

**Appendix 5A**

Performance of Thermal Desorption  
Unit

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# Evaluation Test Summary Report for the Thermal Desorption Unit

Coleman-Evans  
Wood Preserving Site  
Whitehouse, Florida

Technical Volume

*Prepared for*  
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**WESTON.**

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**TABLE 3-3  
COLEMAN -EVANS  
EVALUATION TEST  
INPUTS FOR DIOXIN / FURAN CALCULATIONS**

**Test Data**

Run number	1
Location	Thermal Polisher Exhaust Stack
Date	11/2/01
Time period	0930-1427
Operator	LOF

**Inputs For Calcs.**

Sq. rt delta P	0.18904
Delta d	0.95140
Stack temp. (deg.F)	1667.8
Meter temp. (deg.F)	87.4
Sample volume (act.)	133.953
Barometric press. (in.Hg)	30.09
Volume H <sub>2</sub> O imp. (ml)	271.0
Weight chnge sil. gel (g)	32.1
% CO <sub>2</sub>	5.4
% O <sub>2</sub>	10.0
% N <sub>2</sub>	84.6
Area of stack (sq.ft.)	15.321
Sample time (min.)	240.0
Static pressure (in.H <sub>2</sub> O)	-0.08
Nozzle dia. (in.)	0.585
Meter box cal.	0.9964
Cp of pitot tube	0.84
Traverse points	16

Laboratory Reporting units (ug or pg)      pg  
Names must be the same as below but do not have to be in the same order

**Dioxin Laboratory Report Data, pg**

Total TCDD	0.0	
2,3,7,8-TCDD	8.0	Q,J
Total PeCDD	0.0	
1,2,3,7,8-PeCDD	28.0	Q,J
Total HxCDD	0.0	
1,2,3,4,7,8-HxCDD	19.0	Q,J
1,2,3,6,7,8-HxCDD	35.0	J
1,2,3,7,8,9-HxCDD	55.0	
Total HpCDD	0.0	
1,2,3,4,6,7,8-HpCDD	160.0	B
Total OCDD	360.0	B

**Furan Laboratory Report Data, pg**

Total TCDF	0.0	
2,3,7,8-TCDF (DB-225)	89.0	
Total PeCDF	0.0	
1,2,3,7,8-PeCDF	75.0	
2,3,4,7,8-PeCDF	120.0	
Total HxCDF	0.0	
1,2,3,4,7,8-HxCDF	180.0	C,B
1,2,3,6,7,8-HxCDF	85.0	Q,B
2,3,4,6,7,8-HxCDF	86.0	B
1,2,3,7,8,9-HxCDF	5.7	J,B
Total HpCDF	0.0	
1,2,3,4,6,7,8-HpCDF	200.0	B
1,2,3,4,7,8,9-HpCDF	24.0	B,J
Total OCDF	58.0	B,J,S

(DB-225) = Confirmation analysis utilizing a DB-225 column.

ND< = Not detected

Q = Estimated maximum possible concentration (EMPC).

J = Estimated result below the reporting limit.

B = The associated laboratory method blank contains the target analyte at a reportable level.

S = Ion suppression.

C = Co-eluting isomer.

**Table 3-3 (cont.)  
COLEMAN -EVANS  
EVALUATION TEST  
SUMMARY OF DIOXIN / FURAN TEST DATA AND TEST RESULTS**

**Test Data**

Run number	1
Location	Thermal Polisher Exhaust Stack
Date	11/2/01
Time period	0930-1427

**SAMPLING DATA:**

Sampling duration, min.	240.0
Nozzle diameter, in.	0.585
Cross sectional nozzle area, sq.ft.	0.001867
Barometric pressure, in. Hg	30.09
Avg. orifice press. diff., in H <sub>2</sub> O	0.95
Avg. dry gas meter temp., deg F	87
Avg. abs. dry gas meter temp., deg. R	547
Total liquid collected by train, ml	303.1
Std. vol. of H <sub>2</sub> O vapor coll., cu.ft.	14.27
Dry gas meter calibration factor	0.9964
Sample vol. at meter cond., dcf	133.953
Sample vol. at std. cond., dscf <sup>(1)</sup>	129.721
Percent of isokinetic sampling	99.8

**GAS STREAM COMPOSITION DATA:**

CO <sub>2</sub> , % by volume, dry basis	5.4
O <sub>2</sub> , % by volume, dry basis	10.0
N <sub>2</sub> , % by volume, dry basis	84.6
Molecular wt. of dry gas, lb/lb mole	29.26
H <sub>2</sub> O vapor in gas stream, prop. by vol.	0.099
Mole fraction of dry gas	0.901
Molecular wt. of wet gas, lb/lb mole	28.15

