

US EPA ARCHIVE DOCUMENT

	B	C
1	<b>Source Description</b>	
2		
3	Phase II ID No.	2002
4	EPA ID No.	LAD008187080
5	Facility Name	Dow Chemical Co.
6	Facility Location	
7	City	Plaquemine
8	State	LA
9	Unit ID Name/No.	R-4
10	Other Sister Facilities	None
11	Number of Sister Facilities	0
12	Combustor Class	Liquid-fired boiler
13	Combustor Type	Liquid-fired
14	Combustor Characteristics	Multi pass firetube boiler
15	Capacity (MMBtu/hr)	45
16	Soot Blowing	?
17	APCS Detailed Acronym	Q/HCIABS/CWS
18	APCS General Class	WQ, LEWS
19	APCS Characteristics	Quench, HCl absorber, Cl2 wet scrubber. Water in HCl absorber, caustic sodium hydroxide in Cl2 scrubber
20	Hazardous Wastes	Liq
21	Haz Waste Description	Liquid/gaseous wastes (propylene dichloride plant wastes, crude PDC)
22	Supplemental Fuel	Natural gas
23		
24	Stack Characteristics	
25	Diameter (ft)	2.5
26	Height (ft)	40
27	Gas Velocity (ft/sec)	
28	Gas Temperature (°F)	
29		
30	Permitting Status	Tier I for all metals
	HWC Burn Status (Date if Terminated)	
31		

	B	C
1	<b>Cond Description</b>	
2		
3	<b>2002C1</b>	
4		
5	Report Name/Date	Trial Burn Report, Glycol I Plant, Industrial Boiler R-4, Dow Chem., Louisiana Operations, Volume 1: Report, December 12, 1997
6	Report Prepar	Radian International
7	Testing Firm	Radian International
8	Testing Dates	August 13, 1997
9	Cond Dates	Aug-97
10	Cond Description	Trial burn; min comb chamber temperature
11	Content	PM, HCl/Cl <sub>2</sub> , DRE, CO
12		
13	<b>2002C2</b>	
14		
15	Report Name/Date	Trial Burn Report, Glycol I Plant, Industrial Boiler R-4, Dow Chem., Louisiana Operations, Volume 1: Report, December 12, 1997
16	Report Prepar	Radian International
17	Testing Firm	Radian International
18	Testing Dates	August 14, 1997
19	Cond Dates	Aug-97
20	Cond Description	Trial burn; max waste feedrates (Cr, ash spiking), steam prod rate, min L/G
21	Content	PM, HCl/Cl <sub>2</sub> , DRE, CO
22		
23	<b>2002C3</b>	
24		
25	Report Name/Date	Trial Burn Report, Glycol I Plant, Industrial Boiler R-4, Dow Chem., Louisiana Operations, Volume 1: Report, December 12, 1997
26	Report Prepar	Radian International
27	Testing Firm	Radian International
28	Testing Dates	August 11-13, 1997
29	Cond Dates	Aug-97
30	Cond Description	Risk burn; normal op cond
31	Content	Organics, PCDD/PCDF

