Cremation Association of North America

Dear Representative McIntire:

The Cremation Association of North American (CANA) is a trade association that advocates for cremation best practices in the US, Canada and Mexico. As Executive Director I am writing to support efforts to reduce cremation pollution by reducing crematory operating temperatures in the state. Oregon is the last state in the US to require secondary chamber temperatures of 1800 degrees Fahrenheit.

In CANA's Crematory Operations Certification Program, required by 26 states, we teach the science of combustion. The foundation of this is balancing Time, Temperature and Turbulence. Crematories have two chambers to increase turbulence and retention time to let particulate matter and other emissions settle prior to discharge through the stack. Oregon currently requires 0.5 seconds of retention time which is achievable unless temperatures are too high. The higher the temperature the lower the retention time.

The 1999 study by the U.S. E.P.A. established crematories as small source emitters capable of state oversight. A copy of the study can be downloaded at this link. https://www.dropbox.com/scl/fo/x4202104iz6cdgwaqsp77/AFeu20mwobkJ5Y1hk6M0p_g?rlkey=0yausst3f41fw3pegnpsunlwr&st=ro7h3nlv&dl=0 . While this study may seem outdated, there has been no need to conduct another national study as states require testing before granting air permits. This testing on new makes and models of cremators has consistently supported the original data.

Three operating temperatures were evaluated, 1400, 1600 and 1800-degrees Fahrenheit. Technicians and scientists performed multiple cremations at each temperature level. The conclusion of the U.S. E.P.A. test company scientists was clear.

1400 degrees is the optimal operating temperature to reduce pollutant emissions, fuel consumption and production of greenhouse gases and that higher operating temperatures actually increase those factors. That said, 1600 degrees is preferable to 1800 degrees.

The relevant supporting data can be found on page 43 of the E.P.A. study available at the link above. Here are my notes summarizing my understanding of the test results. I hope you find this information helpful in considering a 1400 or 1600 degree operating temperature.

Retaining Oregon's current 1800-degree operating temperature requirement results in **LESS** oxygen and nitrogen oxide and **MORE** carbon dioxide, sulfur dioxide, carbon monoxide and visible emissions.

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Here are the relevant snapshots from page 43 of the E.P.A. study:

Analyte	Secondary Chamber Temperature: 1400 F							
	Run 1		Run2		Run 3		Average	
	inlet	outlet	inlet	outlet	inlet	outlet	Inlet	outlet
Oxygen (%dv)	9.78	11.36	10.43	11.85	9.22	10.37	9.81	11.19
Carbon dioxide (%dv)	6.92	6.13	6.50	5.81	7.56	6.88	6.99	6.27
Sulfur dioxide (ppmdv)	9.17	8.54	1.45	0.00	16.66	14.60	9.09	7.71
Nitrogen oxides (ppmdv)	132.35	119.59	110.62	97.42	96.31	84.87	113.09	100.63
Carbon monoxide (ppmdv)	1.91	1.42	2.99	2.41	1.78	1.38	2.23	1.74
Visible emissions (% opacity)								
max. 6-min. value	0.00		0.00		3.75		1.25	
run average	0.00		0.00		0.33		0.11	

	Secondary Chamber Temperature: 1800 F							
	Run 7		Run8		Run 9		Average	
	inlet	outlet	inlet	outlet	inlet	outlet	inlet	outlet
Oxygen (%dv)	7.24	8.78	7.53	8.94	7.71	9.48	7.49	9.07
Carbon dioXide (%dv)	9.55	8.37	8.21	7.34	8.16	7.07	8.64	7.59
Sulfur dioxide {ppmdv)	48.46	38.96	33.71	26.84	17.68	16.12	33.28	27.31
Nitrogen oxides (ppmdv)	128.09	113.18	79.62	70.97	85.29	73.86	97.67	86.00
Carbon monoxide (ppmdv)	15.73	10.50	1.49	1.48	0.00	0.46	5.74	4.15
Visible emissions (% opacity)								
max. 6-rnin. value	6.04		13.96		12.50		10.83	
run average	0.78		0.92		0.72		0.81	

	Secondary Chamber Temperature: 1600 F							
	Run 4		Run 5		Run6		Average	
	inlet	outlet	Inlet	outlet	Inlet	outlet	Inlet	outlet
Oxygen (%dv)	8.56	9.31	8.25	9.79	8.90	10.50	8.57	9.87
Carbon dioxide (%dv)	7.76	7.29	8.76	7.6B	7.80	6.88	8.11	7.28
Sulfur dioxide (ppmdv)	17.62	16,19	20.03	16.79	15.18	**12.48**	**17.61**	**15,15**
Nitrogen oxides (ppmdv)	113.18	102.92	176.69	**140.46**	88.23	75.09	**126.03**	**106.16**
Carbon monoxide (ppmdv)	0.16	0.19	0.15	0.04	0.68	0.58	**0.33**	**0.27**
Visible emissions (% opacity)								
max. 6-min. value	0.00		7.71		0.00		**2.57**	
run average	0.00		**0.99**		0.00		**0.33**	

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I hope you will consider supporting this legislation to reduce operating temperature to 1400 or 1600 degrees Fahrenheit. It would make a positive difference for everyone in Oregon.

Please feel free to ask if you have any questions or would like more information.

Sincerely,

Barbara Kemmis
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