**GAS STREAM VELOCITY AND VOLUMETRIC FLOW DATA:**

Static pressure, in. H <sub>2</sub> O	-0.08
Absolute pressure, in. Hg	30.08
Avg. temperature, deg. F	1668
Avg. absolute temperature, deg.R	2128
Pitot tube coefficient	0.84
Total number of traverse points	16
Avg. gas stream velocity, ft./sec.	21.5
Stack/duct cross sectional area, sq.ft.	15.32
Avg. gas stream volumetric flow, wacf/min.	19781
Avg. gas stream volumetric flow, dscf/min.	4445

<sup>(1)</sup> Standard conditions = 68 deg. F. (20 deg. C.) and 29.92 in Hg (760 mm Hg)

**TABLE 3-3 (cont.)  
COLEMAN -EVANS  
EVALUATION TEST  
SUMMARY OF DIOXIN / FURAN TEST DATA AND TEST RESULTS**

**TEST DATA**

Run number	1
Location	Thermal Polisher Exhaust Stack
Date	11/2/01
Time period	0930-1427

**DIOXIN LABORATORY REPORT DATA, pg.**

Total TCDD	
2,3,7,8-TCDD	8.0
Total PeCDD	
1,2,3,7,8-PeCDD	28.0
Total HxCDD	
1,2,3,4,7,8-HxCDD	19.0
1,2,3,6,7,8-HxCDD	35.0
1,2,3,7,8,9-HxCDD	55.0
Total HpCDD	
1,2,3,4,6,7,8-HpCDD	160.0
Total OCDD	360.0

**DIOXIN CONCENTRATION, lb/dscf**

Total TCDD	
2,3,7,8-TCDD	1.36E-16
Total PeCDD	
1,2,3,7,8-PeCDD	4.76E-16
Total HxCDD	
1,2,3,4,7,8-HxCDD	3.23E-16
1,2,3,6,7,8-HxCDD	5.95E-16
1,2,3,7,8,9-HxCDD	9.35E-16
Total HpCDD	
1,2,3,4,6,7,8-HpCDD	2.72E-15
Total OCDD	6.12E-15

**DIOXIN CONCENTRATION, ng/dscm.**

Total TCDD	
2,3,7,8-TCDD	2.18E-03
Total PeCDD	
1,2,3,7,8-PeCDD	7.62E-03
Total HxCDD	
1,2,3,4,7,8-HxCDD	5.17E-03
1,2,3,6,7,8-HxCDD	9.53E-03
1,2,3,7,8,9-HxCDD	1.50E-02
Total HpCDD	
1,2,3,4,6,7,8-HpCDD	4.36E-02
Total OCDD	9.80E-02

**DIOXIN CONCENTRATION, ng/dscm @ 7% O<sub>2</sub>**

Total TCDD	
2,3,7,8-TCDD	2.77E-03
Total PeCDD	
1,2,3,7,8-PeCDD	9.70E-03
Total HxCDD	
1,2,3,4,7,8-HxCDD	6.58E-03
1,2,3,6,7,8-HxCDD	1.21E-02
1,2,3,7,8,9-HxCDD	1.91E-02
Total HpCDD	
1,2,3,4,6,7,8-HpCDD	5.54E-02
Total OCDD	1.25E-01

ND< = Non detect value

Table 3-3 (cont.)  
**COLEMAN -EVANS**  
**EVALUATION TEST**  
**SUMMARY OF DIOXIN / FURAN TEST DATA AND TEST RESULTS**

**TEST DATA**

Run number	1
Location	Thermal Polisher Exhaust Stack
Date	11/2/01
Time period	0930-1427

**DIOXIN EMISSIONS, lb/hr.**

Total TCDD	
2,3,7,8-TCDD	3.63E-11
Total PeCDD	
1,2,3,7,8-PeCDD	1.27E-10
Total HxCDD	
1,2,3,4,7,8-HxCDD	8.61E-11
1,2,3,6,7,8-HxCDD	1.59E-10
1,2,3,7,8,9-HxCDD	2.49E-10
Total HpCDD	
1,2,3,4,6,7,8-HpCDD	7.25E-10
Total OCDD	1.63E-09

**DIOXIN EMISSIONS, g/sec.**

Total TCDD	
2,3,7,8-TCDD	4.56E-12
Total PeCDD	
1,2,3,7,8-PeCDD	1.60E-11
Total HxCDD	
1,2,3,4,7,8-HxCDD	1.08E-11
1,2,3,6,7,8-HxCDD	2.00E-11
1,2,3,7,8,9-HxCDD	3.14E-11
Total HpCDD	
1,2,3,4,6,7,8-HpCDD	9.13E-11
Total OCDD	2.05E-10

