

Appendix A

Distribution Assessment

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ANOVA Analysis, Incinerators, D/F, WHB or Dry APCD vs All Others (Wet and No APCD)

Source	# Obs	Avg	Sum Squares	Deg of Freedom	Mean Square
WHB or Dry APCD	8	4.42	125.0		
All Others (wet and no apcd)	81	0.08	12.3		
Between Categories			137.3	1	137.3
Within Categories (Residual)			1,022.0	87	11.7
Total	89	0.47	1,159.4	88	
F	11.69				
Fcrit (95% conf)	3.95				

F > Fcrit, D/F from WHB or Dry APCD is higher than all others (wet and no apcd)

ANOVA Analysis, Incinerators, D/F, WHB vs Dry APCD (all conditions)

Source	# Obs	Avg	Sum Squares	Deg of Freedom	Mean Square
Dry APCD	8	0.17	87.8		
WHB	10	6.13	70.3		
Between Categories			158.1	1	158.1
Within Categories (Residual)			1,019.2	16	63.7
Total	18	3.48	1,177.3	17	
F	2.48				
Fcrit (95% conf)	4.49				

F < Fcrit, D/F from WHB is not different than Dry APCD

Considers CT, and N if CT is not available

Units with both WHB and Dry APCD are included in WHB category

ANOVA Analysis, Incinerators, D/F, WHB vs Dry APCD (only CT conditions)

Source	# Obs	Avg	Sum Squares	Deg of Freedom	Mean Square
Dry APCD	6	0.17	108.6		
WHB	2	17.19	325.8		
Between Categories			434.4	1	434.4
Within Categories (Residual)			586.3	6	97.7
Total	8	4.42	1,020.7	7	
F		4.45			
Fcrit		5.99			

F < Fcrit, D/F from WHB is not different than Dry APCD

ANOVA Analysis, Incinerators, PM, Government vs Non-government

Source	# Obs	Avg	Sum Squares	Deg of Freedom	Mean Square
Non-government	103	0.021	0.00001		
Government	14	0.018	0.00009		
Between Categories			0.00010	1	0.00010
Within Categories (Residual)			0.051	115	0.00044
Total	117	0.021	0.051	116	
F		0.231			
Fcrit (95% conf)		3.924			

F < Fcrit, PM from non-government is not significantly different than government

ANOVA Analysis, Incinerators, Hg, Government vs Non-government

Source	# Obs	Avg	Sum Squares	Deg of Freedom	Mean Square
Non-government	15	5,486	1,762,611		
Government	1	1	26,439,162		
Between Categories			28,201,772	1	28,201,772
Within Categories (Residual)			1,383,907,904	14	98,850,565
Total	16	5,143	1,412,109,677	15	
F	0.285				
Fcrit (95% conf)	4.600				

F < Fcrit, Hg from government is not different than non-government

ANOVA Analysis, Incinerators, SVM, Government vs Non-government

Source	# Obs	Avg	Sum Squares	Deg of Freedom	Mean Square
Non-government	27	3,571	2,074,475		
Government	7	2,225	8,001,545		
Between Categories			10,076,020	1	10,076,020
Within Categories (Residual)			1,545,947,658	32	48,310,864
Total	34	3,294	1,556,023,677	33	
F	0.209				
Fcrit (95% conf)	4.149				

F < Fcrit, SVM from government is not different than from non-government

ANOVA Analysis, Incinerators, LVM, Government vs Non-government

Source	# Obs	Avg	Sum Squares	Deg of Freedom	Mean Square
Non-government	36	292	42,471		
Government	3	738	509,653		
Between Categories			552,124	1	552,124
Within Categories (Residual)			20,979,164	37	567,004
Total	39	326	21,531,288	38	
F	0.974				
Fcrit (95% conf)	4.105				

