

US EPA ARCHIVE DOCUMENT

	B	C
1	Source Description	
2		
3	Phase II ID No.	2018
4	EPA ID No.	TXD008092793
5	Facility Name	Dow Chemical Company
6	Facility Location	
7	City	Freeport
8	State	TX
9	Unit ID Name/No.	Unit FTB-603
10	Other Sister Facilities	None
11	Number of Sister Facilities	0
12	Combustor Class	HCl Production Furnace
13	Combustor Type	
14	Combustor Characteristics	Firetube boiler made by Johnston Boiler Company, horizontal direct fired comb chamber by John Zink Company, 50.2 MMBtu/hr, operated @ 1700°C
15	Capacity (MMBtu/hr)	50.2
16	Soot Blowing	None
17	APCS Detailed Acronym	WHB/VS/Q/HCLABS/VS/CLWS
18	APCS General Class	WHB, HEWS, LEWS, WQ
19	APCS Characteristics	(Venturi scrubber, quench, HCl absorber, venturi scrubber, chlorine scrubber) Chlorine scrubber uses inorganic reducing agent to capture chlorine
20	Hazardous Wastes	Liq
21	Haz Waste Description	Liquid wastes (PDC Heavies)
22	Supplemental Fuel	Natural gas
23		
24	Stack Characteristics	
25	Diameter (ft)	2.5
26	Height (ft)	85
27	Gas Velocity (ft/sec)	35.0
28	Gas Temperature (°F)	129.3
29		
30	Permitting Status	Tier I for all chlorine and all metals except Cr+6 (Tier III)
31	HWC Burn Status (Date if Terminated)	

	B	C
1	Cond Description	
2		
3	2018C1	
4		
5	Report Name/Date	FTB-603 Trial Burn Report and Risk Burn Report, June 30, 1998
6	Report Prepare	Focus Environmental
7	Testing Firm	METCO Environmental
8	Testing Dates	April 6, 1998
9	Cond Dates	Apr-98
10	Condition Descr	Trial burn, min comb temp, max stack gas flow rate
11	Content	CO, DRE of POHC (chlorobenzene)
12		
13	2018C2	
14		
15	Report Name/Date	FTB-603 Trial Burn Report and Risk Burn Report, June 30, 1998
16	Report Prepare	Focus Environmental
17	Testing Firm	METCO Environmental
18	Testing Dates	April 2-3, 1998
19	Cond Dates	Apr-98
20	Condition Descr	Risk burn, normal operating conditions
21	Content	PCDD/F, metals
22		
23	2018C3	
24		
25	Report Name/Date	FTB-603 Certificate of Compliance Burn, January 1997
26	Report Prepare	
27	Testing Firm	
28	Testing Dates	Jan 14-16, 1997
29	Cond Dates	Jan-97
30	Condition Descr	COC burn, max waste feed and production rate, max comb temp, min APCS
31	Content	PM, HCl/Cl ₂ , Cr+6
32		
33	2018C4	
34		
35	Report Name/Date	FTB-603 Certificate of Compliance Burn, January 1997
36	Report Prepare	
37	Testing Firm	
38	Testing Dates	04-Feb-97
39	Cond Dates	Jan-97
40	Condition Descr	COC burn, min comb temp
41	Content	CO

