01	222.1 U	0	2.221	366.3	0	0	0	0	0	3.663	3.663
	OCDD	0.001	274.4 U	0	0.2744	475.5 U	0	0	0	0	0	0.4755	0.4755
	2,3,7,8-TCDF	0.1	784	78.4	78.4	642.6	64.26	64.26	64.26	64.26	64.26	64.26	64.26
	1,2,3,7,8-PCDF	0.05	274.4	13.72	13.72	237.8 U	0	0	0	0	0	11.89	11.89
	2,3,4,7,8-PCDF	0.5	378.9	189.45	189.45	334.1 J	167.05	167.05	167.05	167.05	167.05	167.05	167.05
	1,2,3,4,7,8-HxCDF	0.1	307.1	30.71	30.71	353.4 J	35.34	35.34	35.34	35.34	35.34	35.34	35.34
	1,2,3,6,7,8-HxCDF	0.1	241.7 U	0	24.17	257 J	25.7	25.7	25.7	25.7	25.7	25.7	25.7
	2,3,4,6,7,8-HxCDF	0.1	222.1 U	0	22.21	257 J	25.7	25.7	25.7	25.7	25.7	25.7	25.7
	1,2,3,7,8,9-HxCDF	0.1	29.4 U	0	2.94	41.1 U	0	0	0	0	0	4.11	4.11
	1,2,3,4,6,7,8-HpCDF	0.01	1176	11.76	11.76	1285	12.85	12.85	12.85	12.85	12.85	12.85	12.85
	1,2,3,4,7,8,9-HpCDF	0.01	130.7 U	0	1.307	179.9 U	0	0	0	0	0	1.799	1.799
	OCDF	0.001	2287	2.287	2.287	2378	2.378	2.378	2.378	2.378	2.378	2.378	2.378
	EPA TEQ		424.3	518.7	518.7	459.0	459.0	459.0	459.0	459.0	459.0	459.0	459.0
	TEQ load (mg/D)		0.61	0.75	0.75	0.66	0.66	0.66	0.66	0.66	0.66	0.66	0.66
	Final load (mg/day)		0.64	0.70	0.70	0.66	0.66	0.66	0.66	0.66	0.66	0.66	0.66
	Average of 2 runs, 7/11/96, after sterifuel:		<DL=0	0.64	0.64	<DL=1/2DL	0.70	0.70	0.70	<DL=DL	0.76	0.76	0.76

Kaiser

Facility: Kaiser Aluminum and Chemical Corporation, Trentwood Works, Spokane, WA
 Sample Name: Air Emissions - DC#2 EAST & WEST MELTER; DC#2 HOLDER
 File Name: R340-2KTWFDMS1
 Lab: Quanterra

Congener	Run 1 6/18/96			Run 2 6/19/96		
	Value (ng/min)	Q	DL	Value (ng/min)	Q	DL
2,3,7,8-TCDD	0.964 U		0	5.12 U		0
1,2,3,7,8-PCDD	1.45 U		0	5.88 U		0
1,2,3,4,7,8-HxCDD	1.45 U		0	5.22 U		0
1,2,3,6,7,8-HxCDD	1.45 U		0	13.1 U		0
1,2,3,7,8,9-HxCDD	1.65 U		0	14.2 U		0
1,2,3,4,6,7,8-HpCD	3.58 U		0	58.8		0.588
OCDD	15.2 U		0	75.1 J		0.0751
2,3,7,8-TCDF	2.07 U		0	15.2		1.52
1,2,3,7,8-PCDF	0.964 U		0	23.9 U		0
2,3,4,7,8-PCDF	1.38 U		0	47.9 J		23.95
1,2,3,4,7,8-HxCDF	1.45 U		0	56.6		5.66
1,2,3,6,7,8-HxCDF	0.964 U		0	31.6 J		3.16
2,3,4,6,7,8-HxCDF	1.58 U		0	72.9		7.29
1,2,3,7,8,9-HxCDF	0.827 U		0	5.12 U		0
1,2,3,4,6,7,8-HpCDF	2.55 U		0	100.1		1.001
1,2,3,4,7,8,9-HpCDF	4.27 U		0	33.7 J		0.337
OCDF	5.65 U		0	87.1		0.0871
EPA TEQ (ng/min)	0.00		1.06	43.67		56.69
TEQ load (mg/D)	0.0000		0.001520	0.0629		0.0816

Ave. of 3 runs (mg TEQ/day)

<DL=0:	0.314
<DL=1/2DL:	0.365
<DL=DL:	0.416

one melter all melters (10)

Kalama Chemical (page 1 of 2)

Facility: Kalama Chemical -- U-3 Boiler Trial Burn
 Lab: Quanterra

Sample Name Date	Run 1 6/25/96			Run 2 6/26/96			Run 3 6/27/96		
	ng/dscm Q (<DL=0)	TEQ ng/dscm (<DL=DL)	TEQ ng/dscm (<DL=DL)	ng/dscm Q (<DL=0)	TEQ ng/dscm (<DL=DL)	TEQ ng/dscm (<DL=DL)	ng/dscm Q (<DL=0)	TEQ ng/dscm (<DL=DL)	TEQ ng/dscm (<DL=DL)
Congener									
TEF									
2,3,7,8-TCDD	0.002 U	0	0.002	0.0032 U	0	0.0032	0.0024 U	0	0.0024
1,2,3,7,8-PCDD	0.0013 U	0	0.00065	0.0014 U	0	0.0007	0.0007 U	0	0.00035
1,2,3,4,7,8-HxCDD	0.0012 U	0	0.00012	0.0015 U	0	0.00015	0.0008 U	0	0.00008
1,2,3,6,7,8-HxCDD	0.0026 U	0	0.00026	0.0048 U	0	0.00048	0.0035 U	0	0.00035
1,2,3,7,8,9-HxCDD	0.0026 U	0	0.00026	0.0039 U	0	0.00039	0.0023 U	0	0.00023
1,2,3,4,6,7,8-HpCDD	0.0129 U	0	0.000129	0.0746	0.000746	0.000746	0.0337 J	0.000337	0.000337
OCDD	0.042 J	0.000042	0.000042	0.298	0.000298	0.000298	0.135	0.000135	0.000135
2,3,7,8-TCDF	0.0042 J	0.00042	0.00042	0.0048 J	0.00048	0.00048	0.0032 U	0	0.00032
1,2,3,7,8-PCDF	0.0016 U	0	0.00008	0.0019 U	0	0.000095	0.0011 U	0	0.000055
2,3,4,7,8-PCDF	0.002 U	0	0.001	0.0033 U	0	0.00165	0.0021 U	0	0.00105
1,2,3,4,7,8-HxCDF	0.0026 U	0	0.00026	0.0029 U	0	0.00029	0.0022 U	0	0.00022
1,2,3,6,7,8-HxCDF	0.0017 U	0	0.00017	0.0019 U	0	0.00019	0.0016 U	0	0.00016
2,3,4,6,7,8-HxCDF	0.0024 U	0	0.00024	0.0028 U	0	0.00028	0.0017 U	0	0.00017
1,2,3,7,8,9-HxCDF	0.002 U	0	0.0002	0.0008 U	0	0.00008	0.0004 U	0	0.00004
1,2,3,4,6,7,8-HpCDF	0.0068 U	0	0.000068	0.0061 U	0	0.000061	0.0037 U	0	0.000037
1,2,3,4,7,8,9-HpCDF	0.0028 U	0	0.000028	0.0019 U	0	0.000019	0.0016 U	0	0.000016
OCDF	0.014 U	0	0.000014	0.009 U	0	0.000009	0.007 U	0	0.000007
EPA TEQ	0.000462	0.005941		0.001524	0.009118		0.000472	0.005957	
Gas flow Rate (dscf/min)	10260	10260		9582	9582		10092	10092	
TEQ Loading (mg TEQ/day)	0.0001937	0.002491		0.000597	0.003571		0.000195	0.002457	

Average of 6 runs (mg/day):
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 <DL=1/2DL 0.00216
 <DL=DL 0.00403

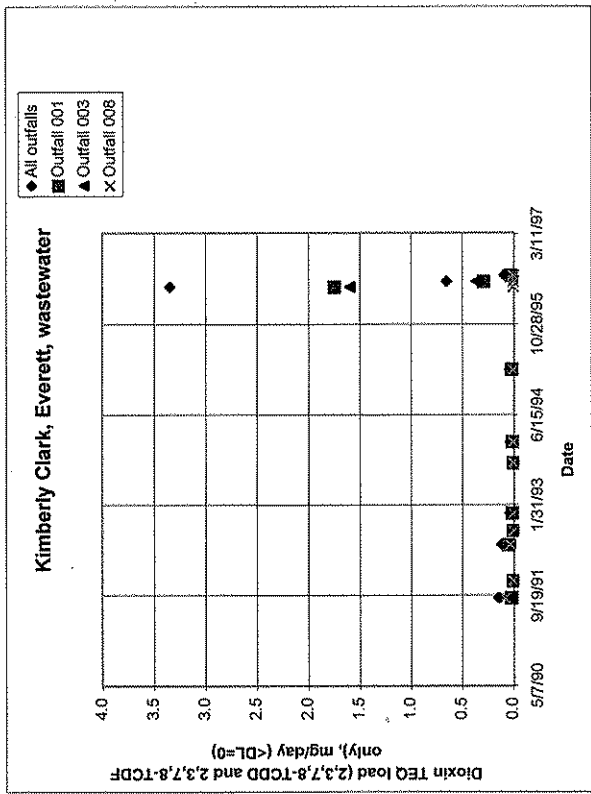
Kalama Chemical (page 2 of 2)

Facility: Kalama Chemical -- U-3 Boiler Trial Burn
 Lab: Quanterra

Sample Name	Run 4 6/28/96			Run 5 6/29/96			Run 6 6/30/96		
	TEQ ng/dscm Q (<DL=0)	TEQ ng/dscm (<DL=DL)	TEQ ng/dscm Q (<DL=DL)	TEQ ng/dscm Q (<DL=0)	TEQ ng/dscm (<DL=DL)	TEQ ng/dscm Q (<DL=DL)	TEQ ng/dscm Q (<DL=0)	TEQ ng/dscm (<DL=DL)	TEQ ng/dscm Q (<DL=DL)
2,3,7,8-TCDD	0.0036 U	0	0.0036 U	0.0035 U	0	0.0035 U	0.0087 U	0	0.0087 U
1,2,3,7,8-PCDD	0.0018 U	0	0.0018 U	0.0026 U	0	0.0026 U	0.0068 U	0	0.0068 U
1,2,3,4,7,8-HxCDD	0.0112 U	0	0.0112 U	0.0008 U	0	0.0008 U	0.0164 U	0	0.0164 U
1,2,3,6,7,8-HxCDD	0.0103 U	0	0.0103 U	0.0148 U	0	0.0148 U	0.0155 U	0	0.0155 U
1,2,3,7,8,9-HxCDD	0.0117 U	0	0.0117 U	0.0104 U	0	0.0104 U	0.0174 U	0	0.0174 U
1,2,3,4,6,7,8-HpCDD	0.0364 J	0.000364	0.000364	0.0888	0.000888	0.000888	0.0352 J	0.000352	0.000352
OCDD	0.157	0.000157	0.000157	0.256	0.000256	0.000256	0.135	0.000135	0.000135
2,3,7,8-TCDF	0.0034 U	0	0.0034 U	0.0022 U	0	0.0022 U	0.0045 U	0	0.0045 U
1,2,3,7,8-PCDF	0.0023 U	0	0.0023 U	0.0027 U	0	0.0027 U	0.0053 U	0	0.0053 U
2,3,4,7,8-PCDF	0.002 U	0	0.002 U	0.0038 U	0	0.0038 U	0.0048 U	0	0.0048 U
1,2,3,4,7,8-HxCDF	0.0022 U	0	0.0022 U	0.0043 U	0	0.0043 U	0.0033 U	0	0.0033 U
1,2,3,6,7,8-HxCDF	0.0017 U	0	0.0017 U	0.0031 U	0	0.0031 U	0.002 U	0	0.002 U
2,3,4,6,7,8-HxCDF	0.0022 U	0	0.0022 U	0.0047 U	0	0.0047 U	0.0033 U	0	0.0033 U
1,2,3,7,8,9-HxCDF	0.0009 U	0	0.0009 U	0.0011 U	0	0.0011 U	0.0015 U	0	0.0015 U
1,2,3,4,6,7,8-HpCDF	0.0006 U	0	0.0006 U	0.0069 U	0	0.0069 U	0.0121 U	0	0.0121 U
1,2,3,4,7,8,9-HpCDF	0.0002 U	0	0.0002 U	0.0033 U	0	0.0033 U	0.0053 U	0	0.0053 U
OCDF	0.0007 U	0	7E-07	0.012 U	0	0.012 U	0.015 U	0	0.015 U
EPA TEQ	0.000521	0.010505	0.000521	0.001174	0.012263	0.001174	0.000487	0.021831	0.000487
Gas flow Rate (dscf/min)	8971	8971	8971	8286	8286	8286	8562	8562	8562
TEQ Loading (mg TEQ/day)	0.000191	0.003852	0.000191	0.000398	0.004153	0.000398	0.00017	0.00764	0.00017

Kimberly Clark - Wastewater (2,3,7,8-TCDD and 2,3,7,8-TCDF only)