	B	C	D	E	F	G	H	I	J	K	L	M
1	<b>Stack Gas Emissions</b>											
2												
3		Commen	Units		7% O2							
4												
5												
6	<b>2002C1</b>	<b>(min comb temp)</b>				R1		R2		R3		Cond Avg
7												
8	PM	E1	gr/dscf	y		0.0018		0.00016		0.0014		0.0011
9	CO (MHRA)	E1	ppmv	y		12.7		12.2		15.4		13.4
10	CO (RA)	E1	ppmv	y		11.5		10.2		13.9		11.9
11	HCl		µg/dscm	n		835		165		141		
12	Cl2		µg/dscm	n		19238		450		402		
13												
14	POHC DRE	1,2-Dichloropropane										
15	POHC Feedrate		lb/hr			473.6		524.3		513.9		
16	Emissions Rate		lb/hr			0.000947		0.001049		0.001028		
17	DRE	E1	%			99.9998		99.9998		99.9998		
18												
19	POHC DRE	Chlorobenzene										
20	POHC Feedrate		lb/hr			126		126		126		
21	Emissions Rate		lb/hr			0.000504		0.000378		0.000504		
22	DRE	E1	%			99.9996		99.9997		99.9996		
23												
24	Sampling Train	PM, HCl/ E1										
25	Stack Gas Flowrate		dscfm			5846		5533		5776		5718.3
26	O2		%			11.6		11.3		11.5		11.5
27	Moisture		%			8.3		8.8		8.3		8.5
28	Temperature		°F			115		117		115		115.7
29												
30	HCl	E1	ppmv	y		0.83		0.16		0.14		0.38
31	Cl2	E1	ppmv	y		9.84		0.22		0.20		3.42
32	Total Chlorine	E1	ppmv	y		20.51		0.61		0.55		7.22
33												
34	<b>2002C2</b>	<b>(max feed, prod. rates)</b>				R1		R2		R3		Cond Avg
35												
36	PM	E1	gr/dscf	y		0.0055		0.006		0.0084		0.0066
37	CO (MHRA)	E1	ppmv	y		20.7		19.9		16.1		18.9
38	CO (RA)	E1	ppmv	y		19		18.1		14.1		17.1
39	HCl		µg/dscm	n		4675		4026		4437		
40	Cl2		µg/dscm	n		536		444		438		
41												
42	POHC DRE	1,2-Dichloropropane										
43	POHC Feedrate		lb/hr			1716		1671		1588		
44	Emissions Rate		lb/hr			0.005148		0.006684		0.00794		
45	DRE	E1	%			99.9997		99.9996		99.9995		
46												
47	POHC DRE	Chlorobenzene										
48	POHC Feedrate		lb/hr			126		126		126		
49	Emissions Rate		lb/hr			0.000756		0.000882		0.001008		
50	DRE	E1	%			99.9994		99.9993		99.9992		
51												
52	Sampling Train	PM, HCl/ E1										
53	Stack Gas Flowrate		dscfm			8053		8238		7917		8069.3
54	O2		%			5.6		6		5.9		5.8
55	Moisture		%			15.4		15.1		14.9		15.1
56	Temperature		°F			139		137		137		137.7
57												
58	HCl	E1	ppmv	y		2.84		2.51		2.75		2.70
59	Cl2	E1	ppmv	y		0.17		0.14		0.14		0.15
60	Total Chlorine	E1	ppmv	y		3.17		2.79		3.03		3.00
61												
62	<b>2002C3</b>	<b>(normal risk burn)</b>				R1		R2		R3		Cond Avg
63												
64	PM	E1	gr/dscf	y		0.0023		0.0005		0.001		0.0013
65	CO (MHRA)	E1	ppmv	y		18.4		19		15.7		17.7
66	CO (RA)	E1	ppmv	y		16		16		14		15.3
67	HCl		µg/dscm	n		614		656		529		

	B	C	D	E	F	G	H	I	J	K	L	M
68	Cl2		µg/dscm	n		274		448		236		
69												
70	Sampling Train	PM, HCl/ E1										
71	Stack Gas Flowrate		dscfm			8435		8266		8492		8397.7
72	O2		%			6.2		6.4		6.6		6.4
73	Moisture		%			12		12.5		12.8		12.4
74	Temperature		°F			138		139		138		138.3
75												
76	HCl	E1	ppmv	y		0.39		0.42		0.34		0.38
77	Cl2	E1	ppmv	y		0.09		0.15		0.08		0.11
78	Total Chlorine	E1	ppmv	y		0.57		0.72		0.50		0.59

	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P	Q	R	S	T	U	V	W	X	Y
1	<b>Feedstreams</b>																							
2																								
3																								
4																								
5	<b>2002C1</b>																							
6																								
7	Feedstream Number																							
8	Feed Class																							
9	Feed Class 2																							
10	Feedstream Description																							
11	Feed Rate	lb/hr																						
12	Heating Value	Btu/lb																						
13	Ash	lb/hr																						
14	Chlorine	lb/hr																						
15																								
16	Stack Gas Flowrate	dscfm																						
17	O2	%																						
18																								
19	Thermal Feedrate	MMBtu/hr																						
20	Estimated Firing Rate	MMBtu/hr																						
21																								
22	<b>Feedrate MTEC Calculations</b>																							
23																								
24	Ash	mg/dscfm																						
25	Chlorine	ug/dscfm																						
26																								
27	<b>2002C2</b>																							
28																								
29	Feedstream Number																							
30	Feed Class																							
31	Feed Class 2																							
32	Feedstream Description																							
33	Feed Rate	lb/hr																						
34	Heating Value	Btu/lb																						
35	Ash	lb/hr																						
36	Chlorine	lb/hr																						
37																								
38	Stack Gas Flowrate	dscfm																						
39	O2	%																						
40																								
41	Thermal Feedrate	MMBtu/hr																						
42	Estimated Firing Rate	MMBtu/hr																						
43																								
44	<b>Feedrate MTEC Calculations</b>																							
45																								
46	Ash	mg/dscfm																						
47	Chlorine	ug/dscfm																						
48																								
49	<b>2002C3</b>																							
50																								
51	Feedstream Number																							
52	Feed Class																							
53	Feed Class 2																							
54	Feedstream Description																							
55	Feed Rate	lb/hr																						
56	Heating Value	Btu/lb																						
57	Ash	lb/hr																						
58	Chlorine	lb/hr																						

