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717-767-1551
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March 4, 2021

Representative Stan Saylor
100 Redco Avenue
Red Lion, PA 17356

Dear Representative Saylor,

This is a follow-up to my letter dated 2/25 in which I was in touch regarding legislation proposed by Representative Steve Malagari to reduce cremation pollution by reducing crematory operating temperatures in the Commonwealth. The purpose of this follow-up is to provide the supporting data from E.P.A.

As a second-generation funeral director operating six funeral homes and a crematory, I hope you will support this effort. My associates have personally handled more than 8000 cremations since we installed our crematory in 1994.

Relevant to optimum crematory operating temperatures, I know of no other more **comprehensive and credible information** on crematory emissions than the 1999 study by the U.S. E.P.A. and its approved testing scientists. A copy of the study can be downloaded at this link.

<https://www.dropbox.com/s/55jpd7nq67qn9vg/PB2000106992%20woodlawn%20%281%29.pdf?dl=0>

The study is a mind-numbing 74 pages of scientific data, prepared by U.S. E.P.A. approved environmental testing contractors, which increased costs for scientific services to an estimated \$300,000. E.P.A. agreed to pay half of that expense, the balance of which was paid by cremation providers and crematory manufacturers in conjunction with the Cremation Association of North America (cremationassociation.org). Actual costs far exceeded that \$300,000 amount and those additional costs were paid by the parties other than E.P.A.

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.

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

1551 Kenneth Rd., York, PA 17408-2243

the test results. I hope you find this information helpful in considering a 1400 operating temperature.

The bottom line is that 1400 is unquestionably the most dramatic difference in reducing pollution and 1600 is only marginally better than 1800 degrees. Therefore, my comments compare only the averages of 1400 v. 1800.

Operating at 1400 degrees v. 1800 degrees, here are the comparative measurements of the amounts that are going into the air in Pennsylvania during the process of cremation.

1400 degrees v. 1800 degrees

Oxygen (<i>not a threat</i>)	11.19	9.07	(81% of 11.19 at 1400 degrees)
Carbon dioxide	6.27	7.59	(121% of 6.27 at 1400 degrees)
Sulfur dioxide	7.71	27.31	(354% of 7.71 at 1400 degrees)
Nitrogen oxide	100.63	86.00	(85% of 100.63 at 1400 degrees)
Carbon monoxide	1.74	4.15	(238% of 1.74 at 1400 degrees)
Visible emissions	1.25	10.83	(886% of 1.25 at 1400 degrees)

Retaining Pennsylvania'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. Here are the relevant snapshots from page 43 of the E.P.A. study.

Analyte	Secondary Chamber Temperature: 1400 F							
	Run 1		Run 2		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	
Analyte	Secondary Chamber Temperature: 1800 F							
	Run 7		Run 8		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-min. 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		Run 6		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	7.68	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

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

Please feel free to ask if you have any questions or would like more information. Also, I believe Barbara Kemmis to be the most knowledgeable, honest broker of relevant information on this subject and encourage you to reach out to her too if you wish.

Barbara Kemmis, Executive Director
 Cremation Association of North America
 499 Northgate Parkway, Wheeling, IL 60090
 (phone) 312-245-1077 www.cremationassociation.org
barbara@cremationassociation.org

For your convenience, I also enclosed a summary commentary written by Paul Rahill, one of the study participants. Frankly, I found it much easier to read than the actual report at the link above.

I respectfully thank you for your consideration to reduce pollution and natural resource consumption in Pennsylvania.

If you have any questions whatsoever, please don't hesitate to ask me however would be most convenient for you. Email me at Ernie@HeffnerCare.com or call my office 888-767-1551 or call my personal cell 717-487-4420.

Sincerely,



Ernie Heffner

C: via email

Barbara Kemmis, barbara@cremationassociation.org
 Representative Steve Malagari, SMalagari@pahouse.net



Environmental Journey

By Paul Rahill,
Matthews Cremation Division

A Journey of Ten Years . . .

The regulation development process for human and animal crematories that began in 1996 was originally estimated to take four years to complete. At the start of this journey, the US EPA did not have any regulations covering the design, installation and operation of human or animal crematories, leaving this process to the individual states and provinces to deal with as they may. The EPA regulation development plan was originally designed to include varied public and private groups, giving them the opportunity to express their concerns, provide their input and make recommendations that would shape the outcome of the future regulations.