Date	2,3,7,8-TCDD TEF = 1		2,3,7,8-TCDF TEF = 0.1		Flow (MGD)	TEQ Load (mg/day)		
	Value (ppq)	TEQ (ppq) <DL =	Value (ppq)	TEQ (ppq) <DL =		0	1/2 DL	DL
Kimberly Clark, Everett - "Outfall 001"								
9/5/91	4.5 U	0	4.5	0.81	6.6	0.02	0.08	0.13
12/9/91	9.6 U	0	9.6	0	7	0.00	0.14	0.27
6/26/92	3.8 U	0	3.8	2.4	5.8	0.05	0.09	0.14
9/12/92	2.1 U	0	2.1	0	6	0.00	0.03	0.06
12/19/92	3.4 U	0	3.4	0.68	4.9	0.01	0.04	0.08
9/21/93	3.0 U	0	3	0	5.9	0.00	0.04	0.08
1/17/94	3.5 U	0	3.5	0.56	5.8	0.01	0.05	0.09
2/21/95	4.4 U	0	4.4	0.84	5.9	0.02	0.07	0.12
5/21/96	53.0	53	53	16	6.7	1.75	1.75	1.75
6/20/96	9.2	9.2	9.2	3.7	5.9	0.29	0.29	0.29
7/23/96	4.9 U	0	4.9	1	6	0.02	0.08	0.13
Kimberly Clark, Everett - "Outfall 003"								
9/5/91	4.5 U	0	4.5	0.94	11.2	0.04	0.14	0.23
12/9/91	7.8 U	0	7.8	0	11.8	0.00	0.19	0.37
6/26/92	2.9 U	0	2.9	0.87	9.8	0.03	0.09	0.14
9/12/92	2.3 U	0	2.3	0	10.2	0.00	0.05	0.10
12/19/92	3.8 U	0	3.8	0.7	8.3	0.02	0.08	0.14
9/21/93	2.7 U	0	2.7	0	10.1	0.00	0.06	0.12
1/17/94	3.3 U	0	3.3	0.45	9.8	0.02	0.07	0.14
2/21/95	4.6 U	0	4.6	0.84	5.5	0.02	0.08	0.11
5/21/96	38	38	38	11	8.6	1.59	1.59	1.59
6/20/96	5.9	5.9	5.9	2.3	11.7	0.36	0.36	0.36
7/23/96	4 U	0	4	1.1	15.8	0.07	0.19	0.30
Kimberly Clark, Everett - "Outfall 008"								
9/5/91	3.3 U	0	3.3	1.2	18.7	0.08	0.20	0.32
12/9/91	7.3 U	0	7.3	0	19.8	0.00	0.31	0.61
6/26/92	3.1 U	0	3.1	0.46	16.4	0.03	0.12	0.22
9/12/92	3.2 U	0	3.2	0	17.2	0.00	0.12	0.24
12/19/92	2.4 U	0	2.4	0	13.9	0.00	0.07	0.14
9/21/93	3.1 U	0	3.1	0	16.9	0.00	0.11	0.21
1/17/94	2.9 U	0	2.9	0	16.5	0.00	0.09	0.19
2/21/95	4.3 U	0	4.3	0	20.5	0.00	0.17	0.35
5/21/96	2.8 U	0	2.8	0	16.4	0.00	0.09	0.18
6/20/96	1.9 U	0	1.9	0	16.2	0.00	0.06	0.13
7/23/96	2.5 U	0	2.5	0	16.7	0.00	0.09	0.19



Kimberly Clark - Wastewater (2,3,7,8-TCDD and 2,3,7,8-TCDF only)

Date	2,3,7,8-TCDD TEF = 1		2,3,7,8-TCDF TEF = 0.1		TEQ Load (mg/day)		
	Value (ppq)	TEQ (ppq) <DL = 0 DL	Value (ppq)	TEQ (ppq) <DL = 0 DL	0	1/2 DL	DL
Kimberly Clark - Sum of 3 outfalls							
9/5/91					0.15	0.41	0.68
12/9/91					0.00	0.63	1.26
6/26/92					0.11	0.31	0.50
9/12/92					0.00	0.20	0.39
12/19/92					0.03	0.20	0.36
9/21/93					0.00	0.21	0.41
1/17/94					0.03	0.22	0.42
2/21/95					0.04	0.31	0.58
5/21/96					3.34	3.44	3.53
6/20/96					0.65	0.71	0.78
7/23/96					0.09	0.36	0.63
Low					0.00	0.20	0.36
Average					0.40	0.63	0.87
High					3.34	3.44	3.53
Count					11		

Longview Fibre

Facility Longview Fibre Company, Pulp and Paper Mill
 Lab Triangle Laboratories of RTP, Inc.
 Sample Name EF-E (Process Wastewater Effluent)
 Sample Number 458305
 Date 11/2/93 to 11/3/93
 Units

Congener	TEF	Value	Qualifier	pg/L TEQ	pg/L TEQ	pg/L TEQ	pg/L TEQ
2,3,7,8-TCDD	1	5	U	0	0	0	5
1,2,3,7,8-PCDD	0.5	5.5	U	0	0	0	2.75
1,2,3,4,7,8-HxCDD	0.1	6.9	U	0	0	0	0.69
1,2,3,6,7,8-HxCDD	0.1	6.2	U	0	0	0	0.62
1,2,3,7,8,9-HxCDD	0.1	6.2	U	0	0	0	0.62
1,2,3,4,6,7,8-HpCD	0.01	9.2		0.092	0	0	0.092
OCDD	0.001	67	UJ	0	0	0	0.067
2,3,7,8-TCDF	0.1	6.3	UJ	0	0	0	0.63
1,2,3,7,8-PCDF	0.05	4.5	U	0	0	0	0.225
2,3,4,7,8-PCDF	0.5	3.8	U	0	0	0	1.9
1,2,3,4,7,8-HxCDF	0.1	6.4	U	0	0	0	0.64
1,2,3,6,7,8-HxCDF	0.1	3.8	U	0	0	0	0.38
2,3,4,6,7,8-HxCDF	0.1	3.7	U	0	0	0	0.37
1,2,3,7,8,9-HxCDF	0.1	5	U	0	0	0	0.5
1,2,3,4,6,7,8-HpCDF	0.01	4.3	U	0	0	0	0.043
1,2,3,4,7,8,9-HpCDF	0.01	6.5	U	0	0	0	0.065
OCDF	0.001	9.2	U	0	0	0	0.0092

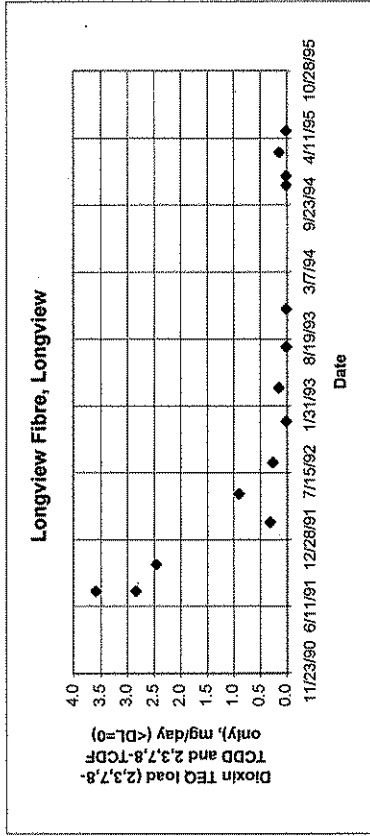
EPA TEQ (pg/L) 0.092 14.6012

Flow (MGD) 60.7
 TEQ load (mg/D) 0.021 1.69 3.35

Longview Fibre - Wastewater (2,3,7,8-TCDD and 2,3,7,8-TCDF only)

Date	2,3,7,8-TCDD TEF = 1		2,3,7,8-TCDF TEF = 0.1		Flow (MGD)	TEQ Load (mg/day)		
	Value (ppq)	TEQ (ppq) <DL =	Value (ppq)	TEQ (ppq) <DL =		0	1/2 DL	DL
Longview Fibre, Longview - "Final Mill Effluent"								
7/26/91	8.5	8.5	40	4	60	2.84	2.84	2.84
7/26/91	12	12	38	3.8	60	3.59	3.59	3.59
10/14/91	8.2	8.2	22	2.2	62.4	2.46	2.46	2.46
2/17/92	10 U	0	13	1.3	61.2	0.30	1.46	2.62
5/13/92	4.6 U	0	39	3.9	60.4	0.89	1.42	1.94
8/14/92	3 U	0	8.8	0.88	77.2	0.26	0.70	1.13
12/16/92	3.2 U	0	5 U	0	57.6	0.00	0.40	0.81
3/26/93	2.3 U	0	5.6	0.56	66.4	0.14	0.43	0.72
7/27/93	1.5 U	0	1.6 U	0	62.5	0.00	0.20	0.39
11/16/93	3.2 U	0	2.4 U	0	64.5	0.00	0.42	0.84
12/19/94	4.5 U	0	5.6 U	0	54.5	0.00	0.52	1.04
11/21/94	1.7 U	0	2.8 U	0	58.6	0.00	0.22	0.44
2/27/95	2.9 U	0	6.5	0.65	55.2	0.14	0.44	0.74
5/3/95	1.8 U	0	1.9 U	0	55.5	0.00	0.21	0.42
8/16/95	4.5 U	0	3.6 U	0		0.00	0.2	0.4
11/9/95	2.0 U	0	1.9 U	0		0.76	1.1	1.4
5/30/96	2.5 U	0	2.7 U	0		3.59	3.6	3.6
9/11/96	2.3 U	0	1.9 U	0				
11/12/96	1.7 U	0	1.4 U	0				
1/22/97	2.3 U	0	2.2 U	0				
Low						0.00	0.2	0.4
Average						0.76	1.1	1.4
High						3.59	3.6	3.6
Count							14	

Estimated flow based on average flow for AOX data
 Estimated flow based on average flow for AOX data



Northwest Hospital

Northwest Hospital Medical Waste Incinerator
Huntington Engineering and Environmental, Inc.

Facility Lab Sample Name Date	Run 1 1/18/95				Run 2 1/19/95				Run 3 1/20/95			
	ng/dscm Q	ngTEQ/ dscm	mg TEQ/min (<DL=0)	mg TEQ/min (<DL=DL)	ng/dscm Q	ngTEQ/ dscm	mg TEQ/min (<DL=0)	mg TEQ/min (<DL=DL)	ng/dscm Q	ngTEQ/ dscm	mg TEQ/min (<DL=0)	mg TEQ/min (<DL=DL)
Congener												
2,3,7,8-TCDD	0.004	0.004	5.12E-07	5.32E-07	0.008	0.008	0	1.07E-06	0.004	0.004	0	3.82E-07
1,2,3,7,8-PCDD	0.086	0.043	5.50E-06	5.50E-06	0.064	0.032	4.28E-06	4.28E-06	0.009	0.0045	0	4.30E-07
1,2,3,4,7,8-HxCDD	0.202	0.0202	2.58E-06	2.58E-06	0.099	0.0099	1.33E-06	1.33E-06	0.051	0.0051	4.87E-07	4.87E-07
1,2,3,6,7,8-HxCDD	0.387	0.0887	1.13E-05	1.13E-05	0.347	0.0347	4.64E-06	4.64E-06	0.181	0.0181	1.73E-06	1.73E-06
1,2,3,7,8,9-HxCDD	0.405	0.0405	5.19E-06	5.18E-06	0.173	0.0173	2.32E-06	2.32E-06	0.092	0.0092	8.78E-07	8.78E-07
1,2,3,4,6,7,8-HpCDD	12.5	0.125	1.60E-05	1.60E-05	5.2	0.052	6.96E-06	6.96E-06	2.56	0.0256	2.44E-06	2.44E-06
OCDD	24.9	0.0249	3.18E-06	3.18E-06	13.1	0.0131	1.75E-06	1.75E-06	5.49	0.00649	6.20E-07	6.20E-07
2,3,7,8-TCDF	0.103	0.0103	1.32E-06	1.32E-06	0.059	0.0059	7.90E-07	7.90E-07	0.025	0.0025	2.39E-07	2.39E-07
1,2,3,7,8-PeCDF	0.311	0.0311	1.99E-06	1.99E-06	0.168	0.0084	1.12E-06	1.12E-06	0.061	0.00305	2.91E-07	2.91E-07
2,3,4,7,8-PeCDF	0.809	0.4045	5.17E-05	5.17E-05	0.421	0.2105	2.82E-05	2.82E-05	0.154	0.077	7.35E-06	7.35E-06
1,2,3,4,7,8-HxCDF	1.06	0.106	1.36E-05	1.36E-05	0.495	0.0495	6.63E-06	6.63E-06	0.191	0.0191	1.82E-06	1.82E-06
1,2,3,6,7,8-HxCDF	0.981	0.0981	1.25E-05	1.25E-05	0.471	0.0471	6.30E-06	6.30E-06	0.164	0.0164	1.57E-06	1.57E-06
2,3,4,6,7,8-HxCDF	2.49	0.249	3.18E-05	3.18E-05	1.16	0.116	1.55E-05	1.55E-05	0.478	0.0478	4.56E-06	4.56E-06
1,2,3,7,8,9-HxCDF	0.996	0.0996	1.27E-05	1.27E-05	0.471	0.0471	6.30E-06	6.30E-06	0.167	0.0167	1.59E-06	1.59E-06
1,2,3,4,6,7,8-HpCDF	7.94	0.0794	1.02E-05	1.02E-05	3.47	0.0347	4.64E-06	4.64E-06	1.43	0.0143	1.37E-06	1.37E-06
1,2,3,4,7,8,9-HpCDF	2.96	0.0296	3.79E-06	3.79E-06	1.24	0.0124	1.66E-06	1.66E-06	0.58	0.0058	5.54E-07	5.54E-07
OCDF	14.8	0.0148	1.89E-06	1.89E-06	6.69	0.00669	8.95E-07	8.95E-07	3.76	0.00376	3.59E-07	3.59E-07
EPA TEQ	1.453	0.000186	0.000186	0.000186	0.70529	0.0000933	0.0000933	0.0000944	0.2794	0.0000259	0.0000259	0.0000267
TEQ Load (mg/d)	0.268	0.268	0.268	0.268	0.134	0.134	0.136	0.136	0.037	0.037	0.037	0.038

Average of 3 runs (mg/day):	0.146
<DL=0	0.147
<DL=1/2DL	0.147
<DL=DL	0.147

Olivine - Air Emissions (page 1 of 2)