	B	C	D	E	F	G	H	I	J	K	L	M	N	O
1	Stack Gas Emissions													
2														
3		Comments	Units	7% O2										
4														
5														
6	2018C1	Trial burn				R1		R2		R3		Cond Avg		
7														
8	CO (MHRA)	E1	ppmv	y		54.9		57.6		44.8		52.5		
9	CO (RA)	E1	ppmv	y		42.8		46.3		33.1		40.7		
10														
11	POHC DRE	Chlorobenzene												
12	POHC Feedrate		lb/hr			45.04		44.99		45				
13	Emission Rate	E1	lb/hr		nd	3.00E-05	nd	3.00E-05	nd	3.00E-05				
14	DRE	E1	%		>	99.99993	>	99.99993	>	99.99993				
15														
16	Sampling Train	DRE	E1											
17	Stack Gas Flowrate		dscfm			10705		10705		10508		10639.3		
18	O2		%			12.4		13.6		12.8		12.9		
19	Moisture		%			16.07		15.65		16.54		16.1		
20	Temperature		°F			129		129		130		129.3		
21														
22	2018C2	Risk Burn				R1		R2		R3		Cond Avg		
23														
24	CO (MHRA)	E1	ppmv	y		22.98		97.67		19.8		46.8		
25	CO (RA)	E1	ppmv	y		18.74		31		18.16		22.6		
26	Antimony		µg/dscf		nd	0.02	nd	0.02	nd	0.02				
27	Arsenic		µg/dscf			0.00033		0.00083		0.0048				
28	Barium		µg/dscf			0		0		0				
29	Beryllium		µg/dscf			0.0006		0.00053		0.00058				
30	Cadmium		µg/dscf		nd	0.002	nd	0.003	nd	0.001				
31	Chromium		µg/dscf			0.01		0.0093		0.0086				
32	Cobalt		µg/dscf		nd	0.00	nd	0.003	nd	0.005				
33	Copper		µg/dscf			0.093		0.071		0.066				
34	Lead		µg/dscf		nd	0.02		0.02	nd	0.02				
35	Manganese		µg/dscf			0.37		0.34		0.47				
36	Mercury		µg/dscf		nd	0.003	nd	0.002	nd	0.001				
37	Molybdenum		µg/dscf		nd	0.070	nd	0.06	nd	0.07				
38	Nickel		µg/dscf		nd	0.01	nd	0.01	nd	0.01				
39	Selenium		µg/dscf		nd	0.006	nd	0.004	nd	0.004				
40	Silver		µg/dscf		nd	0.0008	nd	0.0008	nd	0.0008				
41	Thallium		µg/dscf		nd	0.006	nd	0.008	nd	0.006				
42	Vanadium		µg/dscf		nd	0.01	nd	0.005	nd	0.005				
43														
44	Sampling Train	Metals	E1											
45	Stack Gas Flowrate		dscfm			10324		10464		10159		10315.7		
46	O2		%											
47	Moisture		%											
48	Temperature		°F											
49														
50	Sampling Train	PCDD/F	E2											
51	Stack Gas Flowrate		dscfm			10200		10800		10300		10433.3		
52	O2		%			10.3		10.5		10.4		10.4		
53	Moisture		%											
54	Temperature		°F											
55														
56	Antimony	E1	µg/dscm	y	nd	0.92	nd	0.94	nd	0.93	100	0.93		
57	Arsenic	E1	µg/dscm	y		0.02		0.04		0.22		0.09		
58	Barium	E1	µg/dscm	y		0		0		0		0.00		
59	Beryllium	E1	µg/dscm	y		0.03		0.02		0.03		0.03		
60	Cadmium	E1	µg/dscm	y	nd	0.09	nd	0.14	nd	0.05	100	0.09		
61	Chromium	E1	µg/dscm	y		0.51		0.44		0.40		0.45		
62	Cobalt	E1	µg/dscm	y	nd	0.09	nd	0.14	nd	0.23	100	0.16		
63	Copper	E1	µg/dscm	y		4.30		3.35		3.08		3.58		
64	Lead	E1	µg/dscm	y	nd	0.92		0.94	nd	0.93	66	0.93		
65	Manganese	E1	µg/dscm	y		17.11		16.02		21.93		18.35		
66	Mercury	E1	µg/dscm	y	nd	0.14	nd	0.09	nd	0.05	100	0.09		
67	Molybdenum	E1	µg/dscm	y	nd	3.24	nd	2.83	nd	3.27	100	3.11		
68	Nickel	E1	µg/dscm	y	nd	0.46	nd	0.47	nd	0.47	100	0.47		
69	Selenium	E1	µg/dscm	y	nd	0.28	nd	0.19	nd	0.19	100	0.22		
70	Silver	E1	µg/dscm	y	nd	0.04	nd	0.04	nd	0.04	100	0.04		
71	Thallium	E1	µg/dscm	y	nd	0.28	nd	0.38	nd	0.28	100	0.31		

	B	C	D	E	F	G	H	I	J	K	L	M	N	O
72	Vanadium	E1	µg/dscm	y	nd	0.23	nd	0.24	nd	0.23	100	0.23		
73	SVM	E1	µg/dscm	y	100	1.02	13	1.08	100	0.98	69	1.03		
74	LVM	E1	µg/dscm	y		0.55		0.50		0.65		0.57		
75														
76														
77	2018C3	CoC				R1		R2		R3		Cond Avg		
78														
79	CO (RA)	E1	ppmv			14.84		13.06		13.5		13.8		
80	CO (MHRA)	E1	ppmv	y		15.84		15.56		16.2		15.9		
81	PM	E1	gr/dscf	y		0.006		0.002		0.006		0.005		
82	Chromium		g/hr			0.155		0.006		0.256		0.139		
83	HCl		g/hr			7.7		1.5		0.7		3.3		
84	Cl2		g/hr			6		3.7		1.5		4		
85														
86	HCl	E1	ppmv	y		0.40		0.08		0.04		0.17		
87	Cl2	E1	ppmv	y		0.16		0.10		0.04		0.10		
88	Total Cl	E1	ppmv	y		0.72		0.27		0.12		0.37		
89														
90	Chromium	E1	ug/dscm	y		12.29		0.48		20.30		11.02		
91	LVM	E1	ug/dscm	y		12.29		0.48		20.30		11.02		Cr only
92														
93	Sampling Train	Taken from o E1		sampling train not in CoC; used avg from other conditions										
94	Stack Gas Flowrate		dscfm			10400.0		10400.0		10400.0		10400.0		
95	O2		%			11.0		11.0		11.0		11.0		
96														
97	2018C4					R1		R2		R3		Cond Avg		
98														
99	CO (RA)	E1	ppmv	y		29.1		29.7		27.4		28.7		
100	CO (MHRA)	E1	ppmv	y		33.4		30.7		29.3		31.1		