	Z	AA	AB	AC	AD
1					
2					
3					
4					
5			Cond Avg		
6					
7			F3		
8			Total		
9			Total		
10			Total		
11					
12					
13					actual waste
14					actual waste
15					
16					
17					
18					
19	9.97328		9.96		
20	17.42		17.31		
21					
22					
23					
24	4.1 50		8.2		actual waste
25	42056051.3		40663421.9		actual waste
26					
27			Cond Avg		
28					
29			F3		
30			Total		
31			Total		
32			Total		
33					
34					
35					2.2
36					actual waste
37					
38					8000
39					6
40					
41	29.88664		29.88		
42	37.95		38.85		
43					
44					
45					
46	79.9		90.7		68.6
47	55503370.3		53846631.0		actual waste
48					
49					
50					
51					
52					
53					
54					
55					
56					
57					
58					

	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P	Q	R	S	T	U	V	W	X	Y	
59	Mercury		mg/L		0.024		0.012		0.058		0.03														
60	Lead		mg/L		0.924		0.524		1.55		1														
61	Cadmium		mg/L		0.044		0.056		0.048		0.05														
62	Arsenic		mg/L		2.15		1.58		4.28		3														
63	Beryllium		mg/L	nd	0.0388	nd	0.0388	nd	0.0388		0.04														
64	Chromium		mg/L		0.078		0.096		0.018		0.07														
65	Nickel		mg/L	nd	0.115	nd	0.115	nd	0.115		0.12														
66	Antimony		mg/L	nd	0.828	nd	0.828	nd	0.828		0.83														
67	Selenium		mg/L		5.24		2.79		10.9		6														
68	Stack Gas Flowrate		dscfm		8435		8266		8492		8397.7														
69	O2		%		6.2		6.4		6.6		6.4														
71	Thermal Feedrate		MMBtu/hr		25.1		24.9		24.9		25.1		25.1		24.9		24.9		25.1					25.1	
73	Estimated Firing Rate		MMBtu/hr										39.6		38.3		38.8		38.9					38.9	
74																									
75	<i>Feedrate MTEC Calculations</i>																								
76	Ash		mg/dscm	100	9.0	100	9.3	100	9.2	100	9.2	100	9.2	100	9.2	100	9.2	100	9.2	100	9.2	100	9.2	100	
78	Chlorine		ug/dscm		41156970		42871515		41284695		41771060.2		41975756.9		41677170.8		41807996.0		41771060						41771060
79	Mercury		ug/dscm		2.1		1.1		5.3		2.9		3.1		3.8		3.2		3						3
80	Lead		ug/dscm		82.7		48.8		142.2		91.2		94.1		109.2		98.2		91						91
81	Cadmium		ug/dscm		3.9		5.2		4.4		4.5		4.7		4.5		4.6		5						5
82	Arsenic		ug/dscm		192.4		147.3		392.7		244.1		261.3		299.4		268.3		244						244
83	Beryllium		ug/dscm	100	3.5	100	3.6	100	3.6	100	3.5	100	3.6	100	3.6	100	3.6	100	3.6	100	3.6	100	3.6	100	4
84	Chromium		ug/dscm		7.0		8.9		1.7		5.9		5.5		4.3		5.2		6						6
85	Nickel		ug/dscm	100	10.3	100	10.7	100	10.6	100	10.5	100	10.6	100	10.6	100	10.6	100	10.6	100	10.6	100	10.6	100	11
86	Antimony		ug/dscm	100	74.1	100	77.2	100	76.0	100	75.7	100	76.3	100	76.0	100	76.0	100	76						76
87	Selenium		ug/dscm		468.8		260.0		1000.0		576.3		612.1		729.5		639.3		576						576
88	SVM		ug/dscm		86.6		54.1		146.6		95.8		86.6		54.1		146.6		95.8						95.8
89	LVM		ug/dscm	1.7	202.8	2.3	159.8	0.89	397.9	1.4	253.5	1.7	202.8	2.3	159.8	0.9	397.9	1.4	253.5					253.5	
90																									
91	assumes density of liquid waste is 1 g/mL																								



	A	B	C	D	E	F
1	<b>Process Information</b>					
2						
3		Units	Run	Run	Run	Avg
4			1	2	3	
5						
6	<b>2002C1</b>					
7						
8	First Pass Boiler Temp.	°F	1427	1427	1427	1427
9	Steam Production Rate	lb/hr	8700	8700	8700	8700
10						
11	<b>2002C2</b>					
12						
13	First Pass Boiler Temp.	°F	2012	2012	2012	2012
14	Steam Production Rate	lb/hr	29000	28500	27500	28333.333
15						
16	<b>2002C3</b>					
17						
18	First Pass Boiler Temp.	°F	1967	1967	1967	1967
19	Steam Production Rate	lb/hr	27000	26500	27000	26833.333