Facility		Air Emissions, March 17-18, 1995											
Sample Name		Run 1				Run 2				Run 3			
Lab		080696-0001-SA				080696-0002-SA				080696-0003-SA			
Sample ID		3/17-18/1995				3/17-18/1995				3/17-18/1995			
Lab ID													
Date													
Congener		Value	Q	Value	Q	Value	Q	Value	Q	Value	Q	Value	Q
TEF		(ng/sample)	(mg/day)	(ng/kg)	<DL=	(ng/sample)	(mg/day)	(ng/kg)	<DL=	(ng/sample)	(mg/day)	(ng/kg)	<DL=
2,3,7,8-TCDF	0.01	0.085	0.022	0.022	0.022	0.082	0.016	0.016	0.016	0.033	0.0086	0	0.009
1,2,3,7,8-PCDD	0.5	0.49	0.1	0.063	0.063	0.33	0.084	0.042	0.042	0.18	0.0467	0	0.023
1,2,3,4,7,8-HxCDD	0.1	0.73	0.2	0.019	0.019	0.52	0.133	0.013	0.013	0.31	0.0804	0.006	0.008
1,2,3,6,7,8-HxCDD	0.1	1.2	0.5	0.049	0.049	1.4	0.368	0.036	0.036	0.79	0.2050	0.020	0.020
1,2,3,7,8,9-HxCDD	0.1	2.5	0.6	0.065	0.065	1.8	0.460	0.046	0.046	1	0.2695	0.026	0.026
1,2,3,4,6,7,8-HpCDD	0.01	16	4.1	0.041	0.041	10	2.554	0.026	0.026	6.3	1.6348	0.016	0.016
OCDD	0.001	33	8.5	0.009	0.009	19	4.853	0.005	0.005	12	3.1139	0.003	0.003
2,3,7,8-TCDF	0.1	0.44	0.1	0.011	0.011	0.32	0.082	0.008	0.008	0.17	0.0441	0.004	0.004
1,2,3,7,8-PCDF	0.05	1	0.3	0	0.013	0.75	0.192	0	0.010	0.37	0.0960	0	0.005
2,3,4,7,8-PCDF	0.5	1.6	0.4	0.208	0.208	1.2	0.307	0.153	0.153	0.65	0.1687	0.084	0.084
1,2,3,4,7,8-HxCDF	0.1	4.2	1.1	0	0.108	2.8	0.715	0.072	0.072	1.6	0.4152	0.042	0.042
1,2,3,6,7,8-HxCDF	0.1	2.2	0.6	0	0.057	1.5	0.383	0.038	0.038	0.83	0.2154	0.022	0.022
2,3,4,6,7,8-HxCDF	0.1	2.8	0.7	0	0.072	1.9	0.485	0	0.049	1.1	0.2854	0	0.029
1,2,3,7,8,9-HxCDF	0.1	0.25	0.1	0	0.006	0.18	0.046	0	0.005	0.13	0.0337	0	0.003
1,2,3,4,6,7,8-HpCDF	0.01	10	2.6	0.026	0.026	6	1.533	0.015	0.015	3.9	1.0120	0.010	0.010
1,2,3,4,7,8,9-HpCDF	0.01	13	3.3	0.003	0.003	0.68	0.176	0.002	0.002	0.53	0.1376	0.001	0.001
OCDF	0.001	4.1	1.1	0	0.001	1.8	0.460	0	0.000	1.6	0.4152	0	0.000
EPA TEQ Load (mg/day)				0.51461	0.772			0.472	0.535			0.237	0.306

Ave. of 3 runs (mg TEQ/day)

<DL=0:	0.41
<DL=1/2DL:	0.47
<DL=DL:	0.54

Test Conditions

sample volume (dscf)	112.889
Ave. stack volumetric flowrate (dscf/min)	20,232

107.937
19,147

104.427
18,818

Olivine - Air Emissions (page 2 of 2)

Facility		Olivine Corporation, Municipal Solid Waste Incinerator											
Sample Name		Air Emissions, October 27-28/1994											
Lab		Alta Analytical Laboratory Inc., El Dorado Hills, CA											
Sample ID	Date	Run 1				Run 2				Run 3			
		14117-001-SA 10/27-28/1994				14117-002-SA 10/27-28/1994				14117-003-SA 10/27-28/1994			
Congener	TEF	Value	Q	TEQ (ng/kg)	Value	Q	TEQ (ng/kg)	Value	Q	TEQ (ng/kg)	Value	Q	TEQ (ng/kg)
		(ng/sample)		<DL=	(ng/sample)		<DL=	(ng/sample)		<DL=	(ng/sample)		<DL=
2,3,7,8-TCDF	0.1	0.82	0.202	0.202	0.41	0.102	0.102	0.64	0.143	0.14	0.143	0.143	0.143
1,2,3,7,8-PCDD	0.5	7	1.721	0.861	1.9	0.470	0.235	3.8	0.848	0.4	0.424	0.424	0.424
1,2,3,4,7,8-HxCDD	0.1	13	3.197	0.320	3.6	0.867	0.087	7.4	1.651	0.165	0.165	0.165	0.165
1,2,3,6,7,8-HxCDD	0.1	40	9.837	0.984	8.9	2.204	0.220	18	4.015	0.401	0.401	0.401	0.401
1,2,3,7,8,9-HxCDD	0.1	19	4.672	0.467	4.8	1.199	0.119	10	2.230	0.223	0.223	0.223	0.223
1,2,3,4,6,7,8-HpCDD	0.01	230	56.561	0.566	57	14.115	0.141	120	26.765	0.268	0.268	0.268	0.268
OCDD	0.001	290	71.315	0.071	79	19.563	0.020	210	46.839	0.047	0.047	0.047	0.047
2,3,7,8-TCDF	0.1	6.7	1.648	0.165	2	0.495	0.050	4.9	1.093	0.109	0.109	0.109	0.109
1,2,3,7,8-PCDF	0.05	16	3.935	0.197	4.9	1.213	0.061	11	2.453	0.12	0.123	0.123	0.123
2,3,4,7,8-PCDF	0.5	34	8.361	4.181	40	2.476	1.238	21	4.584	2.342	2.342	2.342	2.342
1,2,3,4,7,8-HxCDF	0.1	41	10.083	1.008	13	3.219	0.322	28	6.245	0.625	0.625	0.625	0.625
1,2,3,6,7,8-HxCDF	0.1	33	8.115	0.812	10	2.476	0.248	22	4.907	0.491	0.491	0.491	0.491
2,3,4,6,7,8-HxCDF	0.1	51	12.542	1.254	14	3.467	0.35	30	6.691	0.67	0.669	0.669	0.669
1,2,3,7,8,9-HxCDF	0.1	13	3.197	0.320	3.5	0.867	0.09	8	1.784	0.18	0.178	0.178	0.178
1,2,3,4,6,7,8-HpCDF	0.01	140	34.428	0.344	44	10.896	0.109	100	22.304	0.223	0.223	0.223	0.223
1,2,3,4,7,8,9-HpCDF	0.01	15	3.689	0.037	3.9	0.966	0.010	8.9	1.985	0.020	0.020	0.020	0.020
OCDF	0.001	28	6.886	0	8.6	2.130	0.0021	21	4.684	0.005	0.005	0.005	0.005
EPA TEQ Load (mg/day)				11.79			3.395			3.395		6.455	6.455
Ave. of 3 runs (mg TEQ/day)													
<DL=0:		7.21											
<DL=1/2DL:		7.21											
<DL=DL:		7.21											
Test Conditions													
sample volume (dscf)		109.184			112.023			115.984					
Ave. stack volumetric flowrate (dscf/min)		18.646			19.264			17.965					

* Run #2 was diluted 1:10 and re-analyzed due to matrix interferences. Results taken from the diluted extract are indicated with the "m" qualifier.

Rayonier - Air

Facility		Rayonier			
Sample Name		Hog Fuel Boiler Average			
Lab	Date	Value (ng/m3)	Q	1995 TEQ (ng/m3)	DL
Congener	TEF			<DL=	0
2,3,7,8-TCDD	1	0.006 U		0.000	0.006
1,2,3,7,8-PCDD	0.5	0.026		0.013	0.013
1,2,3,4,7,8-HxCDD	0.1	0.019		0.002	0.002
1,2,3,6,7,8-HxCDD	0.1	0.036		0.004	0.004
1,2,3,7,8,9-HxCDD	0.1	0.024		0.002	0.002
1,2,3,4,6,7,8-HpCDD	0.01	0.134		0.001	0.001
OCDD	0.001	0.156		0.000	0.000
2,3,7,8-TCDF	0.1	0.177		0.018	0.018
1,2,3,7,8-PCDF	0.05	0.038		0.002	0.002
2,3,4,7,8-PeCDF	0.5	0.040		0.020	0.020
1,2,3,4,7,8-HxCDF	0.1	0.018 U		0.000	0.002
1,2,3,6,7,8-HxCDF	0.1	0.018 U		0.000	0.002
2,3,4,6,7,8-HxCDF	0.1	0.018 U		0.000	0.002
1,2,3,7,8,9-HxCDF	0.1	0.018 U		0.000	0.002
1,2,3,4,6,7,8-HpCDF	0.01	0.026		0.0003	0.000
1,2,3,4,7,8,9-HpCDF	0.01	0.018 U		0.000	0.000
OCDF	0.001	0.036 U		0.000	0.000
EPA TEQ (ng/m3)				0.062	0.076
Ave. stack volumetric flowrate (dscf/min.)				22,097	22,097
TEQ Production Rate (mg/d)				0.056	0.068
Multiplying by 3, as per note below (mg TEQ/day)					
<DL=0:				0.168	
<DL=1/2DL:				0.186	
<DL=DL:				0.205	

In the Amtest report: "Note: These emission tests were conducted at 1 of 3 scrubber stacks. The airflows and PCDD/PCDF emission reates (ng/min) should be multiplied by 3 to represent total emissions."

Source: Foster Wheeler Environmental Corporation, 1997, Table 2-3, page 2-32.

Rayonier - Ash

Facility	Sample Name	Lab	Sample ID	Date	Filter Ash (p. 2-72) ¹				Ash, Vacuum Filter, & Grate				Filter Ash (p. 2-70) ¹				Fly Ash (p.2-69) ¹				
					Value (pg/g)	TEQ (pg/g)	Q	<DL=	DL	Value (pg/g)	TEQ (pg/g)	Q	<DL=	DL	Value (pg/g)	TEQ (pg/g)	Q	<DL=	DL	Value (pg/g)	TEQ (pg/g)
Rayonier	TEF				850	850	88	88	88	88	460	460	460	460	40	40	40	40	40	40	40
	2,3,7,8-TCDD				6,400	3200	3200	230	230	230	1,400	1,400	1,400	700	120	120	120	60	60	60	60
	1,2,3,4,7,8-HxCDD				16,000	1600	1600	82	82	82	1,000	1,000	1,000	100	260	260	260	26	26	26	26
	1,2,3,6,7,8-HxCDD				21,000	2100	2100	220	220	220	2,200	2,200	2,200	64	180	180	180	18	18	18	18
	1,2,3,7,8,9-HxCDD				16,000	1600	1600	190	190	190	1,900	1,900	1,900	15	160	160	160	16	16	16	16
	1,2,3,4,6,7,8-HpCDD				130,000	1300	1300	100	100	100	10,000	10,000	10,000	19	810	810	810	8	8	8	8
	OCDD				88,000	88	88	11	11	11	11,000	11,000	11,000	2	470	470	470	0	0	0	0
	2,3,7,8-TCDF				1,400	140	140	21	21	21	210	210	210	150	130	130	130	13	13	13	13
	1,2,3,7,8-PCDF				1,900	95	95	200	200	200	200	200	200	44	43	43	43	2	2	2	2
	2,3,4,7,8-PCDF				2,600	1300	1300	310	310	310	310	310	310	600	56	56	56	28	28	28	28
	1,2,3,4,7,8-HxCDF				1,500	150	150	20	20	20	200	200	200	67	41	41	41	4	4	4	4
	1,2,3,6,7,8-HxCDF				ND	0	?	18	18	18	180	180	180	51	38	38	38	4	4	4	4
	2,3,4,6,7,8-HxCDF				1,300	130	130	12	12	12	120	120	120	3	31	31	31	3	3	3	3
	1,2,3,7,8,9-HxCDF				680	68	68	37	37	37	37	37	37	21	14	14	14	1	1	1	1
	1,2,3,4,6,7,8-HpCDF				1,500	15	15	2	2	2	210	210	210	3	57	57	57	1	1	1	1
	1,2,3,4,7,8,9-HpCDF				430	4	4	81	81	81	81	81	81	1	11	11	11	0	0	0	0
	OCDF				370	0	0	120	120	120	120	120	120	0	20	20	20	0	0	0	0
	EPA TEQ (ppt)				12,641			1,150	1,164	1,164	2,299	2,299	2,299	225	225	225	225	225	225	225	225
	TEQ Production Rate @ 3 tons/day (mg/d)				34.5			3.14	3.17	3.17	6.27	6.27	6.27	0.61	0.61	0.61	0.61	0.61	0.61	0.61	0.61
	TEQ Production Rate @ 6 tons/day (mg/d)				68.9			6.27	6.35	6.35	12.5	12.5	12.5	1.23	1.23	1.23	1.23	1.23	1.23	1.23	1.23
	TEQ Production Rate @ 15 tons/day (mg/d)				172.4			15.7	15.9	15.9	31.4	31.4	31.4	3.07	3.07	3.07	3.07	3.07	3.07	3.07	3.07

¹Source: Foster Wheeler Environmental Corporation, 1997.

ND = Not Detected (detection limit not given)

Rayonier - Water (page 1 of 2)

Facility Lab (unknown) Date Sample Description	Rayonier											
	Dec-89 #3 Mill Effluent			Feb-90 Extended Outfall			Jun-90 Extended Outfall			Dec-91 Extended Outfall		
	Value (ppq)	TEQ (ppq) <DL=	DL	Value (ppq)	TEQ (ppq) <DL=	DL	Value (ppq)	TEQ (ppq) <DL=	DL	Value (ppq)	TEQ (ppq) <DL=	DL
Congener												
TEF												
2,3,7,8-TCDD	27	27	27	18	18	18	U	0	0	69	69	69
1,2,3,7,8-PCDD	55	28	28	69	35	35	U	0	0	320	160	160
1,2,3,4,7,8-HxCDD	37	4	4	46	5	5	U	0	0	210	21	21
1,2,3,6,7,8-HxCDD	U	0	0	32	3	3	U	0	0	250	25	25
1,2,3,7,8,9-HxCDD	U	0	0	360	36	36	U	0	0	240	24	24
1,2,3,4,6,7,8-HpCD	250	3	3	210	2	2	50	1	1	44	0	0
OCDD	2100	2	2	530	1	1	270	0	0	1400	1	1
2,3,7,8-TCDF	46	5	5	33	3	3	4	0	0	64	6	6
1,2,3,7,8-PCDF	58	3	3	40	2	2	U	0	0	64	3	3
2,3,4,7,8-PCDF	46	23	23	U	0	0	U	0	0	97	49	49
1,2,3,4,7,8-HxCDF	U	0	0	32	3	3	U	0	0	33	3	3
1,2,3,6,7,8-HxCDF	U	0	0	20	2	2	U	0	0	32	3	3
2,3,4,6,7,8-HxCDF	U	0	0	U	0	0	U	0	0	39	4	4
1,2,3,7,8,9-HxCDF	U	0	0	U	0	0	U	0	0	U	0	0
1,2,3,4,6,7,8-HpCDF	U	0	0	U	0	0	U	0	0	44	0	0
1,2,3,4,7,8,9-HpCDF	U	0	0	U	0	0	U	0	0	U	0	0
OCDF	U	0	0	U	0	0	U	0	0	U	0	0
EPA TEQ (ppq)		93		109				1		370		
Flow rate (MGD)		34.9		36.9				43.3		37.1		
TEQ Production Rate (mg/d)		12.3		15.3				0.19		51.9		

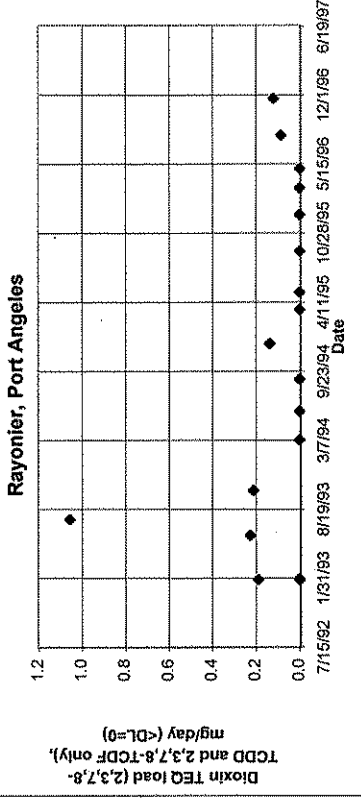
Source: Foster Wheeler Environmental Corporation, 1997, Table 2-6, page 2-57.