	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P	Q	R	S	T	U	V	W	X	Y	Z
1	Feedstreams																								
2																									
3																									
4	2018C1	Trial burn																							
5	Feedstream Number																								
6	Feed Class																								
7	Feed Class 2																								
8	Feedstream Description																								
9	Feed Rate	lb/hr																							
10	Thermal Feedrate	MMBtu/hr																							
11	Viscosity	cps																							
12	Heating Value	Btu/lb																							
13	Density	lb/gal																							
14	Ash	lb/hr																							
15	Chlorine	lb/hr																							
16	Stack Gas Flowrate	dscfm																							
17	Oxygen	%																							
18	Estimated Firing Rate	MMBtu/hr																							
19	Feedrate MTEC Calculations																								
20	Ash	mg/dscm																							
21	Chlorine	ug/dscm																							
22	2018C2	Risk burn																							
23	Feedstream Number																								
24	Feed Class																								
25	Feed Class 2																								
26	Feedstream Description																								
27	Feed Rate	lb/hr																							
28	Thermal Feedrate	MMBtu/hr																							
29	Viscosity	cps																							
30	Heating Value	Btu/lb																							
31	Density	lb/gal																							
32	Ash	lb/hr																							
33	Chlorine	lb/hr																							
34	Antimony	g/hr																							
35	Arsenic	g/hr																							
36	Barium	g/hr																							
37	Beryllium	g/hr																							
38	Cadmium	g/hr																							
39	Chromium	g/hr																							
40	Lead	g/hr																							
41	Mercury	g/hr																							
42	Nickel	g/hr																							
43	Selenium	g/hr																							
44	Silver	g/hr																							
45	Thallium	g/hr																							
46	Zinc	g/hr																							
47	Stack Gas Flowrate	dscfm																							
48	Oxygen	%																							
49	Estimated Firing Rate	MMBtu/hr																							
50	Feedrate MTEC Calculations																								
51	Ash	mg/dscm																							

B	C	D	E	F	G	H	I	J	K	L	M	N	O	P	Q	R	S	T	U	V	W	X	Y	Z
61	Chlorine	ug/dscm		60993975		54510373		55617231		55970707		711596		715449		729976		718890						
62	Antimony	ug/dscm		4.5		3.0		22.2		9.8														
63	Arsenic	ug/dscm	100	3.7	100	3.8	100	3.8	100	3.8														
64	Barium	ug/dscm		3.8		1.2		0.5		1.8														
65	Beryllium	ug/dscm	100	0.4	100	0.4	100	0.4	100	0.4														
66	Cadmium	ug/dscm	100	2.2	100	2.3	100	2.3	100	2.3														
67	Chromium	ug/dscm		12.7		5.6		4.6		7.6														
68	Lead	ug/dscm		5.2		4.5		16.1		7.8														
69	Mercury	ug/dscm	100	7.5	100	6.0	100	7.7	100	7.0														
70	Nickel	ug/dscm		20.2		15.0		15.3		10.3														
71	Selenium	ug/dscm	100	5.2	100	5.3	100	5.4	100	5.3														
72	Silver	ug/dscm	100	0.7	100	0.7	100	0.7	100	0.7														
73	Thallium	ug/dscm		5.7		15.0		10.7		10.5														
74	Zinc	ug/dscm		1268.8		1350.8		359.9		997.8														
75	SVM	ug/dscm	30	7.5	33.3	6.8	13	18.4	23	10.1														
76	LVM	ug/dscm	24	16.8	42.6	9.7	48	8.8	35	11.8														
77																								
78																								
79	2018C3																							
80																								
81	Feedstream Number																							
82	Feed Class																							
83	Feed Class 2																							
84	Feedstream Description																							
85	Feed Rate	lb/hr		5200		5242		5154		43.8														
86	Thermal Feedrate	MMBtu/hr		44.3		44.6		42.4																
87	Ash	lb/hr		0.052		0.0786		0.0156																
88	Chlorine	lb/hr		2600		2517		2579																
89	Chromium	lb/hr		6.60E-05		5.03E-05		5.31E-05																
90																								
91	Stack Gas Flowrate	dscfm		10400		10400		10400		10400														
92	Oxygen	%		11		11		11		11														
93																								
94	Feedrate MTEC Calculations																							
95	Ash	mg/dscm		1.87		2.83		0.56		1.75														
96	Chlorine	ug/dscm		93580683		90593300		92824839		92332940.71														
97	Chromium	ug/dscm		2.4		1.8		1.9		2.03														