ND< = Non detect value

Table 3-3 (cont.)  
**COLEMAN -EVANS**  
**EVALUATION TEST**  
**SUMMARY OF DIOXIN / FURAN TEST DATA AND TEST RESULTS**

**TEST DATA**

Run number	1
Location	Thermal Polisher Exhaust Stack
Date	11/2/01
Time period	0930-1427

**FURAN LABORATORY REPORT DATA, pg.**

Total TCDF	
2,3,7,8-TCDF (DB-225)	89.0
Total PeCDF	
1,2,3,7,8-PeCDF	75.0
2,3,4,7,8-PeCDF	120.0
Total HxCDF	
1,2,3,4,7,8-HxCDF	180.0
1,2,3,6,7,8-HxCDF	85.0
2,3,4,6,7,8-HxCDF	86.0
1,2,3,7,8,9-HxCDF	5.7
Total HpCDF	
1,2,3,4,6,7,8-HpCDF	200.0
1,2,3,4,7,8,9-HpCDF	24.0
Total OCDF	58.0

**FURAN CONCENTRATION, lb/dscf**

Total TCDF	
2,3,7,8-TCDF (DB-225)	1.51E-15
Total PeCDF	
1,2,3,7,8-PeCDF	1.27E-15
2,3,4,7,8-PeCDF	2.04E-15
Total HxCDF	
1,2,3,4,7,8-HxCDF	3.06E-15
1,2,3,6,7,8-HxCDF	1.44E-15
2,3,4,6,7,8-HxCDF	1.46E-15
1,2,3,7,8,9-HxCDF	9.69E-17
Total HpCDF	
1,2,3,4,6,7,8-HpCDF	3.40E-15
1,2,3,4,7,8,9-HpCDF	4.08E-16
Total OCDF	9.86E-16

**FURAN CONCENTRATION, ng/dscm.**

Total TCDF	
2,3,7,8-TCDF (DB-225)	2.42E-02
Total PeCDF	
1,2,3,7,8-PeCDF	2.04E-02
2,3,4,7,8-PeCDF	3.27E-02
Total HxCDF	
1,2,3,4,7,8-HxCDF	4.90E-02
1,2,3,6,7,8-HxCDF	2.31E-02
2,3,4,6,7,8-HxCDF	2.34E-02
1,2,3,7,8,9-HxCDF	1.55E-03
Total HpCDF	
1,2,3,4,6,7,8-HpCDF	5.45E-02
1,2,3,4,7,8,9-HpCDF	6.53E-03
Total OCDF	1.58E-02

**FURAN CONCENTRATION, ng/dscm @ 7% O<sub>2</sub>**

Total TCDF	
2,3,7,8-TCDF (DB-225)	3.08E-02
Total PeCDF	
1,2,3,7,8-PeCDF	2.60E-02
2,3,4,7,8-PeCDF	4.16E-02
Total HxCDF	
1,2,3,4,7,8-HxCDF	6.24E-02
1,2,3,6,7,8-HxCDF	2.95E-02
2,3,4,6,7,8-HxCDF	2.98E-02
1,2,3,7,8,9-HxCDF	1.98E-03
Total HpCDF	
1,2,3,4,6,7,8-HpCDF	6.93E-02
1,2,3,4,7,8,9-HpCDF	8.32E-03
Total OCDF	2.01E-02

(DB-225) = Confirmation analysis utilizing a DB-225 column.  
 ND< = Non detect value

**Table 3-3 (cont.)  
 COLEMAN -EVANS  
 EVALUATION TEST  
 SUMMARY OF DIOXIN / FURAN TEST DATA AND TEST RESULTS**

**TEST DATA**

Run number	1
Location	Thermal Polisher Exhaust Stack
Date	11/2/01
Time period	0930- 427

**FURAN EMISSIONS, lb/hr.**

Total TCDF	
2,3,7,8-TCDF (DB-225)	4.03E-10
Total PeCDF	
1,2,3,7,8-PeCDF	3.40E-10
2,3,4,7,8-PeCDF	5.44E-10
Total HxCDF	
1,2,3,4,7,8-HxCDF	8.16E-10
1,2,3,6,7,8-HxCDF	3.85E-10
2,3,4,6,7,8-HxCDF	3.90E-10
1,2,3,7,8,9-HxCDF	2.58E-11
Total HpCDF	
1,2,3,4,6,7,8-HpCDF	9.06E-10
1,2,3,4,7,8,9-HpCDF	1.09E-10
Total OCDF	2.63E-10