Rayonier - Water (page 2 of 2)

Facility Lab (unknown)	Date	Sample Description	Apr-92 Final Effluent			Jun-92 Final Effluent			Sep-92 Final Effluent			Dec-92 Final Effluent			Feb-94 Extended Outfall		
			Value (ppq)	TEQ (ppq) <DL=	DL	Value (ppq)	TEQ (ppq) <DL=	DL	Value (ppq)	TEQ (ppq) <DL=	DL	Value (ppq)	TEQ (ppq) <DL=	DL	Value (ppq)	TEQ (ppq) <DL=	DL
TEF																	
2,3,7,8-TCDD	1		38	38	38	32	32	32	16	16	16	13	13	13	0	0	
1,2,3,7,8-PCDD	0.5		140	70	70	96	48	48	55	28	28	U	0	0	U	0	
1,2,3,4,7,8-HxCDD	0.1		85	9	9	62	6	6	U	0	0	U	0	0	U	0	
1,2,3,6,7,8-HxCDD	0.1		130	13	13	84	8	8	82	8	8	64	6	6	U	0	
1,2,3,7,8,9-HxCDD	0.1		92	9	9	120	12	12	52	5	5	U	0	0	U	0	
1,2,3,4,6,7,8-HpCD	0.01		450	5	5	260	3	3	260	3	3	190	2	2	U	0	
OCDD	0.001		720	1	1	410	0	0	540	1	1	430	0	0	U	0	
2,3,7,8-TCDF	0.1		52	5	5	47	5	5	22	2	2	28	3	3	U	0	
1,2,3,7,8-PCDF	0.05		U	0	0	33	2	2	U	0	0	U	0	0	U	0	
2,3,4,7,8-PCDF	0.5		63	32	32	40	20	20	U	0	0	U	0	0	U	0	
1,2,3,4,7,8-HxCDF	0.1		U	0	0	U	0	0	U	0	0	U	0	0	U	0	
1,2,3,6,7,8-HxCDF	0.1		U	0	0	U	0	0	U	0	0	U	0	0	U	0	
2,3,4,6,7,8-HxCDF	0.1		U	0	0	U	0	0	U	0	0	U	0	0	U	0	
1,2,3,7,8,9-HxCDF	0.1		U	0	0	U	0	0	U	0	0	U	0	0	U	0	
1,2,3,4,6,7,8-HpCD	0.01		U	0	0	U	0	0	U	0	0	U	0	0	U	0	
1,2,3,4,7,8,9-HpCD	0.01		U	0	0	U	0	0	U	0	0	U	0	0	U	0	
OCDF	0.001		U	0	0	U	0	0	U	0	0	U	0	0	U	0	
EPA TEQ (ppq)			181			136			62			25			0		
Flow rate (MGD)			39.7			40.3			42.6			37.4			36.9		
TEQ Production Rate (mg/d)			27.1			20.7			10.0			3.47			0.00		

Rayonier - Wastewater (2,3,7,8-TCDD and 2,3,7,8-TCDF only)

Date	2,3,7,8-TCDD TEF = 1		2,3,7,8-TCDF TEF = 0.1		Flow (MGD)	TEQ Load (mg/day)			Comment
	Value (ppq)	TEQ (ppq) <DL =	Value (ppq)	TEQ (ppq) <DL =		0	1/2 DL	DL	
Rayonier, Port Angeles - "Final effluent"									
1/25/93	4.4 U	0	4.4	0	37.9	0.00	0.34	0.69	
1/26/93	10.0 U	0	10	1.3	38.2	0.19	0.91	1.63	
1/27/93	7.9 U	0	7.9	0	38.6	0.00	0.65	1.29	
1/28/93	4.4 U	0	4.4	0	37.4	0.00	0.36	0.71	
1/29/93	6.6 U	0	6.6	0	37.5	0.00	0.53	1.05	
6/4/93	9.7 U	0	9.7	1.5	39.8	0.23	0.96	1.69	
7/20/93	5.4	5.4	5.4	0.93	44.0	1.05	1.05	1.05	
10/12/93	5.0 U	0	5	1.3	42.8	0.21	0.62	1.02	
3/8/94	7.2 U	0	7.2	0	37.3	0.00	0.56	1.12	
5/30/94	3.8 U	0	3.8	0	39.9	0.00	0.34	0.67	
8/31/94	2.1 U	0	2.1	0	41.7	0.00	0.19	0.38	
12/12/94	3.5 U	0	3.5	0.9	40.0	0.14	0.40	0.67	
3/21/95	0.5 U	0	0.5	0	38.5	0.00	0.05	0.10	
5/10/95	4.3 U	0	4.3	0	38.4	0.00	0.33	0.66	
9/6/95	4.3 U	0	4.3	0	33.6	0.00	0.29	0.58	
12/20/95	1.5 U	0	1.5	0	37.4	0.00	0.12	0.25	
3/6/96	2.2 U	0	2.2	0	35.0	0.00	0.17	0.34	
5/1/96	2.0 U	0	2	0	36.4	0.00	0.18	0.37	
8/6/96	0.98 U	0	0.98	0.52	43.3	0.09	0.17	0.25	
11/21/96	4.1 U	0	4.1	0.83	37.6	0.12	0.41	0.70	Mill stopped operating March 30, 1997
Low						0.00	0.05	0.10	
Average						0.10	0.43	0.76	
High						1.05	1.05	1.69	
Count						20			



RECOMP - Ash

RECOMP, previously Thermal Reduction Company

Sample Name Lab Sample Number Test Number Date	Ash Analyses Weyerhaeuser Analytical and Testing Services														
	5714218 1994 r'cvd at lab 4/17/95				SR 00063 1995 r'cvd at lab 1/29/96				SR 03237 1996 r'cvd at lab 2/20/97						
	Value (ng/kg)	Q	TEQ (ng/kg) <DL= 0	1/2DL	DL	Value (ng/kg)	Q	TEQ (ng/kg) <DL= 0	1/2DL	DL	Value (ng/kg)	Q	TEQ (ng/kg) <DL= 0	1/2DL	DL
Congener	TEF														
2,3,7,8-TCDD	1	2.1	U	0	2.1	1.6	U	0	1.6	3.6	U	0	3.6	3.6	
1,2,3,7,8-PCDD	0.5	5.4	U	0	2.7	3.1	U	0	1.55	12.2	U	0	0	6.1	
1,2,3,4,7,8-HxCDD	0.1	5.68		0.568	0.568	0.81	U	0	0.081	18.1		1.81	1.81	1.81	
1,2,3,6,7,8-HxCDD	0.1	7.24		0.724	0.724	16.3		1.63	1.63	29		2.9	2.9	2.9	
1,2,3,7,8,9-HxCDD	0.1	12.3		1.23	1.23	13.7		1.37	1.37	47.5		4.75	4.75	4.75	
1,2,3,4,6,7,8-HpCD	0.01	94.4		0.944	0.944	80.8		0.808	0.808	302		3.02	3.02	3.02	
OCDD	0.001	551		0.551	0.551	517		0.517	0.517	1721		1.721	1.721	1.721	
2,3,7,8-TCDF	0.1	30.6		3.06	3.06	19.8		1.98	1.98	69.6		6.96	6.96	6.96	
1,2,3,7,8-PCDF	0.05	8.53		0.4265	0.4265	8.76		0.438	0.438	29.7		1.485	1.485	1.485	
2,3,4,7,8-PCDF	0.5	12.7		6.35	6.35	9.74		4.87	4.87	20.6		10.3	10.3	10.3	
1,2,3,4,7,8-HxCDF	0.1	34.6		3.46	3.46	30.1		3.01	3.01	118		11.8	11.8	11.8	
1,2,3,6,7,8-HxCDF	0.1	13.7		1.37	1.37	16.8		1.68	1.68	61.5		6.15	6.15	6.15	
2,3,4,6,7,8-HxCDF	0.1	25.5		2.55	2.55	26.6		2.66	2.66	95.3		9.53	9.53	9.53	
1,2,3,7,8,9-HxCDF	0.1	1.9	U	0	0.19	1.4	U	0	0.14	13.8		1.38	1.38	1.38	
1,2,3,4,6,7,8-HpCDF	0.01	160		1.6	1.6	171		1.71	1.71	614		6.14	6.14	6.14	
1,2,3,4,7,8,9-HpCDF	0.01	13.6		0.136	0.136	12.3		0.123	0.123	40.3		0.403	0.403	0.403	
OCDF	0.001	118		0.118	0.118	114		0.114	0.114	348		0.348	0.348	0.348	
EPA TEQ				23.09	28.08			20.91	24.28			68.70	78.40		
Waste Production Rate (tons/year)				10,744	10,744			11,970	11,970			12,712	12,712		
TEQ Production Rate (mg/d)				0.617	0.683			0.622	0.672			2.17	2.32	2.48	

Comments
All ash samples are total ash (bottom + fly). Fly ash estimated to be 10%
Sampled ash was composited from four quarterly samples to be representative of the year.

RECOMP - Air Emissions

RECOMP, previously Thermal Reduction Company

Facility

Sample Name Lab Sample Number Test Number Date	Air Emissions Twin City Testing, St. Paul, Minnesota					
	Run 1, 88514611 4325J-02 12/14/88		Run 2, 88514612 4325J-03 12/14/88		Run 3, 88514613 4325J-04 12/14/88	
Congener	Value (ng/sec)	TEQ (ng/sec)	Value (ng/sec)	TEQ (ng/sec)	Value (ng/sec)	TEQ (ng/sec)
TEF	0.8	0.8	1.2	1.2	1.3	1.9
2,3,7,8-TCDD	3.2	1.6	5.1	2.55	10.5	5.25
1,2,3,7,8-PCDD	7.8	0.78	13.7	1.37	22.3	2.23
1,2,3,4,7,8-HxCDD	7.6	0.76	13.5	1.35	21.0	2.1
1,2,3,6,7,8-HxCDD	14.1	1.41	21.9	2.19	36.7	3.67
1,2,3,7,8,9-HxCDD	117.1	1.171	188.9	1.889	304.4	3.044
1,2,3,4,6,7,8-HpCD	513.2	0.5132	875.9	0.8759	1212.4	1.2124
OCDD	32.2	3.22	46.5	4.65	61.7	6.17
2,3,7,8-TCDF	4.2	0.21	4.7	0.235	8.5	0.425
1,2,3,7,8-PCDF	11.4	5.7	16.4	8.2	26.2	13.1
2,3,4,7,8-PCDF	41.2	4.12	71.2	7.12	107.6	10.76
1,2,3,4,7,8-HxCDF	14.1	1.41	23.3	2.33	32.8	3.28
1,2,3,6,7,8-HxCDF	4.9	0.49	9.6	0.96	52.5	5.25
2,3,4,6,7,8-HxCDF	30.9	3.09	57.5	5.75	78.7	7.87
1,2,3,7,8,9-HxCDF	127.3	1.273	228.6	2.286	283.4	2.834
1,2,3,4,6,7,8-HpCDF	7.7	0.077	15.1	0.151	21.0	0.21
OCDF	77.2	0.0772	187.5	0.1875	262.4	0.2624
EPA TEQ		26.70		43.29		68.97
TEQ load (mg/D)		2.31		3.74		5.96
Ave. TEQ load of 3 runs (mg/D)						

<DL=0	4.00
<DL=1/2DL	4.00
<DL=DL	4.00

Comments
 Burns a mixture of municipal (85-100%) and medical waste (0-15%)
 During testing, burned 0-20% medical waste.
 Two incinerators; exhaust gases from each of the secondary chambers are combined
 and passed through the ESP before venting.
 Run 3 collected during "soot blowing"
 Technically "air starved", but operated more like mass burn

Renton Wastewater Treatment Plant, Metro

Renton Wastewater Treatment Plant, Municipality of Metropolitan Seattle (Metro)		Quanterra Environmental Services	
Facility	Lab	Date	Units
		9/8/97	
		pg/g	
Congener	TEF	Value (ng/kg) Qual.	TEQ (<DL=1/2 DL) (<DL=DL)
2,3,7,8-TCDD	1	17 U	17
1,2,3,7,8-PCDD	0.5	17 U	8.5
1,2,3,4,7,8-HxCDD	0.1	43 U	4.3
1,2,3,6,7,8-HxCDD	0.1	43 U	4.3
1,2,3,7,8,9-HxCDD	0.1	43 U	4.3
1,2,3,4,6,7,8-HpCD	0.01	450	4.5
OCDD	0.001	4500	4.5
2,3,7,8-TCDF	0.1	17 U	1.7
1,2,3,7,8-PCDF	0.05	17 U	0.85
2,3,4,7,8-PCDF	0.5	17 U	8.5
1,2,3,4,7,8-HxCDF	0.1	43 U	4.3
1,2,3,6,7,8-HxCDF	0.1	43 U	4.3
2,3,4,6,7,8-HxCDF	0.1	43 U	4.3
1,2,3,7,8,9-HxCDF	0.1	43 U	4.3
1,2,3,4,6,7,8-HpCDF	0.01	43	0.43
1,2,3,4,7,8,9-HpCDF	0.01	43 U	0.43
OCDF	0.001	140	0.14
EPA TEQ		9.57	76.65
Waste Production Rate (estimated dry tons/year)		11,000	11,000
TEQ load (mg/D)		0.262	2.10
		0.432	

1989 waste production rate estimated by Kyle Dorsey, Department of Ecology.