This process, worked by consensus amongst teams, proved to be very slow in producing tangible results. Adding frustration to the process was the surprising lack of credible data on crematory emissions available through the US EPA and its sources. Two years after the teams began to meet, EPA felt it best to reorganize and called upon only those participants it felt could move the process along in a positive and productive manner.

This void of crematory emissions data concerned the members of the newly reorganized "Subteam 1," which included representatives from CANA's environmental team. This Subteam was tasked with making recommendations to the EPA's Work Group leaders on how to

proceed with developing regulations, but without accurate emissions data this proved to be a challenge. The options available to the team were not great. The team could propose moving forward with developing regulations based on best estimates of crematory emissions or recommend crematory specific testing be performed before any regulations were considered.

The risk of basing long term regulations for crematories on inadequate and inaccurate data was too great for the death care industry and the Subteam to consider. Whether based on best guess or facts, regulatory change for crematories would certainly result in significant cost increases to the industry and the public,

not to mention the inconvenience that would be caused by the inevitable closing and consolidating of crematories that could not economically meet new regulations.

With the overshadowing negative attitudes by the public towards the general funeral service industry and the belief that both costs and inconvenience would increase, the mandate for CANA's representatives on Subteam 1 was clear; it must take a proactive role on behalf of its members and the public they serve. This mandate was not only to insure that cremations be readily available at reasonable costs but also that the commitment to clean air for the living not be compromised through unnecessarily weak or

over-ambitious regulations. With this mandate, the EPA Subteam headed by Paul Rahill and Dale Walter (IEE-Industrial Equipment & Engineering, ALL Crematory, Matthews) proposed to the US EPA that extensive environmental testing be performed prior to developing any Federal environmental regulations for crematories.

Environmental Testing like that proposed by the Subteam is very expensive under any circumstances, but when the testing will be used to guide US EPA regulations, only environmental testing contractors approved by US EPA can be used, increasing costs dramatically. The direct costs to perform the testing required for this critical evaluation would be approximately \$300,000. In addition to this was the significant pre-test engineering and technical preparation services, most of which was donated by Matthews Cremation.

During this regulatory development process, crematories were only one of many "industries" being reviewed by the US EPA. Quite honestly, crematories were a low priority and the likelihood of obtaining precious test funding from EPA was slim at best. The Subteam then proposed a very unique matching funds idea: EPA would pay half the cost of testing, evaluation and reporting and the balance would be raised by CANA, its members and affiliated death care groups with an interest in the outcome. This proposal intrigued EPA and they soon agreed to this idea. Under the proactive leadership of then CANA President John Cole of Pinecrest Cemetery Company Ottawa, Canada, the task of raising the capital needed for testing began.

CANA was established in 1913 for the purpose of promoting professional standards related to cremation practices throughout North America. There are approximately 1200 members who are engaged in serving the cremation families

through Funeral Homes, Cemeteries, Societies, as well as associated service providers. In addition, there are many vendor members to the industry who are also dedicated to indirectly serving families through their clients. This venture with EPA would require a coordinated effort of all parties to successfully meet the challenges ahead.

As with previous testing performed by the members of the Subteam it was determined that it would be advantageous to test different casket and container types at different temperatures to see what effect these variables had on the tested emissions under a very strict test setting. The types of containers were basic (minimum) cardboard cremation containers, cloth covered caskets and particle board/wood caskets. The three temperature ranges selected were the three most common found in North America, 1400°F, 1600°F and 1800°F. The location selected by the US EPA was a CANA member, The Woodlawn Cemetery located in the Bronx, New York. One of the reasons Woodlawn was selected was because their cremation equipment was typical to what could be routinely found operating throughout North America.

US EPA originally decided on 12 tests with the assorted containers and caskets at two temperature levels. CANA however requested a total of 18 tests be performed at three different temperature levels and agreed to pay for the additional testing above the cost sharing arrangement in order to obtain the most detailed and accurate data for the industry. EPA hired the two independent testing contractors whom they knew well and had utilized in other testing projects. After considerable pre-test preparations, testing began on June 11, 1999 and concluded on June 17, 1999.