F < Fcrit, LVM from government is not different than from non-government

ANOVA Analysis, Incinerators, Chlorine, Government vs Non-government

Source	# Obs	Avg	Sum Squares	Deg of Freedom	Mean Square
Non-government	84	37.7	657		
Government	8	5.6	6,898		
Between Categories			7,555	1	7,555
Within Categories (Residual)			503,072	90	5,590
Total	92	34.9	510,627	91	
F	1.352				
Fcrit (95% conf)	3.947				

F < Fcrit, Chlorine from non-government is not different than government

ANOVA Analysis, Incinerators, PM, Liquid vs Non-liquid

Source	# Obs	Avg	Sum Squares	Deg of Freedom	Mean Square
Non-liquid	73	0.018	0.0007		
Liquid	44	0.026	0.0011		
Between Categories			0.0018	1	0.0018
Within Categories (Residual)			0.0489	115	0.0004
Total	117	0.021	0.0507	116	
F	4.242				
Fcrit (95% conf)	3.924				

F > Fcrit, PM from liquid is significantly higher than non-liquid

ANOVA Analysis, Incinerators, Hg, Liquid vs Non-liquid

Source	# Obs	Avg	Sum Squares	Deg of Freedom	Mean Square
Non-liquid	12	6,854	35,133,259		
Liquid	4	10	105,399,778		
Between Categories			140,533,038	1	140,533,038
Within Categories (Residual)			1,271,576,639	14	90,826,903
Total	16	5,143	1,412,109,677	15	
F		1.547			
Fcrit (95% conf)		4.600			

F < Fcrit, Hg from liquid is not different than from non-liquid

ANOVA Analysis, Incinerators, SVM, Liquid vs Non-liquid

Source	# Obs	Avg	Sum Squares	Deg of Freedom	Mean Square
Non-liquid	31	3,084	1,364,136		
Liquid	3	5,462	14,096,071		
Between Categories			15,460,207	1	15,460,207
Within Categories (Residual)			1,540,563,471	32	48,142,608
Total	34	3,294	1,556,023,677	33	
F		0.321			
Fcrit (95% conf)		4.149			

F < Fcrit, SVM from liquid is not significantly different than non-liquid

ANOVA Analysis, Incinerators, LVM, Liquid vs Non-liquid

Source	# Obs	Avg	Sum Squares	Deg of Freedom	Mean Square
Non-liquid	33	341	7,919		
Liquid	6	241	43,552		
Between Categories			51,471	1	51,471
Within Categories (Residual)			21,479,817	37	580,536
Total	39	326	21,531,288	38	
F	0.089				
Fcrit (95% conf)	4.105				

F < Fcrit, LVM from liquid is not different than from non-liquid

ANOVA Analysis, Incinerators, Chlorine, Liquid vs Non-liquid

Source	# Obs	Avg	Sum Squares	Deg of Freedom	Mean Square
Non-liquid	57	18.3	15,787		
Liquid	35	62.0	25,710		
Between Categories			41,496	1	41,496
Within Categories (Residual)			469,131	90	5,213
Total	92	34.9	510,627	91	
F		7.961			
Fcrit (95% conf)		3.947			

F > Fcrit, Chlorine from liquid is significantly higher than non-liquid

ANOVA Analysis, Cement Kilns, PCDD/PCDF, No ILRM (Long Only) vs Short kilns with ILRM Off vs Short kilns with ILRM On

Source	# Obs	Avg	Sum Squares	Deg of Freedom	Mean Square
No ILRM (Long Only)	43	1.87	0.1		
ILRM Status Off	1	1.17	0.4		
ILRM Status On	1	0.01	3.2		
Between Categories			3.8	2	1.89
Within Categories (Residual)			529.8	42	12.61
Total	45	1.81	533.5	44	
F		0.15			
Fcrit (95% conf)		3.22			

F < Fcrit, therefore PCDD/PCDF from long kilns is not significantly different than short kilns with ILRM Off and ILRM On

ANOVA Analysis, Cement Kilns, Hg, No ILRM (Long Only) vs Short kilns with ILRM Off vs Short kilns with ILRM On