Simpson Tacoma Kraft

Facility: Simpson Tacoma Kraft Company
 Lab: Weyerhaeuser
 Sample Name: Final effluent - composite
 Sample Number: 78136
 Date: 2/12-13/1991
 Units: pg/L

Congener	TEF	Value	Qualifier	pg/L	pg/L	pg/L	pg/L	pg/L	pg/L
2,3,7,8-TCDD	1	79		79					79
1,2,3,7,8-PCDD	0.5	7		3.5					3.5
1,2,3,4,7,8-HxCDD	0.1	8		0.8					0.8
1,2,3,6,7,8-HxCDD	0.1	26		2.6					2.6
1,2,3,7,8,9-HxCDD	0.1	8		0.8					0.8
1,2,3,4,6,7,8-HpCDD	0.01	142		1.42					1.42
OCDD	0.001	190		0.19					0.19
2,3,7,8-TCDF	0.1	71		7.1					7.1
1,2,3,7,8-PCDF	0.05	7		0.35					0.35
2,3,4,7,8-PeCDF	0.5	39		19.5					19.5
1,2,3,4,7,8-HxCDF	0.1	12		1.2					1.2
1,2,3,6,7,8-HxCDF	0.1	15		1.5					1.5
2,3,4,6,7,8-HxCDF	0.1	3 U							0.3
1,2,3,7,8,9-HxCDF	0.1	12		1.2					1.2
1,2,3,4,6,7,8-HpCDF	0.01	17		0.17					0.17
1,2,3,4,7,8,9-HpCDF	0.01	1		0.01					0.01
OCDF	0.001	7		0.007					0.007

EPA TEQ: 119.347 119.347 119.647

Flow (MGD): 30.4
 TEQ load (mg/D): 13.73 13.75 13.77

Note: Not included in overall average: sample split discrepancies

Simpson Tacoma Kraft - Wastewater (2,3,7,8-TCDD and 2,3,7,8-TCDF only)

Date	2,3,7,8-TCDD TEF = 1		2,3,7,8-TCDF TEF = 0.1		Flow (MGD)	TEQ Load (mg/day) <DL=					
	Value (ppq)	TEQ (ppq) <DL = 0 DL	Value (ppq)	TEQ (ppq) <DL = 0 DL		0	1/2 DL	DL			
Simpson Tacoma Kraft, Tacoma - "Secondary Effluent"											
11/18/91	8.2 U	0	8.2	4.2 U	0	0.42	0.00	0.45	0.90		
3/30/92	1.7 U	0	1.7	3.3 U	0	0.33	0.00	0.11	0.23		
7/31/92	3.2 U	0	3.2	4.9 U	0	0.49	0.00	0.21	0.43		
11/30/92	1.9 U	0	1.9	3.2 U	0	0.32	0.00	0.12	0.24		
6/15/93	2.5 U	0	2.5	1.4 U	0	0.14	0.00	0.17	0.34		
3/30/94	2.3 U	0	2.3	1 U	0	0.1	0.00	0.12	0.25		
6/27/94	6.5 U	0	6.5	5.9 U	0	0.59	0.00	0.40	0.80		
9/20/94	1.5 U	0	1.5	1.8 U	0	0.18	0.00	0.11	0.21		
12/6/94	3.9 U	0	3.9	2.5 U	0	0.25	0.00	0.22	0.44		
3/30/95	2.3 U	0	2.3	1.4 U	0	0.14	0.00	0.13	0.26		
6/20/95	.96 U	0	0.96	0.6 U	0	0.06	0.00	0.06	0.12		
10/2/95	1.1 U	0	1.1	.63 U	0	0.063	0.00	0.06	0.13		
12/11/95	6.4 U	0	6.4	2.6 U	0	0.26	0.00	0.48	0.97		
3/28/96	1.3 U	0	1.3	.59 U	0	0.059	0.00	0.06	0.13		
9/27/96	3.2 U	0	3.2	2.1 U	0	0.21	0.00	0.20	0.40		
2/6/97	2.7 U	0	2.7	2.4 U	0	0.24	0.00	0.17	0.34		
Low									0.00	0.06	0.12
Average									0.00	0.19	0.39
High									0.00	0.48	0.97
Count									16		

Spokane Incinerator - Air Emissions (page 1 of 5)

Facility Lab	Unit 1				Unit 2			
	Air Emissions Run 1 1-SV-OUT-1 9/24/92	Air Emissions Run 2 2-SV-OUT-1 9/25/92	Air Emissions Run 3 3-SV-OUT-1 9/25/92	Air Emissions Run 1 1-SV-OUT-2 9/22/92	Air Emissions Run 2 3-SV-OUT-2 9/23/92	Air Emissions Run 3 4-SV-OUT-2 9/24/92		
Units	TEQ ng/dscm Q (<DL=0)	TEQ ng/m3 (<DL=0)	TEQ ng/m3 (<DL=DL)	TEQ ng/m3 (<DL=0)	TEQ ng/m3 (<DL=DL)	TEQ ng/m3 (<DL=DL)	TEQ ng/m3 (<DL=DL)	TEQ ng/m3 (<DL=DL)
TEF	0.002 U	0.003 U	0.003 U	0.003 U	0.003 U	0.003 U	0.003 U	0.003 U
2,3,7,8-TCDF	0.003 U	0.003 U	0.003 U	0.003 U	0.003 U	0.003 U	0.003 U	0.003 U
1,2,3,7,8-PCDD	0.003 U	0.003 U	0.003 U	0.003 U	0.003 U	0.003 U	0.003 U	0.003 U
1,2,3,4,7,8-HxCDD	0.003 U	0.003 U	0.003 U	0.003 U	0.003 U	0.003 U	0.003 U	0.003 U
1,2,3,6,7,8-HxCDD	0.003 U	0.003 U	0.003 U	0.003 U	0.003 U	0.003 U	0.003 U	0.003 U
1,2,3,7,8,9-HxCDD	0.003 U	0.003 U	0.003 U	0.003 U	0.003 U	0.003 U	0.003 U	0.003 U
1,2,3,4,6,7,8-HpCDD	0.003 U	0.003 U	0.003 U	0.003 U	0.003 U	0.003 U	0.003 U	0.003 U
OCDD	0.024 J	0.00024	0.00024	0.00024	0.00024	0.00024	0.00024	0.00024
OCDF	0.0215	0.000215	0.000215	0.000215	0.000215	0.000215	0.000215	0.000215
2,3,7,8-TCDF	0.002 U	0.003 U	0.003 U	0.003 U	0.003 U	0.003 U	0.003 U	0.003 U
1,2,3,7,8-PCDF	0.002 U	0.003 U	0.003 U	0.003 U	0.003 U	0.003 U	0.003 U	0.003 U
1,2,3,4,7,8-HxCDF	0.001 U	0.001 U	0.001 U	0.001 U	0.001 U	0.001 U	0.001 U	0.001 U
1,2,3,6,7,8-HxCDF	0.001 U	0.001 U	0.001 U	0.001 U	0.001 U	0.001 U	0.001 U	0.001 U
1,2,3,7,8,9-HxCDF	0.001 U	0.001 U	0.001 U	0.001 U	0.001 U	0.001 U	0.001 U	0.001 U
1,2,3,4,6,7,8-HpCDF	0.001 U	0.001 U	0.001 U	0.001 U	0.001 U	0.001 U	0.001 U	0.001 U
OCDF	0.002 U	0.002 U	0.002 U	0.002 U	0.002 U	0.002 U	0.002 U	0.002 U
EPA TEQ	0.00177	0.00639	0.00639	0.00639	0.00639	0.00639	0.00639	0.00639
Lead (mg/d)	0.0035	0.0166	0.0166	0.0166	0.0166	0.0166	0.0166	0.0166

Average of 3 Runs, Unit 1:
 <DL=0
 <DL=DL

Sum of 2 units, 9/22 to 9/25/92:
 <DL=0
 <DL=1/2DL
 <DL=DL

Average of 3 Runs, Unit 2:
 <DL=0
 <DL=DL

Spokane Incinerator - Air Emissions (page 2 of 5)

Units	Unit 1				Unit #2				Unit #3			
	Air Emissions Run 1	Air Emissions Run 2	Air Emissions Run 3	Air Emissions Run 4	Air Emissions Run 1	Air Emissions Run 2	Air Emissions Run 3	Air Emissions Run 4	Air Emissions Run 1	Air Emissions Run 2	Air Emissions Run 3	Air Emissions Run 4
Sample Name	TEQ	TEQ	TEQ	TEQ	TEQ	TEQ	TEQ	TEQ	TEQ	TEQ	TEQ	TEQ
Sample Number	ng/m3	ng/m3	ng/m3	ng/m3	ng/m3	ng/m3	ng/m3	ng/m3	ng/m3	ng/m3	ng/m3	ng/m3
Test No.	Q (<DL=0)	Q (<DL=0)	Q (<DL=DL)	Q (<DL=DL)	Q (<DL=0)	Q (<DL=DL)	Q (<DL=DL)	Q (<DL=DL)	Q (<DL=0)	Q (<DL=DL)	Q (<DL=0)	Q (<DL=DL)
Date	9/30/93	9/30/93	9/30/93	9/30/93	9/30/93	9/30/93	9/30/93	9/30/93	9/30/93	9/30/93	9/30/93	9/30/93
Units	ng/dscm	ng/dscm	ng/dscm	ng/dscm	ng/dscm	ng/dscm	ng/dscm	ng/dscm	ng/dscm	ng/dscm	ng/dscm	ng/dscm
2,3,7,8-TCDF	0.007 U	0.007 U	0.008	0.008	0.005 U	0.005 U	0.013 U	0.013 U	0.004 U	0.004 U	0.002	0.002
1,2,3,7,8-PeCDD	0.009 U	0.0045	0.0135	0.0135	0.011 U	0.0055	0.018 U	0.018 U	0.006 U	0.006 U	0.004 U	0.002
1,2,3,4,7,8-HxCDD	0.012 U	0.0012	0.0054	0.0054	0.014 U	0.007	0.028 U	0.028 U	0.008 U	0.008 U	0.007 U	0.00037
1,2,3,6,7,8-HxCDD	0.011 U	0.0011	0.0027	0.0027	0.016 U	0.008	0.032 U	0.032 U	0.006 U	0.006 U	0.005 U	0.00035
1,2,3,7,8,9-HxCDD	0.011 U	0.0011	0.0027	0.0027	0.02 U	0.002	0.036 U	0.036 U	0.009 U	0.009 U	0.005 U	0.00035
1,2,3,4,6,7,8-HpCDD	0.028	0.00028	0.00054	0.00054	0.026	0.00026	0.052	0.052	0.021	0.00021	0.00021	0.00036
OCDD	0.943	0.00094	0.00094	0.00094	1.03	0.00103	0.00193	0.00193	0.809	0.000809	0.863	0.000863
2,3,7,8-TCDF	0.005 U	0.0005	0.0005	0.0005	0.005 U	0.0005	0.01 U	0.01 U	0.006 U	0.006 U	0.002 U	0.0002
1,2,3,7,8-PeCDF	0.007 U	0.0007	0.0027	0.0027	0.015 U	0.00075	0.03 U	0.03 U	0.009 U	0.009 U	0.003 U	0.00015
2,3,4,7,8-PeCDF	0.012 U	0.0012	0.0054	0.0054	0.014 U	0.0007	0.028 U	0.028 U	0.009 U	0.009 U	0.003 U	0.00015
1,2,3,4,7,8-HxCDF	0.009 U	0.0009	0.0027	0.0027	0.014 U	0.0007	0.028 U	0.028 U	0.008 U	0.008 U	0.003 U	0.0003
1,2,3,6,7,8-HxCDF	0.005	0.0005	0.0027	0.0027	0.008 U	0.0008	0.022 U	0.022 U	0.008 U	0.008 U	0.005 U	0.0003
2,3,4,6,7,8-HxCDF	0.006 U	0.0006	0.0027	0.0027	0.01 U	0.001	0.021 U	0.021 U	0.005 U	0.005 U	0.003 U	0.0003
1,2,3,7,8,9-HxCDF	0.01 U	0.001	0.008	0.008	0.018 U	0.0018	0.036 U	0.036 U	0.009 U	0.009 U	0.004 U	0.0004
1,2,3,4,6,7,8-HpCDF	0.028 U	0.00028	0.00054	0.00054	0.024 U	0.00024	0.048 U	0.048 U	0.007 U	0.00007	0.0007	0.00007
1,2,3,4,7,8-HpCDF	0.016 U	0.00016	0.00054	0.00054	0.026 U	0.00026	0.052 U	0.052 U	0.015 U	0.00015	0.0015	0.00007
OCDF	0.019	1.9E-05	0.027	0.00027	0.029	2.9E-05	0.040 U	0.040 U	0.112 U	0.000112	0.22	0.00022
EPA TEQ	0.00174	0.0264	0.085659	0.0857	0.00132	0.0307	0.00088	0.0468	0.00112	0.0138	0.003443	0.0108
Load (mg/d)	0.00424	0.0643	0.205	0.205	0.003	0.075	0.00231	0.12233	0.00294	0.03617	0.00891	0.02793
Average of 2 Runs, Unit 1:	0.00373											
<DL=0	0.00373											
<DL=DL	0.0695											
Average of 3 Runs, Unit 2:												
<DL=0	0.00472											
<DL=DL	0.0621											
Sum of 2 units, 9/30/93:												
<DL=0	0.0084											
<DL=1/2DL	0.070											
<DL=DL	0.132											

* These results are not considered representative, therefore, only runs 1 and 3 are averaged.