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:	Dow (Plaquemine LA), Boiler R-4															
4	Condition ID:	2002C3															
5	Condition/Test Date:	August 11-13, 1997															
6																	
7		I-TEF															
8		Wght Fact															
9																	
10	Detected in sample volume (ng)																
11	2,3,7,8-TCDD	1	nd	0.0100	0.0100	0.0050	0.0050	nd	0.007	0.0070	0.0035	0.0035	nd	0.01	0.0100	0.0050	0.0050
12	TCDD Other	0															
13	1,2,3,7,8-PCDD	0.5	nd	0.0200	0.0100	0.0100	0.0050	0.0050	0.03	0.0150	0.0300	0.0150		0.03	0.0150	0.0300	0.0150
14	PCDD Other	0															
15	1,2,3,4,7,8-HxCDD	0.1		0.0200	0.0020	0.0200	0.0020	0.0020	0.08	0.0080	0.0800	0.0080		0.08	0.0080	0.0800	0.0080
16	1,2,3,6,7,8-HxCDD	0.1		0.0300	0.0030	0.0300	0.0030	0.0030	0.1	0.0100	0.1000	0.0100		0.08	0.0080	0.0800	0.0080
17	1,2,3,7,8,9-HxCDD	0.1		0.0200	0.0020	0.0200	0.0020	0.0020	0.07	0.0070	0.0700	0.0070		0.05	0.0050	0.0500	0.0050
18	HxCDD Other	0															
19	1,2,3,4,6,7,8-HpCDD	0.01		0.1500	0.0015	0.1500	0.0015	0.0015	0.47	0.0047	0.4700	0.0047		0.38	0.0038	0.3800	0.0038
20	HpCDD Other	0															
21	OCDD	0.001		0.6300	0.0006	0.6300	0.0006	0.0006	1	0.0010	1.0000	0.0010		0.96	0.0010	0.9600	0.0010
22	2,3,7,8-TCDF	0.1		0.0700	0.0070	0.0700	0.0070	0.0070	0.17	0.0170	0.1700	0.0170		0.16	0.0160	0.1600	0.0160
23	TCDF Other	0															
24	1,2,3,7,8-PCDF	0.05		0.1500	0.0075	0.1500	0.0075	0.0075	0.42	0.0210	0.4200	0.0210		0.43	0.0215	0.4300	0.0215
25	2,3,4,7,8-PCDF	0.5		0.0700	0.0350	0.0700	0.0350	0.0350	0.21	0.1050	0.2100	0.1050		0.22	0.1100	0.2200	0.1100
26	PCDF Other	0															
27	1,2,3,4,7,8-HxCDF	0.1		0.3700	0.0370	0.3700	0.0370	0.0370	1.3	0.1300	1.3000	0.1300		1.3	0.1300	1.3000	0.1300
28	1,2,3,6,7,8-HxCDF	0.1		0.1100	0.0110	0.1100	0.0110	0.0110	0.38	0.0380	0.3800	0.0380		0.35	0.0350	0.3500	0.0350
29	2,3,4,6,7,8-HxCDF	0.1		0.0700	0.0070	0.0700	0.0070	0.0070	0.22	0.0220	0.2200	0.0220		0.22	0.0220	0.2200	0.0220
30	1,2,3,7,8,9-HxCDF	0.1		0.0100	0.0010	0.0100	0.0010	0.0010	0.06	0.0060	0.0600	0.0060		0.05	0.0050	0.0500	0.0050
31	HxCDF Other	0															
32	1,2,3,4,6,7,8-HpCDF	0.01		1.2000	0.0120	1.2000	0.0120	0.0120	5.2	0.0520	5.2000	0.0520		4.4	0.0440	4.4000	0.0440
33	1,2,3,4,7,8,9-HpCDF	0.01		0.3400	0.0034	0.3400	0.0034	0.0034	1.2	0.0120	1.2000	0.0120		1.1	0.0110	1.1000	0.0110
34	HpCDF Other	0															
35	OCDF	0.001		3.3000	0.0033	3.3000	0.0033	0.0033	12.2	0.0122	12.2000	0.0122		11.2	0.0112	11.2000	0.0112
36																	
37	Gas sample volume (dscl)																
38	O2 (%)																
39																	
40	PCDD/PCDF (ng in sample)																
41	PCDD/PCDF (ng/dscm @ 7% O2)		13.0														
42																	
43	TEQ Cond Avg																