**FURAN EMISSIONS, g/sec.**

Total TCDF	
2,3,7,8-TCDF (DB-225)	5.08E-11
Total PeCDF	
1,2,3,7,8-PeCDF	4.28E-11
2,3,4,7,8-PeCDF	6.85E-11
Total HxCDF	
1,2,3,4,7,8-HxCDF	1.03E-10
1,2,3,6,7,8-HxCDF	4.85E-11
2,3,4,6,7,8-HxCDF	4.91E-11
1,2,3,7,8,9-HxCDF	3.25E-12
Total HpCDF	
1,2,3,4,6,7,8-HpCDF	1.14E-10
1,2,3,4,7,8,9-HpCDF	1.37E-11
Total OCDF	3.31E-11

(DB-225) = Confirmation analysis utilizing a DB-225 column.  
 ND< = Non detect value



Table 3-3 (cont.)  
**COLEMAN -EVANS**  
**EVALUATION TEST**  
**SUMMARY OF DIOXIN / FURAN TEST DATA AND TEST RESULTS**

**TEST DATA**

Run number	1
Location	Thermal Polisher Exhaust Stack
Date	11/2/01
Time period	0930-1427

TOXIC EQUIVALENCY EMISSIONS (I-TEF's/89), ng/dscm.	(I-TEF's/89)	
Total TCDD	0	0.00E+00
2,3,7,8-TCDD	1	2.18E-03
Total PeCDD	0	0.00E+00
1,2,3,7,8-PeCDD	0.5	3.81E-03
Total HxCDD	0	0.00E+00
1,2,3,4,7,8-HxCDD	0.1	5.17E-04
1,2,3,6,7,8-HxCDD	0.1	9.53E-04
1,2,3,7,8,9-HxCDD	0.1	1.50E-03
Total HpCDD	0	0.00E+00
1,2,3,4,6,7,8-HpCDD	0.01	4.36E-04
Total OCDD	0.001	9.80E-05

Total TCDF	0	0.00E+00
2,3,7,8-TCDF (DB-225)	0.1	2.42E-03
Total PeCDF	0	0.00E+00
1,2,3,7,8-PeCDF	0.05	1.02E-03
2,3,4,7,8-PeCDF	0.5	1.63E-02
Total HxCDF	0	0.00E+00
1,2,3,4,7,8-HxCDF	0.1	4.90E-03
1,2,3,6,7,8-HxCDF	0.1	2.31E-03
2,3,4,6,7,8-HxCDF	0.1	2.34E-03
1,2,3,7,8,9-HxCDF	0.1	1.55E-04
Total HpCDF	0	0.00E+00
1,2,3,4,6,7,8-HpCDF	0.01	5.45E-04
1,2,3,4,7,8,9-HpCDF	0.01	6.53E-05
Total OCDF	0.001	1.58E-05

**TOTAL TOXIC EQUIVALENCY EMISSIONS (I-TEF's/89), ng/dscm. <sup>(1)</sup>** 0.040

TOXIC EQUIVALENCY EMISSIONS (I-TEF's/89), ng/dscm @ 7% O <sub>2</sub>	(I-TEF's/89)	
Total TCDD	0	0.00E+00
2,3,7,8-TCDD	1	2.77E-03
Total PeCDD	0	0.00E+00
1,2,3,7,8-PeCDD	0.5	4.85E-03
Total HxCDD	0	0.00E+00
1,2,3,4,7,8-HxCDD	0.1	6.58E-04
1,2,3,6,7,8-HxCDD	0.1	1.21E-03
1,2,3,7,8,9-HxCDD	0.1	1.91E-03
Total HpCDD	0	0.00E+00
1,2,3,4,6,7,8-HpCDD	0.01	5.54E-04
Total OCDD	0.001	1.25E-04

Total TCDF	0	0.00E+00
2,3,7,8-TCDF (DB-225)	0.1	3.08E-03
Total PeCDF	0	0.00E+00
1,2,3,7,8-PeCDF	0.05	1.30E-03
2,3,4,7,8-PeCDF	0.5	2.08E-02
Total HxCDF	0	0.00E+00
1,2,3,4,7,8-HxCDF	0.1	6.24E-03
1,2,3,6,7,8-HxCDF	0.1	2.95E-03
2,3,4,6,7,8-HxCDF	0.1	2.98E-03
1,2,3,7,8,9-HxCDF	0.1	1.98E-04
Total HpCDF	0	0.00E+00
1,2,3,4,6,7,8-HpCDF	0.01	6.93E-04
1,2,3,4,7,8,9-HpCDF	0.01	8.32E-05
Total OCDF	0.001	2.01E-05

**TOTAL TOXIC EQUIVALENCY EMISSIONS (I-TEF's/89), ng/dscm @ 7% O<sub>2</sub> <sup>(1)</sup>** 0.050

<sup>(1)</sup> Toxic equivalency does not include detection limit values.  
 (DB-225) = Confirmation analysis utilizing a DB-225 column.  
 ND< = Non detect value