Spokane Incinerator - Air Emissions (page 4 of 5)

Huntingdon, Engineering and Environmental

Sample Name Sample Number Test No. Date	Unit 1				Unit 2				
	Air Emissions Run 1 5/11-12/95	Air Emissions Run 2 5/11-12/95	Air Emissions Run 3 5/11-12/95	Air Emissions Run 1 5/11-12/95	Air Emissions Run 2 5/11-12/95	Air Emissions Run 3 5/11-12/95	Air Emissions Run 1 5/11-12/95	Air Emissions Run 2 5/11-12/95	Air Emissions Run 3 5/11-12/95
TEF	0.0006 U	0.0006 U	0.0006 U	0.0006 U	0.0006 U	0.0006 U	0.0006 U	0.0006 U	0.0006 U
2,3,7,8-TCDF	0.03 U	0.03 U	0.03 U	0.03 U	0.03 U	0.03 U	0.03 U	0.03 U	0.03 U
1,2,3,7,8-PeCDF	0.003 U	0.003 U	0.003 U	0.003 U	0.003 U	0.003 U	0.003 U	0.003 U	0.003 U
1,2,3,4,7,8-HxCDD	0.003 U	0.003 U	0.003 U	0.003 U	0.003 U	0.003 U	0.003 U	0.003 U	0.003 U
1,2,3,6,7,8-HxCDD	0.003 U	0.003 U	0.003 U	0.003 U	0.003 U	0.003 U	0.003 U	0.003 U	0.003 U
1,2,3,7,8,9-HxCDD	0.003 U	0.003 U	0.003 U	0.003 U	0.003 U	0.003 U	0.003 U	0.003 U	0.003 U
1,2,3,4,6,7,8-HpCDD	0.0003 U	0.0003 U	0.0003 U	0.0003 U	0.0003 U	0.0003 U	0.0003 U	0.0003 U	0.0003 U
OCDD	0.172	0.000172	0.000172	0.05	0.000056	0.000056	0.081 U	0.000076	0.000076
2,3,7,8-TCDF	0.006 U	0.0006 U	0.0006 U	0.022 J	0.0022	0	0.06 U	0.002	0.0006 U
1,2,3,7,8-PeCDF	0.03 U	0.0015 U	0.0015 U	0.03 U	0.0015 U	0.0015 U	0.03 U	0.0015 U	0.0015 U
2,3,4,7,8-PeCDF	0.03 U	0.0015 U	0.0015 U	0.03 U	0.0015 U	0.0015 U	0.03 U	0.0015 U	0.0015 U
1,2,3,4,7,8-HxCDF	0.03 U	0.003 U	0.003 U	0.03 U	0.003 U	0.003 U	0.03 U	0.003 U	0.003 U
1,2,3,6,7,8-HxCDF	0.03 U	0.003 U	0.003 U	0.03 U	0.003 U	0.003 U	0.03 U	0.003 U	0.003 U
2,3,4,6,7,8-HxCDF	0.03 U	0.003 U	0.003 U	0.03 U	0.003 U	0.003 U	0.03 U	0.003 U	0.003 U
1,2,3,7,8,9-HxCDF	0.03 U	0.003 U	0.003 U	0.03 U	0.003 U	0.003 U	0.03 U	0.003 U	0.003 U
1,2,3,4,6,7,8-HpCDF	0.003 U	0.0003 U	0.0003 U	0.03 U	0.0003 U	0.0003 U	0.03 U	0.0003 U	0.0003 U
OCDF	0.03 U	0.0003 U	0.0003 U	0.03 U	0.0003 U	0.0003 U	0.03 U	0.0003 U	0.0003 U
EPA TEQ	0.00017	0.00226	0.00617	0.00000	0.00577	0.00000	0.00000	0.00208	0.00000
Load (mg/d)	0.0004	0.1563	0.1588	0.0000	0.1513	0.0000	0.1588	0.0053	0.0000
Average of 3 Runs, Unit 1:									
<DL=0	0.0209	0.0039	0.159	<DL=0	0.0039	0.00177	0.00177	0.0053	0.0000
<DL=DL	0.1555	0.314	0.314	<DL=DL	0.159	0.1587	0.1587	0.1618	0.1574
Average of 3 Runs, Unit 2:									
<DL=0	0.00177	0.00177	0.00177	<DL=0	0.00177	0.00177	0.00177	0.00177	0.00177
<DL=DL	0.1587	0.314	0.314	<DL=DL	0.1587	0.1587	0.1587	0.1618	0.1574

Sum of 2 units, 5/11 to 12/1995:
 <DL=0 0.0039
 <DL=12DL 0.159
 <DL=DL 0.314

Spokane Incinerator - Air Emissions (page 5 of 5)

Alta Analytical Labs, Inc.

Sample Name Sample Number Test No. Date	Unit 1 FF Outlet				Unit 2 FF Outlet				September 23-24, 1997			
	Air Emissions Run 1 October 1-2, 1997		Air Emissions Run 2 October 1-2, 1997		Air Emissions Run 3 October 1-2, 1997		Air Emissions Run 1 September 23-24, 1997		Air Emissions Run 2 September 23-24, 1997		Air Emissions Run 3 September 23-24, 1997	
Units	TEQ ng/m3 (<DL=DL)	TEQ ng/m3 (<DL=DL)	TEQ ng/m3 (<DL=DL)	TEQ ng/m3 (<DL=DL)	TEQ ng/m3 (<DL=DL)	TEQ ng/m3 (<DL=DL)	TEQ ng/m3 (<DL=DL)	TEQ ng/m3 (<DL=DL)	TEQ ng/m3 (<DL=DL)	TEQ ng/m3 (<DL=DL)	TEQ ng/m3 (<DL=DL)	TEQ ng/m3 (<DL=DL)
Congener	ng/dscm Q	ng/dscm Q	ng/dscm Q	ng/dscm Q	ng/dscm Q	ng/dscm Q	ng/dscm Q	ng/dscm Q	ng/dscm Q	ng/dscm Q	ng/dscm Q	ng/dscm Q
TEF	0.009	0.009	0.009	0.009	0.005	0.005	0.005	0.002	0.002	0.002	0.002	0.002
2,3,7,8-TCDF	0.061	0.0305	0.0265	0.013	0.013	0.013	0.026	0.002	0.0015	0.0015	0.0015	0.0015
1,2,3,4,7,8-HxCDD	0.142	0.0142	0.0122	0.054	0.054	0.054	0.054	0.002	0.0003	0.0003	0.0003	0.0002
1,2,3,4,6,7,8-HxCDD	0.239	0.0239	0.0191	0.092	0.092	0.092	0.092	0.004	0.0006	0.0006	0.0006	0.0004
1,2,3,7,8,9-HxCDD	0.18	0.018	0.0155	0.067	0.067	0.067	0.067	0.002	0.0003	0.0003	0.0003	0.0002
1,2,3,4,6,7,8-HpCDD	2.44	0.0244	1.99	0.156	0.156	0.156	0.156	0.025	0.0025	0.0025	0.0025	0.0022
OCDD	6.96	0.0696	6.09	0.199	0.199	0.199	0.199	0.025	0.0025	0.0025	0.0025	0.0022
2,3,7,8-TCDF	0.053	0.0053	0.005	0.005	0.023	0.023	0.023	0.006	0.0005	0.0005	0.0005	0.0005
1,2,3,7,8-PeCDF	0.289	0.0289	0.201	0.069	0.069	0.069	0.069	0.008	0.0006	0.0006	0.0006	0.0004
1,2,3,4,7,8-HxCDF	0.407	0.0407	0.344	0.1095	0.1095	0.1095	0.1095	0.006	0.0006	0.0006	0.0006	0.0005
1,2,3,6,7,8-HxCDF	0.381	0.0381	0.318	0.0318	0.141	0.141	0.141	0.005	0.0005	0.0005	0.0005	0.0005
2,3,4,6,7,8-HxCDF	0.711	0.0711	0.609	0.0609	0.283	0.283	0.283	0.007	0.0007	0.0007	0.0007	0.0006
1,2,3,7,8,9-HxCDF	0.254	0.0254	0.212	0.0212	0.09	0.09	0.09	0.003	0.0003	0.0003	0.0003	0.0002
1,2,3,4,6,7,8-HpCDF	3.96	0.0396	2.91	0.0291	0.134	0.134	0.134	0.017	0.0017	0.0017	0.0017	0.0013
OCDF	0.33	0.0033	0.265	0.00265	0.121	0.121	0.121	0.003	0.0003	0.0003	0.0003	0.0002
EPA TEQ	1.2840	0.46495	1.3082	0.39315	0.19445	0.5374	0.19445	0.0242	0.00915	0.00915	0.00915	0.00872
Lead (mg/d)	1.2840	1.3082	1.0464	1.0675	0.5374	0.5483	0.5374	0.0242	0.00915	0.00915	0.00915	0.00872
Average of 3 Runs, Unit 1:	0.96592	0.3638	0.983	0.983	0.983	0.983	0.983	0.02784	0.00915	0.00915	0.00915	0.00872
<DL=0	0.9747	1.003	1.003	1.003	0.983	0.983	0.983	0.0280	0.00915	0.00915	0.00915	0.00872
<DL=DL												
<DL=DL												
Average of 2 units, 5/11 to 12/1995:												
<DL=0												
<DL=72DL												
<DL=DL												

D = This compound was detected in the method, field, and trip blanks.

Spokane Municipal Incinerator - Air Emissions (1991) (page 1 of 2)

Spokane Waste-to-Energy Facility		Unit 1 Air Emissions, November, 1991 Triangle Laboratories, Inc.												
Congener	TEF	Run 1 Project No: 5887 Unit 1 FF OUTLET November, 1991				Run 2 Project No: 5887 Unit 1 FF OUTLET November, 1991				Run 3 Project No: 5887 Unit 1 FF OUTLET November, 1991				
		Value (ng/smpl)	Q (mg/day)	Value (mg/day)	<DL= 0	Value (ng/sample)	Q (mg/day)	Value (mg/day)	<DL= 0	Value (ng/sample)	Q (mg/day)	Value (mg/day)	<DL= 0	
2,3,7,8-TCDD	0.001	0.01	0.004	0.004	0.004	0.01	0.004	0.004	0.004	0.004	0.003	0.003	0.003	
1,2,3,7,8-PCDD	0.5	0.22	0.096	0.048	0.048	0.07	0.031	0.031	0.015	0.015	0.08	0.034	0.017	
1,2,3,4,7,8-HxCDD	0.1	0.34	0.146	0.073	0.073	0.07	0.031	0.031	0.003	0.003	0.09	0.039	0.004	
1,2,3,6,7,8-HxCDD	0.1	0.62	0.270	0.027	0.027	0.18	0.079	0.079	0.008	0.008	0.19	0.082	0.008	
1,2,3,7,8,9-HxCDD	0.1	0.81	0.352	0.035	0.035	0.23	0.101	0.101	0.010	0.010	0.26	0.112	0.011	
1,2,3,4,6,7,8-HpCD	0.01	2.6	1.131	0.011	0.011	0.96	0.422	0.422	0.004	0.004	0.97	0.417	0.004	
OCDD	0.001	1.5	0.653	0.001	0.001	0.90	0.396	0.396	0.000	0.000	0.80	0.344	0.000	
2,3,7,8-TCDF	0.1	0.18	0.078	0.008	0.008	0.05	0.022	0.022	0.002	0.002	0.05	0.021	0.002	
1,2,3,7,8-PCDF	0.05	0.34	0.148	0.007	0.007	0.12	0.053	0.053	0.003	0.003	0.11	0.047	0.002	
2,3,4,7,8-PeCDF	0.5	0.78	0.339	0.170	0.170	0.21	0.092	0.092	0.046	0.046	0.21	0.090	0.045	
1,2,3,4,7,8-HxCDF	0.1	1.6	0.696	0.070	0.070	0.43	0.189	0.189	0.019	0.019	0.45	0.193	0.019	
1,2,3,6,7,8-HxCDF	0.1	0.78	0.339	0.034	0.034	0.22	0.097	0.097	0.010	0.010	0.21	0.090	0.009	
2,3,4,6,7,8-HxCDF	0.1	1.1	0.479	0.048	0.048	0.32	0.141	0.141	0.014	0.014	0.29	0.125	0.012	
1,2,3,7,8,9-HxCDF	0.1	0.06	0.026	0.003	0.003	0.03	0.013	0.013	0.000	0.000	0.02	0.009	0.000	
1,2,3,4,6,7,8-HpCDF	0.01	1.5	0.653	0.007	0.007	0.60	0.264	0.264	0.003	0.003	0.45	0.193	0.002	
1,2,3,4,7,8,9-HpCDF	0.01	0.25	0.109	0.001	0.001	0.20	0.088	0.088	0.001	0.001	0.07	0.030	0.000	
OCDF	0.001	0.5	0.218	0.000	0.000	0.50	0.220	0.220	0.000	0.000	0.13	0.056	0.000	
EPA TEQ Load (mg/day)				0.48	0.49				0.14	0.14			0.14	0.14

Sum of 2 units:
 <DL=0: 0.28
 <DL=1/2 0.29
 <DL=DL 0.30

0.25
 0.26
 0.26

Test Conditions
 sample volume (dscf) 172.16
 Ave. stack volumetric flowrate (dscf/min) 52,010

157.02
 47,920
 157.34
 46,960

Spokane Municipal Incinerator - Air Emissions (1991) (page 2 of 2)

