

US EPA ARCHIVE DOCUMENT

	B	C
1	Source Description	
2		
3	Phase I ID No.	3028
4	EPA ID No.	TXD981911209
5	Facility Name	Oxy Vinyls, LP VCM Incinerator
6	Facility Location	
7	City	Deer Park
8	State	TX
9	Unit ID Name/No.	VCM HCIN 3 Incinerator
10	Other Sister Facilities	VCM HCIN 2 Incinerator (identical, data in lieu)
11	Number of Sister Facilities	1
12	Combustor Class	Onsite incinerator
13	Combustor Type	Liquid injection
14	Combustor Characteristics	BIGELOW-LIPTAK custom design, comb chamber w/waste heat fire tube boiler
15		
16	Capacity (MMBtu/hr)	
17	Soot Blowing	
18	APCS Detailed Acronym	WHB/WQ/PB/SC/KO
19	APCS General Class	WHB, WQ, LEWS
20	APCS Characteristics	Water quench, packed bed, 2 spray columns, knockout pot (WQ/PB are for recovery of 10% HCl)
21	Hazardous Wastes	Liq
22	Haz Waste Description	90+% is vinyl chloride monomer (VCM)
23	Supplemental Fuel	Misc fuel
24		Fuel gas
25		
26	Stack Characteristics	
27	Diameter (ft)	1.42
28	Height (ft)	
29	Gas Velocity (ft/sec)	76.0
30	Gas Temperature (°F)	81
31		
32	Permitting Status	RCRA
33	HWC Burn Status (Date if Terminated)	

	B	C
1	Condition Description	
2		
3	3028C1	3028C1
4		
5	Report Name/Date	Trial Burn Report, Oxy Vinyls, LP Houston Chemical Complex, Deer Park - VCM Site Organic Chloride Incinerators HCIN2 & HCIN3 Haz Waste Permit App., May 1999
6	Report Prepare	Focus Environmental Inc.
7	Testing Firm	METCO Environmental
8	Testing Dates	January 30, 1999
9	Cond Dates	Jan-99
10	Condition Descr	Trial burn - min temp/DRE
11	Content	DRE, VPICs, CO
12		
13	3028C2	3028C2
14		
15	Report Name/Date	Trial Burn Report, Oxy Vinyls, LP Houston Chemical Complex, Deer Park - VCM Site Organic Chloride Incinerators HCIN2 & HCIN3 Haz Waste Permit App., May 1999
16	Report Prepare	Focus Environmental Inc.
17	Testing Firm	METCO Environmental
18	Testing Dates	February 1-2, 1999
19	Cond Dates	Feb-99
20	Condition Descr	Trial burn - worst-case PM/HCl/metals; As/Cr spiked
21	Content	PM, HCl/Cl ₂ , metals (As/Cr), Cr ₆ , CO & waste feed ash/Cl/metals
22		
23	3028C3	3028C3
24		
25	Report Name/Date	Trial Burn Report, Oxy Vinyls, LP Houston Chemical Complex, Deer Park - VCM Site Organic Chloride Incinerators HCIN2 & HCIN3 Haz Waste Permit App., May 1999
26	Report Prepare	Focus Environmental Inc.
27	Testing Firm	METCO Environmental
28	Testing Dates	January 27-29, 1999
29	Cond Dates	Jan-99
30	Condition Descr	Risk burn (Slightly higher than annual median waste feedrate)
31	Content	Metals, D/Fs, CO, Cr ₆ , PSD, V/SV PICs, feed metals/ash/Cl