AA	AB	AC	AD	AE	AF	AG	AH	AI	AJ	AK	AL	AM	AN	AO	AP	AQ	AR
61		61705570.9			55225821.8		56347206.7		56689597.0								
62		4.5	3.0		3.8	100	22.2		9.8								
63	100	3.7	3.8	100	3.8	100	3.8	100	3.8								
64		3.8	1.2		0.5		0.5		1.8								
65	100	0.4	0.4	100	0.4	100	0.4	100	0.4								
66	100	2.2	2.2	100	2.3	100	2.3	100	2.3								
67		12.7	5.6		4.6		4.6		7.6								
68		5.2	4.5		16.1		16.1		7.8								
69	100	7.5	6.0	100	7.7	100	7.7	100	7.0								
70		20.2	15.0		15.3		15.3		10.3								
71	100	5.2	5.3	100	5.4	100	5.4	100	5.3								
72	100	0.7	0.7	100	0.7	100	0.7	100	0.7								
73		5.7	15.0		10.7		10.7		10.5								
74		1268.8	1350.8		359.9		359.9		997.8								
75	30	7.5	6.8	12.5	18.4	22.5	18.4	22.5	10.1								
76	24.4	16.8	9.7	47.8	8.8	35.2	8.8	35.2	11.8								
77																	
78																	
79																	
80	Cond Avg	R1	R2	R3	F4	F4	F4	F4	Cond Avg	R1	R2	R3	F5	F5	F5	F5	Cond Avg
81	F3	F4	F4	F4	F4	F4	F4	F4	F4	F5	F5	F5	F5	F5	F5	F5	F5
82	NG	Spike	Spike	Spike	Spike	Spike	Spike	Spike	Spike	Spike	Spike	Spike	Spike	Spike	Spike	Spike	Spike
83	MF	Spike	Spike	Spike	Spike	Spike	Spike	Spike	Spike	Spike	Spike	Spike	Spike	Spike	Spike	Spike	Spike
84	Fuel gas	Spike	Spike	Spike	Spike	Spike	Spike	Spike	Spike	Spike	Spike	Spike	Spike	Spike	Spike	Spike	Spike
85		12.8	11.5		13.5		13.5		46				46.4				45.52
86	1.756666667	0	0		0		0		46				46.4				45.52
87		1.28	1.15		1.35		1.35		46				46.4				45.52
88																	
89		0.0649	0.0575		0.0675		0.0675		46				46.4				45.52
90																	
91	10400	10400	10400	10400	10400	10400	10400	10400	10400	10400	10400	10400	10400	10400	10400	10400	10400
92	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11
93																	
94																	
95		46.07	41.39		48.59		48.59		47.9				44.2				47.1
96		0	0		0		0		0.00				92824839				92332941
97		2335.9	2069.6		2429.5		2429.5		2338				2071				2280

	A	B	C
1	Process Information		
2			
3			Cond Avg
4			
5	2018C1	Trial burn	
6			
7	Comb Temp	°F	1805
8	Prod. Rate	Mlb/hr	19.5
9	Ejector Venturi Pressure	psig	50.7
10	T-609 Scrubber		
11	Effluent pH	pH	9.1
12	Blowdown Flow	gpm	60
13	L/G	gal/Macf	15.3
14			
15	2018C2	Risk burn	Cond Avg
16			
17	Comb Temp	°F	2606
18	Prod Rate	Mlb/hr	29.2
19	Ejector Venturi Pressure	psig	50.5
20	T-609 Scrubber		
21	Effluent pH	pH	8.87
22	Blowdown Flow	gpm	60
23	L/G	gal/Macf	15.1
24			
25	2018C3	CoC	Cond Avg
26			
27	Comb Temp	°F	2670
28	Prod Rate Steam	Mlb/day	798
29	Ejector Venturi Pressure	psig	36.6
30	T-609 Scrubber		
31	Effluent pH	pH	8.3
32	Blowdown Flow	gpm	34.4
33	L/G	gal/Macf	10.75