Spokane Waste-to-Energy Facility		Unit 2 Air Emissions, November, 1991 Triangle Laboratories, Inc.											
Facility	Sample Name	Run 1 Project No: 5887 Unit 2 FF OUTLET November, 1991				Run 2 Project No: 5887 Unit 2 FF OUTLET November, 1991				Run 3 Project No: 5887 Unit 2 FF OUTLET November, 1991			
		Value (ng/sample)	Q (mg/day)	TEQ (mg/day) <DL=	DL	Value (ng/sample)	Q (mg/day)	TEQ (mg/day) <DL=	DL	Value (ng/sample)	Q (mg/day)	TEQ (mg/day) <DL=	DL
Congener	TEF	0.02 U	0.009 U	0.000 0.009	0.02 U	0.009 U	0.000 0.009	0.000 0.009	0.01 U	0.004 U	0.000 0.004	0.000 0.004	
	2,3,7,8-TCDD	0.02 U	0.009 U	0.000 0.004	0.03 U	0.013 U	0.000 0.007	0.000 0.007	0.02 U	0.009 U	0.000 0.004	0.000 0.004	
	1,2,3,7,8-PCDD	0.04 U	0.018 U	0.000 0.002	0.04 U	0.017 U	0.000 0.002	0.000 0.002	0.03 U	0.013 U	0.000 0.001	0.000 0.001	
	1,2,3,4,7,8-HxCDD	0.04	0.018	0.002 0.002	0.03	0.013	0.001 0.001	0.001 0.001	0.02	0.009	0.001 0.001	0.001 0.001	
	1,2,3,6,7,8-HxCDD	0.04	0.018	0.002 0.002	0.05	0.022	0.002 0.002	0.002 0.002	0.02 U	0.009 U	0.000 0.001	0.000 0.001	
	1,2,3,7,8,9-HxCDD	0.53	0.237	0.002 0.002	0.18	0.078	0.001 0.001	0.001 0.001	0.15 J	0.064 J	0.001 0.001	0.001 0.001	
	1,2,3,4,6,7,8-HpCD	1.9	0.851	0.001 0.001	0.48 J	0.209 J	0.000 0.000	0.000 0.000	0.43	0.183	0.000 0.000	0.000 0.000	
	OCDD	0.02	0.009	0.001 0.001	0.02	0.009	0.001 0.001	0.001 0.001	0.02	0.009	0.001 0.001	0.001 0.001	
	2,3,7,8-TCDF	0.03	0.013	0.001 0.001	0.03	0.013	0.001 0.001	0.001 0.001	0.01 U	0.004 U	0.000 0.000	0.000 0.000	
	1,2,3,7,8-PCDF	0.04 J	0.018 J	0.009 0.009	0.05	0.022	0.011 0.011	0.011 0.011	0.04 J	0.017 J	0.009 0.009	0.009 0.009	
	2,3,4,7,8-PCDF	0.09 J	0.040 J	0.004 0.004	0.1 J	0.043 J	0.004 0.004	0.004 0.004	0.07 J	0.030 J	0.003 0.003	0.003 0.003	
	1,2,3,4,7,8-HxCDF	0.04	0.018	0.002 0.002	0.04	0.017	0.002 0.002	0.002 0.002	0.02	0.009	0.001 0.001	0.001 0.001	
	1,2,3,6,7,8-HxCDF	0.05	0.022	0.002 0.002	0.05	0.022	0.002 0.002	0.002 0.002	0.05	0.021	0.002 0.002	0.002 0.002	
	2,3,4,6,7,8-HxCDF	0.02 U	0.009 U	0.000 0.001	0.03 U	0.013 U	0.000 0.001	0.000 0.001	0.02 U	0.009 U	0.000 0.001	0.000 0.001	
	1,2,3,7,8,9-HxCDF	0.15	0.067	0.001 0.001	0.43	0.057	0.001 0.001	0.001 0.001	0.08	0.034	0.000 0.000	0.000 0.000	
	1,2,3,4,6,7,8-HpCD	0.03 U	0.013 U	0.000 0.000	0.04 U	0.017 U	0.000 0.000	0.000 0.000	0.02	0.009	0.000 0.000	0.000 0.000	
	1,2,3,4,7,8,9-HpCD	0.1 J	0.045 J	0 0.000	0.06	0.026	0 0.000	0 0.000	0.07 J	0.030 J	0 0.000	0 0.000	
	OCDF	0.026	0.042	0.026 0.042	0.026	0.044	0.026 0.044	0.026 0.044	0.017	0.029	0.017 0.029	0.017 0.029	
	EPA TEQ Load (mg/day)												

Ave. of 3 runs (mg TEQ/day)
 <DL=0:
 <DL=1/2DL:
 <DL=DL:

Test Conditions
 sample volume (dscf) 152.91
 Ave. stack volumetric flowrate (dscf/min) 47,580

148.89
 43,970

160.04
 48,330

0.023
0.031
0.039

Tacoma City Light Steam Plant No. 2 (page 1 of 2)

Facility Sample Name Lab Sample ID Date	Tacoma City Light Steam Plant No. 2 Twin City Testing						Tacoma City Light Steam Plant No. 2 Twin City Testing							
	Run 1 10/8-9/90		Run 2 10/8-9/90		Run 3 10/8-9/90		Run 1 8/2/91		Run 2 8/2/91		Run 3 8/2/91			
	Value (ng/min) Q	TEQ (ng/min) <DL= DL	Value (ng/min) Q	TEQ (ng/min) <DL= DL	Value (ng/min) Q	TEQ (ng/min) <DL= DL	Value (ng/min) Q	TEQ (ng/min) <DL= DL	Value (ng/min) Q	TEQ (ng/min) <DL= DL	Value (ng/min) Q	TEQ (ng/min) <DL= DL		
TCDF	13.2	13.20	20.2	20.20	7.4	7.40	7.53	0.000	3.59	0.000	3.590	3.88	0.000	3.880
1,2,3,7,8-PCDD	27.2	0.00	53.4	26.70	17.5	8.75	3.22	0.000	6.21	0.000	3.105	2.31	0.000	1.155
1,2,3,4,7,8-HxCDD	24.6	2.46	51.5	5.15	19.3	1.93	1.95	0.000	2.21	0.000	0.221	2.24	0.000	0.224
1,2,3,6,7,8-HxCDD	35.1	3.51	71.8	7.18	33.1	3.31	2.83	0.000	2.28	0.228	0.228	5.3	0.000	0.510
1,2,3,7,8,9-HxCDD	27.2	2.72	41.4	4.14	17.5	1.75	2.87	0.000	4.28	0.000	0.428	1.9	0.190	0.190
1,2,3,4,6,7,8-HpCDD	219.2	2.19	469.4	4.69	331.1	3.31	22.6	0.226	23.5	0.235	0.235	19.0	0.190	0.190
OCDD	377.1	0.38	487.8	0.49	588.6	0.59	116.3	0.116	124.2	0.124	0.124	95.2	0.095	0.095
2,3,7,8-TCDF	149.1	14.91	294.5	29.45	101.2	10.12	13	1.300	15.2	1.520	1.520	12.2	1.220	1.220
1,2,3,7,8-PCDF	105.2	5.26	165.7	8.29	90.1	4.51	3.01	0.000	10.35	0.000	0.518	2.24	0.000	0.112
2,3,4,7,8-PCDF	149.1	74.55	239.3	119.65	128.8	64.40	3.22	0.000	3.79	0.000	1.895	1.97	0.000	0.985
1,2,3,4,7,8-HxCDF	105.2	10.52	71.8	0.00	44.1	4.41	1.16	0.000	1.38	0.000	0.138	2.92	0.000	0.292
1,2,3,6,7,8-HxCDF	114	11.40	84.7	0.00	51.5	5.15	0.62	0.000	2.21	0.000	0.221	1.22	0.000	0.122
2,3,4,6,7,8-HxCDF	149.1	14.91	119.6	11.96	73.6	7.36	0.89	0.000	0.76	0.000	0.076	1.36	0.000	0.136
1,2,3,7,8,9-HxCDF	13.2	1.32	22.1	2.21	13.8	1.38	2.39	0.239	1.59	0.159	0.159	2.45	0.245	0.245
1,2,3,4,6,7,8-HpCDF	420.9	4.21	202.5	2.03	14.7	0.00	5.2	0.000	5.11	0.000	0.051	6.8	0.000	0.068
1,2,3,4,7,8,9-HpCDF	29.8	0.30	28.5	0.00	119.8	1.20	9.49	0.000	1.86	0.000	0.019	0.95	0.000	0.019
OCDF	75.4	0.08	51.7	0.06	31.3	0.03	4.79	0.000	7.59	0.008	0.008	6.26	0.000	0.006
EPA TEQ (ng/min)	161.91	175.51	242.19	258.13	120.44	125.74	1.881	13.825	2.274	12.53	0.000	1.940	9.440	
TEQ Production Rate (mg/d) Ave. of 3 runs (mg TEQ/day)	0.23	0.25	0.35	0.37	0.17	0.18	0.0027	0.020	0.0033	0.0181		0.0028	0.014	

0.252
0.260
0.269

0.0029
0.010
0.017

<DL=0:
<DL=1/2DL:
<DL=DL:

Tacoma City Light Steam Plant No. 2 (page 2 of 2)

Facility Sample Name Lab Sample ID Date	Tacoma City Light Steam Plant No. 2 Twin City Testing											
	Tacoma City Light Steam Plant No. 2 Twin City Testing				Tacoma City Light Steam Plant No. 2 Twin City Testing				Tacoma City Light Steam Plant No. 2 Twin City Testing			
	Run 1 December 11-12, 1991		Run 2 December 11-12, 1991		Run 3 December 11-12, 1991		Run 1 3/20-23/92		Run 2 3/20-23/92		Run 3 3/20-23/92	
	Value (ng/min)	TEQ (ng/min) <DL= Q	Value (ng/min)	TEQ (ng/min) <DL= Q	Value (ng/min)	TEQ (ng/min) <DL= Q	Value (ng/min)	TEQ (ng/min) <DL= Q	Value (ng/min)	TEQ (ng/min) <DL= Q	Value (ng/min)	TEQ (ng/min) <DL= Q
Congener	8.72 U	0.000	4.94	4.940	192.7 U	0.000	33.4 U	0.000	13.3 U	0.000	10.6 U	0.000
TEF	6.85	3.425	3.99 U	1.995	8.35	4.175	12	6.000	12.6	6.300	7.81	3.905
1,2,3,7,8-PeCDD	0.5	0.295	2.85 U	0.285	2.95	0.295	11.4	1.140	6.95	0.695	7.81	0.781
1,2,3,4,7,8-HxCDD	0.1	1.18	1.180	1.180	5.38	0.538	19.5	1.950	13.9	1.390	16.2	1.620
1,2,3,6,7,8-HxCDD	0.1	5.36	0.536	0.536	3.42 U	0.000	13.2	1.320	13.3	1.330	14.4	1.440
1,2,3,7,8,9-HxCDD	0.1	68.5	0.685	0.685	48.1	0.481	50.7	0.507	107.4	1.074	126.1	1.261
1,2,3,4,6,7,8-HpCDD	0.01	249.2	0.249	0.249	205.5	0.205	378.5	0.379	297.0	0.297	336.3	0.336
OCDD	0.001	43 U	0.000	4.110	102.7 U	0.000	30.9 U	0.000	12.0	1.200	30 U	0.000
1,2,3,7,8-PeCDF	0.05	18.7	0.935	0.935	14.5	0.730	41.7	2.085	25.3 U	0.000	51.6 U	0.000
1,2,3,4,7,8-PeCDF	0.5	30.5 U	0.000	15.250	18.4	9.200	11.4	5.700	12.6	6.300	11.4	5.700
1,2,3,4,7,8-HxCDF	0.1	8.72	0.872	0.872	6.20	0.620	14.1	1.410	6.26	0.626	10.2	1.020
1,2,3,6,7,8-HxCDF	0.1	9.350	0.935	0.935	5.57	0.557	13.5	1.350	3.92	0.392	13.2 U	0.000
2,3,4,6,7,8-HxCDF	0.1	2.18 U	0.000	0.218	1.14 U	0.000	42.9 U	0.000	5.88 U	0.000	21.6 U	0.000
1,2,3,7,8,9-HxCDF	0.1	8.72	0.872	0.872	5.63	0.563	12.8	1.280	5.24	0.524	9.01	0.901
1,2,3,4,6,7,8-HpCDF	0.01	13.7	0.137	0.137	18.4	0.184	24.6	0.246	22.7	0.227	21.6	0.216
1,2,3,4,7,8,9-HpCDF	0.01	6.85 U	0.000	0.069	4.56 U	0.000	5.61 U	0.000	7.58 U	0.000	10.2 U	0.000
OCDF	0.001	15.0	0.015	0.015	19.3	0.019	17.7	0.018	14.5	0.015	13.8	0.014
EPA TEQ (ng/min)	10.140	38.697	18.036	24.928	38.035	151.767	18.087	62.430	20.37	40.60	17.19	37.16
TEQ Production Rate (mg/d)	0.015	0.056	0.026	0.036	0.055	0.219	0.026	0.090	0.029	0.058	0.025	0.054

0.032
0.068
0.103

0.027
0.047
0.067

<DL=0:
<DL=1/2DL:
<DL=DL:

Veteran's Administrative Medical Center

Veteran's Administrative Medical Center Medical Waste Incinerator

Facility

Lab

Sample Name

Date

Units

Congener

	Run 1 1/23-25/95		Run 2 1/23-25/95		Run 3 1/23-25/95	
	ng/dscm	ng TEQ/min	ng/dscm	ng TEQ/min	ng/dscm	ng TEQ/min
TEF						
2,3,7,8-TCDD	0.49	34.30	0.068	5.30	0.051	3.81
1,2,3,7,8-PCDD	0.279	19.53	0.494	38.51	0.337	25.16
1,2,3,4,7,8-HxCDD	0.472	33.04	0.658	51.30	0.569	42.49
1,2,3,6,7,8-HxCDD	1.61	112.69	1.87	145.78	1.48	110.51
1,2,3,7,8,9-HxCDD	0.623	43.61	0.926	72.19	0.696	51.97
1,2,3,4,6,7,8-HpCDD	15	1049.93	16.7	1301.91	13.7	1023.00
OCDD	51.5	3604.77	37	2884.46	29.5	2202.80
2,3,7,8-TCDF	0.451	31.57	0.473	36.87	0.548	40.92
1,2,3,7,8-PCDF	0.945	66.15	1.23	95.89	0.928	69.29
2,3,4,7,8-PCDF	2.79	195.29	3.29	256.48	2.11	157.56
1,2,3,4,7,8-HxCDF	3.22	225.39	4.53	353.15	3.16	235.96
1,2,3,6,7,8-HxCDF	4.08	285.58	5.76	449.04	4.01	299.43
2,3,4,6,7,8-HxCDF	11.6	811.95	14.4	1122.60	10.8	806.45
1,2,3,7,8,9-HxCDF	1.95	136.49	2.67	208.15	2.11	157.56
1,2,3,4,6,7,8-HpCDF	27.9	1952.87	39.1	3048.18	31.6	2359.61
1,2,3,4,7,8,9-HpCDF	5.8	405.97	7.82	609.64	5.9	440.56
OCDF	30.1	2106.86	28.8	2245.21	27.4	2045.99

EPA TEQ (ng/min)

352.84

456.23

315.6

TEQ load (mg/day)

0.508

0.657

0.455

Average load from 3 runs (mg/day):

<DL=0 0.540

<DL=1/2DL 0.540

<DL=DL 0.540

Weyerhaeuser Paper Company, Cosmopolis

Weyerhaeuser Paper Company, Cosmopolis

Facility
Lab

Sample Name
Sample Number
Date

001-comp.
228241
5/29-30/1991

002-comp.
238246
5/29-30/1991

Units
Congener

pg/L Q (<DL=0) TEQ pg/L (<DL=DL)

pg/L Q (<DL=0) TEQ pg/L (<DL=DL)