	B	C	D	E	F	G	H	I	J	K	L	M
1	Stack Gas Emissions 1											
2												
3		Comments	Units	7% O2								
4												
5												
6	3028C1	Trial burn - min temp/DRE				R1		R2		R3		Cond Avg
7												
8	CO (RA)	E1	ppmv	y		0		0		0		0.0
9	CO (MHRA)	E1	ppmv	y		0		0		0		0.0
10												
11	PM	E1	gr/dscf	y		0.0076		0.0079		0.009		0.0082
12												
13	POHC	Chlorobenzene										
14	POHC Feedrate		lb/hr			56.64		53.13		44.4		
15	Emission Rate	E1	lb/hr		nd	3.56E-04	nd	3.31E-04	nd	3.30E-04		
16	DRE	E1	%		>	99.9994	>	99.9994	>	99.9993		
17												
18	POHC	Tetrachloroethene										
19	POHC Feedrate		lb/hr			58.05		66.87		61.42		
20	Emission Rate	E1	lb/hr			1.50E-04		7.92E-05		8.24E-05		
21	DRE	E1	%			99.9997		99.9999		99.9999		
22												
23	Sampling Train	PM	E1									
24	Stack Gas Flowrate		dscfm			11237		11377		11426		11347
25	O2		%			12.4		12.4		12.2		12.3
26	Moisture		%			3.39		4.01		3.89		4
27	Temperature		°F			81		81		82		81
28												
29	3028C2	Trial burn - worst-cas				R1		R2		R3		Cond Avg
30												
31	CO (RA)	E1	ppmv	y		7		3		23		11.0
32	CO (MHRA)	E1	ppmv	y		8		14		85		35.7
33												
34	PM	E1	gr/dscf	y		0.034		0.028		0.026		0.0293
35												
36	HCl		ppm	n		183		149		151		
37	Cl2		ppm	n		1.8		5.4		1.6		
38												
39	HCl	E1	ppmv	y		177		146		145		156
40	Cl2	E1	ppmv	y		2		5		1		3
41	Total chlorine	E1	ppmv	y		180		155		148		161
42												
43	Arsenic	E1	ug/dscm	y	nd	32	nd	24		24		19
44	Chromium	E1	ug/dscm	y		326		309		468		368
45	Chromium (Hex)		ug/dscm	n		241		130		229		200
46	Chromium (Hex)	E1	ug/dscm	y		232		127		220		193
47	LVM	E1	ug/dscm	y		358		333		492		394
48												
49	Sampling Train		PM/HCl/Cl E1									
50	Stack Gas Flowrate		dscfm			6177		6330		6295		6267
51	O2		%			6.5		6.7		6.4		6.5
52	Moisture		%			5.4		5.17		5.17		5.2
53	Temperature		°F			92		94		93		93
54												
55												
56	3028C3	Risk burn (Slightly hi				R1		R2		R3		Cond Avg
57												
58	CO (RA)	E1	ppmv	y		0.2		1		0		0
59	CO (MHRA)	E1	ppmv	y		0.4		38		43		35.7
60												
61	Aluminum		ug/dscm	n		392		397		397		
62	Antimony		ug/dscm	n	nd	9.9	nd	12	nd	13		
63	Arsenic		ug/dscm	n	nd	4.3	nd	4.4	nd	4.4		
64	Barium		ug/dscm	n		34		3.4		34		
65	Beryllium		ug/dscm	n	nd	0.22	nd	0.22	nd	0.07		
66	Cadmium		ug/dscm	n	nd	0.42		0.62	nd	0.5		
67	Chromium		ug/dscm	n		7.8		6.9		7.0		
68	Chromium (Hex)		ug/dscm	n		25.9		42.9		33.8		
69	Cobalt		ug/dscm	n	nd	2.2	nd	2.2	nd	0.7		
70	Copper		ug/dscm	n		161		149		148		
71	Iron		ug/dscm	n		2106		2020		1828		