Source	# Obs	Avg	Sum Squares	Deg of Freedom	Mean Square
No ILRM (Long Only)	44	24.8	2,200		
ILRM Status Off	2	195.2	53,344		
ILRM Status On	2	24.1	121		
Between Categories			55,665	2	27,832
Within Categories (Residual)			48,529	45	1,078
Total	48	31.9	104,194	47	
F	25.81				
Fcrit (95% conf)	3.20				

F > Fcrit, therefore Hg from short kilns with ILRM off is significantly higher than short kilns with ILRM On and no ILRM (long only) kilns.

ANOVA Analysis, Cement Kilns, SVM, No ILRM (Long Only) vs Shor kilns with ILRM Off vs Short kilns with ILRM On

Source	# Obs	Avg	Sum Squares	Deg of Freedom	Mean Square
No ILRM (Long Only)	42	554.9	54,639		
ILRM Status Off	2	19.3	499,156		
ILRM Status On	1	3.1	265,970		
Between Categories			819,765	2	409,883
Within Categories (Residual)			17,599,763	42	419,042
Total	45	518.8	18,419,528	44	
F		0.98			
Fcrit (95% conf)		3.22			

F < Fcrit, therefore SVM from No ILRM (long only) kilns is not different than short kilns with ILRM Off and ILRM On

ANOVA Analysis, Cement Kilns, LVM, No ILRM (Long Only) vs Short kilns with ILRM Off vs Short kilns with ILRM On

Source	# Obs	Avg	Sum Squares	Deg of Freedom	Mean Square
No ILRM (Long Only)	37	24.3	54		
ILRM Status Off	2	5.3	630		
ILRM Status On	1	13.7	87		
Between Categories			772	2	386
Within Categories (Residual)			22,351	37	604
Total	40	23.0	23,123	39	
F	0.64				
Fcrit (95% conf)	3.25				

F < Fcrit, LVM from long kilns is not different than short kilns with ILRM Off and short kilns with ILRM On

ANOVA Analysis, Cement Kilns, Chlorine, No ILRM (Long Only) vs Short kilns with ILRM Off vs Short kilns with ILRM On

Source	# Obs	Avg	Sum Squares	Deg of Freedom	Mean Square
No ILRM (Long Only)	44	41.5	132		
ILRM Status Off	2	52.3	316		
ILRM Status On	3	6.0	3,428		
Between Categories			3,876	2	1938
Within Categories (Residual)			72,498	46	1576
Total	49	39.8	76,374	48	
F		1.23			
Fcrit (95% conf)		3.20			

F < Fcrit, therefore Chlorine from no ILRM (long only) kilns is not different than short kilns with ILRM off or ILRM on

ANOVA Analysis, LWAK, Mercury, High Hg Haz Waste vs Low Hg Haz Waste

Source	# Obs	Avg	Sum Squares	Deg of Freedom	Mean Square
High Hg Haz Waste	3	15.4	53		
Low Hg Haz Waste	15	10.3	11		
Between Categories			64	1	63.9
Within Categories (Residual)			1,891	16	118.2
Total	18	11.2	1,954	17	
F		0.54			
Fcrit (95% conf)		4.49			

$F < F_{crit}$, Hg from high Hg haz waste is not different than low Hg haz waste

ANOVA Analysis, LWAK, Chlorine, High CI Haz Waste vs Low CI Haz Waste

Source	# Obs	Avg	Sum Squares	Deg of Freedom	Mean Square
High CI Haz Waste	2	80	2,726,605		
Low CI Haz Waste	15	1,403	363,547		
Between Categories			3,090,153	1	3,090,153
Within Categories (Residual)			2,879,104	15	191,940
Total	17	1,247	5,969,257	16	
F		16.10			
Fcrit (95% conf)		4.54			