TEF

1,2,3,7,8-TCDD	1	2 U	0	2	2.1 U	0	2.1
1,2,3,7,8-PCDD	0.5	1.4 U	0	0.7	1.4 U	0	0.7
1,2,3,4,7,8-HxCDD	0.1	1.1 U	0	0.11	1.6 U	0	0.16
1,2,3,6,7,8-HxCDD	0.1	1.1 U	0	0.11	2.9 U	0	0.29
1,2,3,7,8,9-HxCDD	0.1	1.5 U	0	0.15	1.7 U	0	0.17
1,2,3,4,6,7,8-HpCD	0.01	10 U	0	0.1	6.7 U	0	0.067
OCDD	0.001	70 U	0	0.07	40 U	0	0.04
2,3,7,8-TCDF	0.1	3.7 U	0	0.37	2.1 U	0	0.21
1,2,3,7,8-PCDF	0.05	0.25 U	0	0.0125	1 U	0	0.05
2,3,4,7,8-PCDF	0.5	1.8 U	0	0.9	2 U	0	1
1,2,3,4,7,8-HxCDF	0.1	1.1 U	0	0.11	0.85 U	0	0.085
1,2,3,6,7,8-HxCDF	0.1	1.1 U	0	0.11	1 U	0	0.1
2,3,4,6,7,8-HxCDF	0.1	4.9 U	0	0.49	5.4 U	0	0.54
1,2,3,7,8,9-HxCDF	0.1	2 U	0	0.2	1.6 U	0	0.16
1,2,3,4,6,7,8-HpCD	0.01	3.6 U	0	0.036	3.9 U	0	0.039
1,2,3,4,7,8,9-HpCD	0.01	1.5 U	0	0.015	3.5 U	0	0.035
OCDF	0.001	4.6 U	0	0.0046	6.6 U	0	0.0066
EPA TEQ (pg/L)		0	0	5.4881	0	0	5.7526
Flow (MGD)		32.22	32.22		4.5	4.5	
TEQ load (mg/D)		0.000	0.669		0.000	0.098	

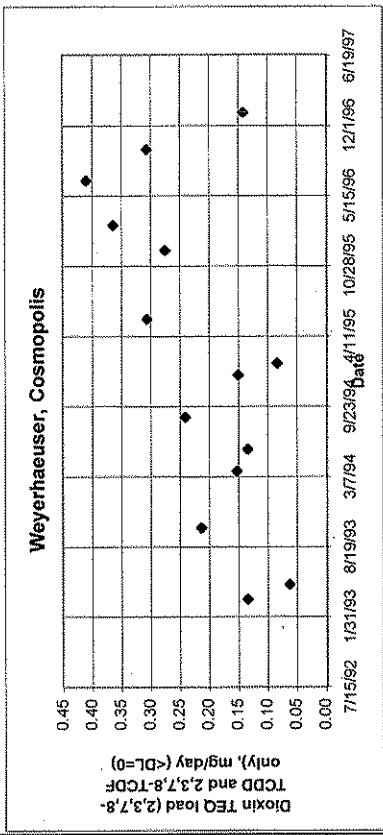
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<DL=DL 0.098

Weyerhaeuser, Cosmopolis - Wastewater (2,3,7,8-TCDD and 2,3,7,8-TCDF only)

Date	2,3,7,8-TCDD TEF = 1		2,3,7,8-TCDF TEF = 0.1		Flow (MGD)	TEQ Load (mg/day)		
	Value (ppq)	TEQ (ppq) <DL =	Value (ppq)	TEQ (ppq) <DL =		0	1/2 DL	DL
3/22/93	1 U	0	1	1.5	23.6	0.13	0.18	0.22
5/3/93	3 U	0	3	0.7	23.5	0.06	0.20	0.33
10/12/93	1 U	0	1	2.1	26.8	0.21	0.26	0.31
12/21/94	1 U	0	1	1.6	24.8	0.15	0.20	0.24
3/23/94	2 U	0	2	1.7	23.7	0.15	0.24	0.33
5/24/94	2 U	0	2	1.6	22.1	0.13	0.22	0.30
8/23/94	6 U	0	6	2.5	25.4	0.24	0.53	0.82
1/24/95	1 U	0	1	1	22	0.08	0.12	0.17
5/30/95	2 U	0	2	3.4	23.8	0.31	0.40	0.49
12/12/95	1 U	0	1	2.8	25.9	0.27	0.32	0.37
2/21/96	1 U	0	1	4.2	22.9	0.36	0.41	0.45
6/27/96	3 U	0	3	4.6	23.52	0.41	0.54	0.68
9/24/96	3 U	0	3	4	20.27	0.31	0.42	0.54
1/7/97	1 U	0	1	1.5	24.88	0.14	0.19	0.24
Low						0.06	0.12	0.17
Average						0.21	0.30	0.39
High						0.41	0.54	0.82
Count						14		

Weyerhaeuser, Cosmopolis - "Pond D Effluent"



Weyerhaeuser, Longview - Air Emissions

Facility		Weyerhaeuser Longview			
Sample Name	Lab	CPC #3 Stack		Weyerhaeuser	
Sample ID	Date	Test #2 (fuel = wood + coal)			
		7/25/90			
		Value	Value	TEQ (mg/day)	
		(pg/sample)	Q (mg/day)	Q	<DL=
				0	1/2 DL
					DL
TEF					
2,3,7,8-TCDD	1	1.4 U	0.005 U	0.000	0.005
1,2,3,7,8-PCDD	0.5	2.3 U	0.008 U	0.000	0.004
1,2,3,4,7,8-HxCDD	0.1	15 U	0.054 U	0.000	0.005
1,2,3,6,7,8-HxCDD	0.1	15 U	0.054 U	0.000	0.005
1,2,3,7,8,9-HxCDD	0.1	15 U	0.054 U	0.000	0.005
1,2,3,4,6,7,8-HpCDD	0.01	43	0.156	0.002	0.002
OCDD	0.001	370	1.342	0.001	0.001
2,3,7,8-TCDF	0.1	71	0.258	0.026	0.026
1,2,3,7,8-PCDF	0.05	14	0.051	0.003	0.003
2,3,4,7,8-PCDF	0.5	26	0.094	0.047	0.047
1,2,3,4,7,8-HxCDF	0.1	31	0.112	0.011	0.011
1,2,3,6,7,8-HxCDF	0.1	30	0.109	0.011	0.011
2,3,4,6,7,8-HxCDF	0.1	2 U	0.007 U	0.000	0.001
1,2,3,7,8,9-HxCDF	0.1	21	0.076	0.008	0.008
1,2,3,4,6,7,8-HpCDF	0.01	27 U	0.010 U	0.000	0.000
1,2,3,4,7,8,9-HpCDF	0.01	27 U	0.010 U	0.000	0.000
OCDF	0.001	10	0.036	0	0.000
EPA TEQ Load (mg/day)				0.11	0.12
					0.13

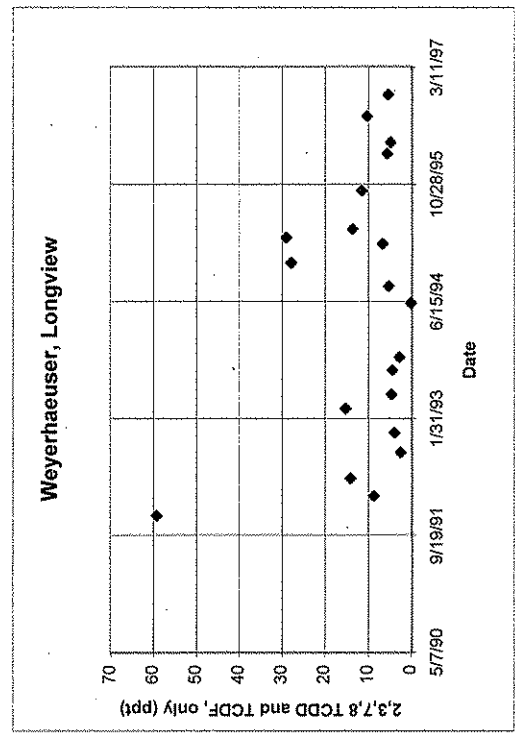
Test Conditions
 sample volume (dscf) 80.41
 Ave. stack volumetric flowrate (dscf/min) 202,548

Weyerhaeuser, Longview - Wastewater (2,3,7,8-TCDD and 2,3,7,8-TCDF only)

Date	2,3,7,8-TCDD TEF = 1		2,3,7,8-TCDF TEF = 0.1		Flow (MGD)	TEQ Load (mg/day) <DL=			Comment
	Value (ppq)	TEQ (ppq) <DL =	Value (ppq)	TEQ (ppq) <DL =		0	1/2	DL	
Weyerhaeuser, Longview - "Secondary effluent"									
12/12/91	3 U	0	14	1.4	60.0	0.32	0.66	1.00	Estimated flow - actual flow not in files
3/5/92	3 U	0	3 U	0	58.9	0.00	0.37	0.74	
5/19/92	4 U	0	14	1.4	56.1	0.30	0.72	1.15	
9/8/92	1 U	0	1 U	0	60.6	0.00	0.13	0.25	
11/30/92	3 U	0	2 U	0	60.0	0.00	0.36	0.73	
1/25/93	1 U	0	14	1.4	66.2	0.35	0.48	0.60	
3/14/93	1 U	0	1 U	0	62.6	0.00	0.13	0.26	
5/14/93	1 U	0	2	0.2	66.3	0.05	0.18	0.30	
8/24/93	1 U	0	4	0.4	67.9	0.10	0.23	0.36	
10/19/93	1 U	0	7	0.7	63.4	0.17	0.29	0.41	
6/7/94	5 U	0	5	0.5	61.5	0.12	0.70	1.28	
8/19/94	3 U	0	6	0.6	65.0	0.15	0.52	0.89	
11/26/94	4 U	0	9	0.9	65.0	0.22	0.71	1.21	
2/15/95	5 U	0	12	1.2	65.0	0.30	0.91	1.53	
2/15/95	4 U	0	13	1.3	65.0	0.32	0.81	1.30	
2/15/95	(Average TEQ of duplicates)					0.31	0.86	1.41	
3/14/95	2 U	0	1.5	0.15	65.0	0.0369	0.28	0.53	
3/14/95	4 U	0	4 U	0	65.0	0.00	0.54	1.08	
3/14/95	(Average TEQ of duplicates)					0.02	0.41	0.81	
4/19/95	2 U	0	10	1	69.0	0.26	0.52	0.78	
4/19/95	3 U	0	9	0.9	69.0	0.24	0.63	1.02	
4/19/95	(Average TEQ of duplicates)					0.25	0.57	0.90	
9/30/95	4 U	0	8	0.8	47.2	0.14	0.50	0.86	
9/30/95	4 U	0	5	0.5	47.2	0.09	0.45	0.80	
9/30/95	(Average TEQ of duplicates)					0.12	0.47	0.83	
3/6/96	2 U	0	2	0.2	44.4	0.03	0.20	0.37	
3/6/96	2 U	0	3	0.3	44.4	0.05	0.22	0.39	
3/6/96	(Average TEQ of duplicates)					0.04	0.21	0.38	
4/24/96	1 U	0	6	0.6	46.1	0.10	0.19	0.28	
4/24/96	1 U	0	6	0.6	46.1	0.10	0.19	0.28	
4/24/96	(Average TEQ of duplicates)					0.10	0.19	0.28	
8/13/96	4 U	0	7	0.7	48.0	0.13	0.49	0.85	
8/13/96	2 U	0	7	0.7	48.0	0.13	0.31	0.49	
8/13/96	(Average TEQ of duplicates)					0.13	0.40	0.67	
11/13/96	2 U	0	4	0.4	46.0	0.07	0.24	0.42	
11/13/96	2 U	0	6	0.6	46.0	0.10	0.28	0.45	
11/13/96	(Average TEQ of duplicates)					0.09	0.26	0.44	
Low						0.00	0.00	0.00	
Average						0.13	0.13	0.13	
High						0.35	0.35	0.35	
Count						21			

Weyerhaeuser, Longview - Sludge (2,3,7,8-TCDD and 2,3,7,8-TCDF only)

Date	2,3,7,8-TCDD TEF = 1		2,3,7,8-TCDF TEF = 0.1		2,3,7,8-TCDD+2,3,7,8-TCDF, only	
	Value (ppt)	TEQ (ppt) <DL =	Value (ppt)	TEQ (ppt) <DL =	0	1/2 DL DL
Weyerhaeuser, Longview - "Combined Effluent Sludge"						
12/12/91	50	50	92	9.2	59.2	59.2
3/5/92	22 U	0	86	8.6	8.6	30.6
5/19/92	5.3 U	0	140	14	14	19.3
9/8/92	2.7 U	0	24.1	2.41	2.41	5.11
11/30/92	2.4 U	0	38	3.8	3.8	6.2
3/14/93	8.74	8.74	64.3	6.43	15.17	15.17
5/14/93	0.6 U	0	45.2	4.52	4.52	5.12
8/24/93	0.67 U	0	43.4	4.34	4.34	5.01
10/19/93	0.49 U	0	27.3	2.73	2.73	3.22
6/7/94	5.1 U	0	3.5 U	0	0	5.45
8/19/94	4.83 U	0	52	5.2	5.2	10.03
11/26/94	22.4	22.4	54.6	5.46	27.86	27.86
2/15/95	8 U	0	65.7	6.57	6.57	14.57
3/14/95	23.4	23.4	55.3	5.53	28.93	28.93
4/19/95	9.32	9.32	42.7	4.27	13.59	13.59
9/30/95	4.8 U	0	114	11.4	11.4	16.2
3/6/96	3.9 U	0	55.5	5.55	5.55	9.45
4/24/96	2 U	0	47.4	4.74	4.74	6.74
8/13/96	3 U	0	102	10.2	10.2	13.2
11/13/96	4.37 U	0	53.4	5.34	5.34	9.71
Mean TEQ (ng/kg)			11.71	11.71	11.71	15.23
Production Rate (Oven-dried tons/day)			165	165	165	165
TEQ load (mg/day)			1.76	1.76	2.02	2.28



Citation for mass rate:
 Weyerhaeuser Co., 1991. Supplemental Environmental checklist for the Weyerhaeuser Longview Kraft Mill Modernization Project, November 1991.
 This number is a predicted estimate.