	B	C	D	E	F	G	H	I	J	K	L	M
72	Lead		ug/dscm	n	nd	4.3	nd	4.4	nd	4.4		
73	Magnesium		ug/dscm	n		211		214	nd	215		
74	Manganese		ug/dscm	n		32		30		32		
75	Mercury		ug/dscm	n	nd	0.28	nd	0.28	nd	0.33		
76	Molybdenum		ug/dscm	n	nd	8.9	nd	8.5		8.6		
77	Nickel		ug/dscm	n	nd	155	nd	138		138		
78	Selenium		ug/dscm	n	nd	13	nd	13	nd	13		
79	Silver		ug/dscm	n	nd	2.2	nd	2.2	nd	2.21		
80	Thallium		ug/dscm	n	nd	13	nd	13	nd	13		
81	Vanadium		ug/dscm	n	nd	1.1	nd	1.1	nd	1.1		
82	Zinc		ug/dscm	n		55		13		42		
83												
84	Sampling Train	Metals	E1									
85	Stack Gas Flowrate		dscfm			9730		9715		9494		9646
86	O2		%			8.3		9.3		8.9		9
87	Moisture		%			6.68		6.87		6.8		7
88	Temperature		°F			99		100		101		100
89												
90	Sampling Train	Cr+6	E2									
91	Stack Gas Flowrate		dscfm			9769		9614		9563		9649
92	O2		%			8.3		9.3		8.9		9
93	Moisture		%			7		9		6.5		8
94	Temperature		°F			99		100		100		100
95												
96	Aluminum	E1	ug/dscm	y		432		475		459		455
97	Antimony	E1	ug/dscm	y	nd	11	nd	15	nd	14	100	13
98	Arsenic	E1	ug/dscm	y	nd	5	nd	5	nd	5	100	5
99	Barium	E1	ug/dscm	y		38		4		40		27
100	Beryllium	E1	ug/dscm	y	nd	0.24	nd	0.26	nd	0.09	100	0.20
101	Cadmium	E1	ug/dscm	y	nd	0		1	nd	1		1
102	Chromium	E1	ug/dscm	y		9		8		8		8
103	Chromium (Hex)	E2	ug/dscm	y		29		51		39		40
104	Cobalt	E1	ug/dscm	y	nd	2	nd	3	nd	1	100	2
105	Copper	E1	ug/dscm	y		178		178		171		176
106	Iron	E1	ug/dscm	y		2321		2417		2116		2284
107	Lead	E1	ug/dscm	y	nd	5	nd	5	nd	5	100	5
108	Magnesium	E1	ug/dscm	y		232		256	nd	248		245
109	Manganese	E1	ug/dscm	y		35		36		37		36
110	Mercury	E1	ug/dscm	y	nd	0.31	nd	0.34	nd	0.38	100	0.34
111	Molybdenum	E1	ug/dscm	y	nd	10	nd	10		10	100	10
112	Nickel	E1	ug/dscm	y	nd	171	nd	165		160		165
113	Selenium	E1	ug/dscm	y	nd	14	nd	16	nd	15	100	15
114	Silver	E1	ug/dscm	y	nd	2	nd	3	nd	3	100	3
115	Thallium	E1	ug/dscm	y	nd	14	nd	16	nd	15	100	15
116	Vanadium	E1	ug/dscm	y	nd	1	nd	1	nd	1	100	1
117	Zinc	E1	ug/dscm	y		60		15		49		42
118												
119	SVM	E1	ug/dscm	y	100	5.2	100	6.0	100	5.7	100	6
120	LVM	E1	ug/dscm	y		14		14		13		14
121												
122	Note: Cr6 emissions are 476% of Total Cr emissions											

	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P	Q	R	S	T	U
1	Feedstream																			
2																				
3																				
4	3028C1																			
5	Feedstream Number																			
6	Feed Class																			
7	Feed Class 2																			
8	Feedstream Description																			
9	Feed Rate	lb/hr																		
10	Ash	%																		
11	Chlorine	%																		
12	Heating Value	Btu/lb																		
13	Ash	lb/hr																		
14	Chlorine	lb/hr																		
15	Thermal Feedrate	MMBtu/hr																		
16	Stack Gas Flowrate	dscfm																		
17	Oxygen	%																		
18																				
19																				
20																				
21	Feedrate MTEC Calculations																			
22	Ash	mg/dscm	y																	
23	Chlorine	ug/dscm	y																	
24																				
25	3028C2																			
26																				
27	Feedstream Number																			
28	Feed Class																			
29	Feed Class 2																			
30	Feedstream Description																			
31	Feed Rate	lb/hr																		
32	Ash	%																		
33	Chlorine	%																		
34	Heating Value	Btu/lb																		
35	Ash	lb/hr																		
36	Chlorine	lb/hr																		
37	Thermal Feedrate	MMBtu/hr																		
38																				
39	Antimony	g/hr																		
40	Arsenic	g/hr																		
41	Barium	g/hr																		
42	Beryllium	g/hr																		
43	Cadmium	g/hr																		
44	Chromium	g/hr																		
45	Lead	g/hr																		
46	Mercury	g/hr																		
47	Silver	g/hr																		
48	Thallium	g/hr																		
49																				
50	Stack Gas Flowrate	dscfm																		
51	Oxygen	%																		
52																				
53	Feedrate MTEC Calculations																			
54	Ash	mg/dscm	y																	
55	Chlorine	ug/dscm	y																	
56	Antimony	ug/dscm	y																	
57	Arsenic	ug/dscm	y																	
58	Barium	ug/dscm	y																	
59	Beryllium	ug/dscm	y																	
60	Cadmium	ug/dscm	y																	