The cremations were performed at each of the three levels of temperature

with data collected and samples taken by the assembled group of technicians and scientists. Pollutants tested for included visible emissions (smoke), particulate matter, carbon monoxide, nitrogen oxides, sulfur dioxide, hydrogen chloride, metals, dioxins and furans. This data collected was unprecedented and would later be utilized to establish baselines by which crematory emissions impact would be evaluated. The conclusion of the test company was clear.

"In general, no correlation was observed between either body characteristics or container type and emissions. Overall emissions tended to increase with increasing temperature."

By October 1999 with the testing complete, data verified, analyzed and documented with the reports written by the test companies and submitted to US EPA, crematories had slipped from a low priority to a very low priority. It was no coincidence; the encouraging test results had contributed to a lower sense of urgency. Crematories, both human and animal would be placed on a back burner at EPA, but not to be forgotten.

Final Regulations were eventually proposed in November of 2004. This was followed by a nationwide public comment period of almost one year allowing anyone; public, industry or agency to submit objections to US EPA for consideration where their basis would be considered before the final regulations would be adopted. Only two comments were received during the one year period and EPA's position remained unchanged.

EPA stated," Final regulations for other solid waste incineration (OSWI) units were signed by the EPA's Administrator on November 30, 2005, and can be found at <http://www.epa.gov/ttn/oarpg/new.html> or see an excerpt on page 20 of this magazine. Regarding the status of human and animal crematories, EPA did not change its position with respect to these

sources between proposal and promulgation and they are not regulated as part of the final OSWI regulations or any other existing Clean Air Act Section 129 incineration regulation.”

Human Crematories: “We noted in the preamble to the proposed rules that in considering the nature of human crematories . . . , EPA has come to the conclusion that the human body should not be labeled or considered solid waste. Therefore, human crematories are not solid waste combustion units, and are not a subcategory of OSWI for regulation. Moreover, we state in the preamble to the final rules that as stated in the preamble to the proposed OSWI rules, if EPA or States determine in the future that human crematories should be considered for regulation they would be addressed under other authorities.”

Animal Crematories: “In the preamble to the proposed rules, we noted that (1) emissions from these units are very low when compared to other solid waste combustion units. The emissions levels from uncontrolled animal crematory units are, in fact, less than emissions after controls from other types of incinerators that are regulated . . . ; (2) EPA is concerned about biosecurity within the agricultural sector; (3) In many areas there is also a lack of reasonable and economic alternatives (e.g., rendering, composting, burial) to incineration.; and (4) EPA has determined that the adverse impacts associated with regulation of animal crematories outweigh the benefits of regulation and these units are not included as a subcategory of OSWI for regulation at this time. We state in the preamble to the final rules that EPA has not changed our decision to exclude animal crematories and pathological waste incineration units, based on our analysis of their emissions and the adverse impacts that would occur if these units were regulated under the final OSWI rules, . . . At this time, EPA has no plans

underway to regulate human or animal crematories.”

15 years after the 1990 Clean Air Act and 10 years after the regulation development process began in earnest, crematories have been tested, reviewed and evaluated with a final determination of no federal regulations planned and none recommended to the States.

Next Steps must be considered though, as problems still exist for current and future crematory operations. In anticipation of US EPA developing federal regulations, many States moved forward on their own and developed regulations without the benefit of the comprehensive test data that was later available from the EPA testing. As a result, several states and provinces have regulations that actually appear to increase the pollutant emissions from crematories as well as increase the fuel consumption of crematories and the production of greenhouse gases.

CANA must now adopt a new mandate which will be a “win-win” for all parties involved. This will require industry leaders to meet with environmental authorities from the States and Provinces to review US EPA’s data. This will create goodwill and provide a greater understanding on how crematories actually function. At the same time, CANA’s leaders must discuss how state and provincial regulations might be updated to reduce emissions by lowering operating temperatures to those levels that achieved the best results during the tests.

This change, which is supported by US EPA’s own published test data, is good for the environment, which is good for us all. Reducing operating temperatures will also increase safety for those who operate cremation equipment and safety must always be a top concern for all crematory operations. Reducing temperatures also reduces fuel consumption and equipment maintenance costs which benefits the consumer by controlling the escalation of

operating costs for crematories.

The journey has been long, expensive and frustrating at times, but much has been learned and gained along the way. Finding and maintaining the delicate balance between the environment and the consumer will always be a challenge but may not be as difficult as once thought. Many interests are common, yet this journey is far from over.