F > Fcrit, Chlorine from high CI haz waste is higher than low CI haz waste

ANOVA Analysis, Solid Fuel Boilers, PM, Stokers vs Pulverized

Source	# Obs	Avg	Sum Squares	Deg of Freedom	Mean Square
Pulverized Coal	3	0.027	0.0000009		
Stoker	4	0.028	0.0000007		
Between Categories			0.0000017	1	0.000002
Within Categories (Residual)			0.00021	5	0.000042
Total	7	0.028	0.00021	6	
F	0.039				
Fcrit (95% conf)	6.61				

F < Fcrit, therefore PM from stokers is not significantly different than pulverized

ANOVA Analysis, Liquid Boilers, PCDD/PCDF, Dry APCDs vs Other

Source	# Obs	Avg	Sum Squares	Deg of Freedom	Mean Square
Dry APCD	4	0.601	1.00		
Other	36	0.047	0.11		
Between Categories			1.11	1	1.106
Within Categories (Residual)			4.43	38	0.117
Total	40	0.102	5.54	39	
F		9.48			
Fcrit (95% conf)		4.10			

F > Fcrit, therefore PCDD/PCDF from dry APCD is significantly higher than PCDD/PCDF from others

ANOVA Analysis, Liquid Boilers, PM, Mixed Waste vs No Mixed Waste

Source	# Obs	Avg	Sum Squares	Deg of Freedom	Mean Square
No Mixed Waste	66	0.024	0.00001		
Mixed Waste	1	0.005	0.00036		
Between Categories			0.00037	1	0.0004
Within Categories (Residual)			1.60	65	0.0247
Total	67	0.024	1.60	66	
F	0.015				
Fcrit (95% conf)	3.989				

F < Fcrit, PM from mixed waste is not different than no mixed waste

ANOVA Analysis, Liquid Boilers, SVM, Mixed Waste vs No Mixed Waste

Source	# Obs	Avg	Sum Squares	Deg of Freedom	Mean Square
No Mixed Waste	14	21.6	16.9		
Mixed Waste	1	5.1	236.2		
Between Categories			253.0	1	253.0
Within Categories (Residual)			3,513.4	13	270.3
Total	15	20.5	3,766.5	14	
F		0.94			
Fcrit (95% conf)		4.67			

F < Fcrit, SVM from no mixed waste is not different than mixed waste

ANOVA Analysis, Liquid Boilers, LVM, Mixed Waste vs Non Mixed Waste

Source	# Obs	Avg	Sum Squares	Deg of Freedom	Mean Square
No Mixed Waste	13	50.8	123.2		
Mixed Waste	1	7.7	1,601.1		
Between Categories			1,724.2	1	1,724
Within Categories (Residual)			58,887.9	12	4,907
Total	14	47.7	60,612.1	13	
F	0.351				
Fcrit (95% conf)	4.747				

F < Fcrit, LVM from mixed waste is not different than non mixed waste

ANOVA Analysis, Liquid Boilers, Cr, Mixed Waste vs No Mixed Waste

Source	# Obs	Avg	Sum Squares	Deg of Freedom	Mean Square
No Mixed Waste	27	90.8	242		
Mixed Waste	1	7.0	6,526		
Between Categories			6,768	1	6767.8
Within Categories (Residual)			968,948	26	37267.2
Total	28	87.8	975,716	27	
F		0.18			
Fcrit (95% conf)		4.23			

F < Fcrit, Cr from mixed waste is not significantly different than no mixed waste

ANOVA Analysis, HCl Prod Furnaces, PCDD/PCDF, WHB vs Non-WHB

Source	# Obs	Avg	Sum Squares	Deg of Freedom	Mean Square
No WHB	4	0.41	2.1		
WHB	8	1.60	1.7		
Between Categories			3.8	1	3.83
Within Categories (Residual)			36.9	10	3.69
Total	12	1.14	40.7	11	
F		1.04			
Fcrit (95% conf)		4.96			

F < Fcrit, D/F from WHB is not different than from no-WHB