B	C	D	E	F	G	H	I	J	K	L	M	N	O	P	Q	R	S	T	U	
61	Chromium	ug/dscm	y	100	20473	20740	21118	20777	20473	20740	21118	20777	20473	20740	21118	20777	20473	20740	21118	20777
62	Lead	ug/dscm	y	100	626	100	592	609	313	100	305	609	313	100	305	609	313	100	296	100
63	Mercury	ug/dscm	y	100	6	100	6	6	3	100	3	6	3	100	3	6	3	100	3	100
64	Silver	ug/dscm	y	100	313	100	296	306	156	100	155	306	156	100	155	306	156	100	148	100
65	Thallium	ug/dscm	y	100	1869	100	1767	1822	934	100	915	1822	934	100	915	1822	934	100	884	100
66																				
67	SVM	ug/dscm	y	100	689	100	651	670	689	100	671	670	689	100	671	670	689	100	651	100
68	LVM	ug/dscm	y	0	29802	0	26324	26968	0.1	29802	0.125	26968	0.1	29802	0.125	26968	0.125	26324	0.1	26968
69																				
70																				
71																				
72	3028C3																			
73																				
74	Feedstream Number																			
75	Feed Class																			
76	Feed Class 2																			
77	Feedstream Description																			
78	Feed Rate	lb/hr			4468	4488	4494	4483			4483									
79	Ash	%			0.04	0.03	0.08	0			0									
80	Chlorine	%			59.2	63	58.8	60.3			60.3									
81	Heating Value	Btu/lb			6590	6380	6610	6526.7			6526.7									
82	Ash	lb/hr			1.8	1.3	3.6	2.2			2.2									
83	Chlorine	lb/hr			2645.1	2827.4	2642.5	2705.0			2705.0									
84	Thermal Feedrate	MMBtu/hr			29.4	28.6	29.7	29.3			29.3									
85																				
86	Antimony	mg/kg		nd	3	3	3	3			3									
87	Arsenic	mg/kg			11	39	26	25.3			25.3									
88	Barium	mg/kg			0.7	0.2	10	3.6			3.6									
89	Beryllium	mg/kg		nd	0.2	0.2	4.7	1.7			1.7									
90	Cadmium	mg/kg		nd	0.4	0.4	0.4	0.4			0.4									
91	Chromium	mg/kg		nd	1.2	1.1	11	11			11									
92	Lead	mg/kg		nd	4	4	9	9			9									
93	Mercury	mg/kg		nd	0.04	0.04	0.04	0.04			0.04									
94	Silver	mg/kg		nd	0.5	0.5	0.5	0.5			0.5									
95	Thallium	mg/kg		nd	12	12	12	12			12									
96																				
97	Stack Gas Flowrate	dscfm			9730	9715	9494	9646			9646									
98	Oxygen	%			8.3	9.3	8.9	9			9									
99																				
100	Feedrate MTEC Calculations																			
101	Ash	mg/dscm	y		54	44	117	72			44									
102	Chlorine	ug/dscm	y		80124349	93113132	86103737	86447072			86447072									
103	Antimony	ug/dscm	y	100	406	100	439	429.58			429.58									
104	Arsenic	ug/dscm	y		1489	5764	3807	3687			3687									
105	Barium	ug/dscm	y		95	30	1464	529.55			529.55									
106	Beryllium	ug/dscm	y	100	27	100	688	248.29			248.29									
107	Cadmium	ug/dscm	y	100	54	100	59	57.28			57.28									
108	Chromium	ug/dscm	y		162	163	1611	645			645									
109	Lead	ug/dscm	y	100	541	100	1318	816.83			816.83									
110	Mercury	ug/dscm	y	100	5	100	6	5.73			5.73									
111	Silver	ug/dscm	y	100	68	100	73	71.60			71.60									
112	Thallium	ug/dscm	y	100	1624	100	1757	1718.31			1718.31									
113																				
114	SVM	ug/dscm	y	100	596	100	1376	874			874									
115	LVM	ug/dscm	y	1.6	1678	0.5	6106	4580			4580									

	B	C	D	E
1	Process Information			
2				
3	3028C1	Trial burn - mir		Cond Avg
4				
5	Comb Chamb Temp	°F		1785
6	Comb Chamb static pressure	in H2O		-0.67
7	Min caustic scrubber (2nd SC) recycle	gpm		384
8	Min caustic scrubber pH			8.6
9	VCM vent gas flow	kscfm		0.512
10				
11	3028C2	Trial burn - wor		Cond Avg
12				
13	Comb Chamb Temp	°F		2400
14	Comb Chamb static pressure	in H2O		-1.2
15	Min caustic scrubber (2nd SC) recycle	gpm		382
16	Min caustic scrubber pH			8.6
17	VCM vent gas flow	kscfm		
18				
19	3028C3	Risk burn (Slig		Cond Avg
20				
21	Comb Chamb Temp	°F		2164
22	Comb Chamb static pressure	in H2O		-1.57
23	Min caustic scrubber (2nd SC) recycle	gpm		382
24	Min caustic scrubber pH			8.6
25	VCM vent gas flow	kscfm		