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 Chemical Company, Freeport TX															
4	Condition ID:	2018C2															
5	Condition/Test Date:	Risk burn, normal operating condition, April 2-3, 1998															
6																	
7		I-TEF															
8		Wght Fact															
9																	
10		Detected in sample volume (pg)															
11		2,3,7,8-TCDD	1	11	11	11	11	11	12	12	12	12	12	8	8.00	8	8.00
12		Total TCDD	0	38	0	38	0	38	17	0	17	0	17	100	0	100	0
13		1,2,3,7,8-PCDD	0.5	18	9	18	9	18	15	8	15	8	15	16	8	16	8
14		Total PCDD	0	50	0	50	0	50	27	0	27	0	27	30	0	30	0
15		1,2,3,4,7,8-HxCDD	0.1	44	4	44	4	44	34	3	34	3	34	36	4	36	4
16		1,2,3,6,7,8-HxCDD	0.1	42	4	42	4	42	34	3	34	3	34	35	4	35	4
17		1,2,3,7,8,9-HxCDD	0.1	22	2	22	2	22	16	2	16	2	16	16	2	16	2
18		Total HxCDD	0	240	0	240	0	240	160	0	160	0	160	170	0	170	0
19		1,2,3,4,6,7,8-HpCDD	0.01	380	4	380	4	380	260	3	260	3	260	280	3	280	3
20		Total HpCDD	0	580	0	580	0	580	370	0	370	0	370	390	0	390	0
21		OCDD	0.001	3200	3	3200	3	3200	2500	3	2500	3	2500	2400	2	2400	2
22		2,3,7,8-TCDF	0.1	1100	110	1100	110	1100	1200	120	1200	120	1200	730	73	730	73
23		Total TCDF	0	3400	0	3400	0	3400	4700	0	4700	0	4700	2600	0	2600	0
24		1,2,3,7,8-PCDF	0.05	1800	90	1800	90	1800	2300	115	2300	115	2300	1500	75	1500	75
25		2,3,4,7,8-PCDF	0.5	1100	550	1100	550	1100	1300	650	1300	650	1300	890	445	890	445
26		Total PCDF	0	5200	0	5200	0	5200	6100	0	6100	0	6100	4100	0	4100	0
27		1,2,3,4,7,8-HxCDF	0.1	3500	350	3500	350	3500	3400	340	3400	340	3400	2800	280	2800	280
28		1,2,3,6,7,8-HxCDF	0.1	1300	130	1300	130	1300	1200	120	1200	120	1200	1000	100	1000	100
29		2,3,4,6,7,8-HxCDF	0.1	850	85	850	85	850	780	78	780	78	780	660	66	660	66
30		1,2,3,7,8,9-HxCDF	0.1	930	93	930	93	930	960	96	960	96	960	760	76	760	76
31		Total HxCDF	0	10000	0	10000	0	10000	8900	0	8900	0	8900	7700	0	7700	0
32		1,2,3,4,6,7,8-HpCDF	0.01	20000	200	20000	200	20000	13000	130	13000	130	13000	15000	150	15000	150
33		1,2,3,4,7,8,9-HpCDF	0.01	3900	39	3900	39	3900	3000	30	3000	30	3000	2600	26	2600	26
34		Total HCDF	0	32000	0	32000	0	32000	22000	0	22000	0	22000	23000	0	23000	0
35		OCDF	0.001	140000	140	140000	140	140000	130000	130	130000	130	130000	110000	110	110000	110
36		Gas sample volume (dscf)		146.75	146.75	146.75	146.75	146.75	153.77	153.77	153.77	153.77	153.77	146.8	146.8	146.8	146.8
37		O2 (%)		10.30	10.30	10.30	10.30	10.30	10.5	10.5	10.5	10.5	10.5	10.4	10.4	10.4	10.4
39		PCDD/PCDF (pg in sample)		1824.80	194708.0	1824.80	1824.80	1824.80	1842.0	174774.0	1842.0	1842.0	1842.0	1430.90	150490.0	1430.90	1430.90
40		PCDD/PCDF (ng/dscm @ 7% O2)	0.0	0.57	61.34	0.57	0.57	0.57	0.56	53.55	0.56	0.56	0.56	0.45	47.84	0.45	0.45
41		TEQ Cond Avg	0.53														
42		Total Cond Avg	54.2														