A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P	Q	R
1	PCDD/PCDF																
2	N																
3	Facility Name and ID:	Oxy Vinyl Incinerator															
4	Condition ID:	3028C3 Risk burn (Slightly higher than annual median waste feedrate)															
5	Condition/Test Date:	Risk burn, Jan 27-29, 1999															
6																	
7																	
8																	
9																	
10																	
11	Detected in sample volume (pg)	1	nd														
12	2,3,7,8-TCDD	8		8.00	4.00	4.00	4.00	nd	7.5	7.50	3.75	3.75	nd	4.7	5	2	
13	Total TCDD	330	0	0	330	0	330	0	78	0.00	78	0.00	0	29	0	29	
14	1,2,3,7,8-PCDD	48	0.5	24.00	48.00	24.00	24.00	0	30	15.00	30.00	15.00	0	11	6	11	
15	Total PCDD	400	0	0	400	0	400	0	180	0.00	180	0.00	0	48	0	48	
16	1,2,3,4,7,8-HxCDD	200	0.1	20.00	200.00	20.00	20.00	0	160	16.00	160.00	16.00	0	70	7	70	
17	1,2,3,6,7,8-HxCDD	130	0.1	13.00	130.00	13.00	13.00	0	120	12.00	120.00	12.00	0	48	5	48	
18	1,2,3,7,8,9-HxCDD	220	0.1	22.00	220.00	22.00	22.00	0	210	21.00	210.00	21.00	0	83	8	83	
19	Total HxCDD	1300	0	0	1300	0	1300	0	1000	0.00	1000	0.00	0	440	0	440	
20	1,2,3,4,6,7,8-HpCDD	4700	0.01	47.00	4700.00	47.00	47.00	0	5500	55.00	5500.00	55.00	0	2300	23	2300	
21	Total HpCDD	8100	0	0	8100	0	8100	0	9200	0.00	9200	0.00	0	3800	0	3800	
22	OCDD	41000	0.001	41.00	41000.00	41.00	41.00	0	57000	57.00	57000	57.00	0	25000	25	25000	
23	2,3,7,8-TCDF	300	0.1	30.00	300.00	30.00	30.00	0	170	17.00	170	17.00	0	510	51	510	
24	Total TCDF	3200	0	0	3200	0	3200	0	1800	0.00	1800	0.00	0	720	0	720	
25	1,2,3,7,8-PCDF	620	0.05	31	620	31	31	0	350	17.50	350	17.50	0	130	7	130	
26	2,3,4,7,8-PCDF	700	0.5	350	700	350	350	0	430	215.00	430	215.00	0	160	80	160	
27	Total PCDF	9400	0	0	9400	0	9400	0	4800	0.00	4800	0.00	0	1800	0	1800	
28	1,2,3,4,7,8-HxCDF	6400	0.1	640	6400	640	640	0	4400	440.00	4400	440.00	0	1800	180	1800	
29	1,2,3,6,7,8-HxCDF	2600	0.1	260	2600	260	260	0	1900	190.00	1900	190.00	0	800	80	800	
30	2,3,4,6,7,8-HxCDF	2300	0.1	230	2300	230	230	0	2000	200.00	2000	200.00	0	750	75	750	
31	1,2,3,7,8,9-HxCDF	210	0.1	21	210	21	21	0	200	20.00	200	20.00	0	96	10	96	
32	Total HxCDF	25000	0	0	25000	0	25000	0	17000	0.00	17000	0.00	0	7200	0	7200	
33	1,2,3,4,6,7,8-HpCDF	41000	0.01	410	41000	410	410	0	47000	470.00	47000	470.00	0	20000	2000	20000	
34	1,2,3,4,7,8,9-HpCDF	7100	0.01	71	7100	71	71	0	10000	100.00	10000	100.00	0	4000	40	4000	
35	Total HpCDF	78000	0	0	78000	0	78000	0	92000	0.00	92000	0.00	0	38000	0	38000	
36	OCDF	150000	0.001	150	150000	150	150	0	240000	240.00	240000	240.00	0	90000	90	90000	
37	Gas sample volume (dscf)			109.24	109.24	109.24	109.24		116.88	116.88	116.88	116.88		120.31	120.31	120.31	
38	O2 (%)			8.00	8.00	8.00	8.00		8.3	8.3	8.3	8.3		8.8	8.8	8.8	
39	PCDD/PCDF (ng in sample)			2.368	316.7	2.364	2.364		2.093	423.1	2.089	2.089		167.0	167.0	0.89	
40	PCDD/PCDF (ng/dscm @ 7% O2)			0.825	110.333	0.824	0.824	0.4	0.70	140.99	0.70	0.70	0.5	56.30	56.30	0.30	
41	TEQ Cond Avg			0.61													
42	Total Cond Avg			102.5													