DEEP Crematory Air Permit Working Group
Kick-Off Meeting
6/11/26
11:30 AM – 1 PM

Welcome and Introductions

Jaimeson Sinclair (DEEP): Good morning, my name is Jamison Sinclair and I'm the director of the Bureau of Air Management Engineering Division. I'd like to welcome you all to our Crematory Air Permit Working Group Kick-off meeting. This working group was established under Special Act 26-33, and we will be looking at the manner in which the Department uses emission factors for the purpose of permitting human crematoria and assuring compliance with the applicable air rules. I'd like to turn things over to our Deputy Commissioner of our Environmental Quality branch, Emma Cimino, to give a brief welcome and introduction.

Emma Cimino (DEEP): Hi everybody, many of you look familiar from our conversations over the legislative session. Thank you all for your attendance today and your participation in this group. The demand for cremation as a means of final disposal is increasing, and cremation of human bodies is a source of air pollution that requires a permit from DEEP for each retort constructed after 2009 in Connecticut. Our permitting process is designed to ensure that ambient air quality is maintained within federal and state standards. Other New England states also require air permits for the same reasons. To obtain a permit for a new cremation retort, the potential owner or operator must demonstrate that the construction and operation will comply with the applicable air pollution control laws and regulations. These demonstrations typically require the use of emissions factors that are representative of how the proposed equipment will be operated to make a preconstruction determination of whether or not the proposed equipment complies with the applicable laws and regulations. Currently, the Department provides a set of default emissions factors that potential operators are able to use in making the demonstrations that are necessary to obtain air permits. These emissions factors were developed between 2015 and 2017 using the best available science at the time and in consultation with other states. We put these default emissions factors together in an attempt to assist these facilities owners. This work can be really technical and expensive for small businesses to pursue on their own, which is why we created this package to make the process easier and more accessible to owners and operators of these facilities. However, the emission factors are admittedly conservative, and they can result in restrictions on the siting and operation of cremation retorts such that the location of an existing retort may be deemed inappropriate for a new replacement if the department's defaults are used. However, assuring that new equipment results in less environmental impact than the equipment it replaces is a fundamental requirement of air pollution control law. That's federal standards and state standards. Special Act 26-33 charges this group with exploring the derivation and use of these emissions factors, specifically for fine particulate matter and mercury in air permitting as applied to these facilities. The working group will seek to provide recommendations that could allow for the replacement of this aging equipment while ensuring adequate protection of the environment and human health in the area. We think this topic is ripe for this sort of interaction. What we learned this session is that our default emission factors can be updated and certainly aren't accomplishing what we were hoping for them to accomplish in every instance, so we thank you all for volunteering for this working group. I think there's good work to be done here, and I look forward to working with you.

Jaimeson: We have 20 minutes for introductions so everyone can introduce themselves. I don’t see any of our legislators or municipal officials on the call.

DEEP Team
Tracy Babbidge (DEEP): I'm the Bureau chief of the air program at DEEP.

Lou Corsino (DEEP): I'm a supervisor in the air permitting group.

Merrily Gere (DEEP): I'm the supervisor of the regulatory group.

Jordana Graveley (DEEP): I am an air pollution control engineer in the regulatory group, and I'm here to support and assist the working group.

Olivia Harris (DEEP): I'm a permit engineer. I've permitted a couple crematories at my time at DEEP.

Harrison Nantz (DEEP): I'm the Deputy chief of staff at DEEP. I manage the legislative affairs. Megan is part of my team.

Megan Andrews (DEEP): I'm the legislative liaison at DEEP.

David Kallander (DPH): I'm a toxicologist with the Department of Public Health. I'm in the environmental health section, and I've been here for 21 years.

Connecticut Funeral Directors Association (CFDA) Members
Michael Introvigne (CFDA): I'm the Treasurer of CFDA. I was the person who brought this up to the legislature after we were contacted by several crematories who were looking to update their retorts and were unable to because they couldn't the current standards.

Mary Anne Hawthorne (Cedarville Cemetery): I'm the executive director of Cedarville Cemetery. We do have a crematory. We were the first crematory established in Hartford County in 1983. We are still operating those same units.

Bob Fournier (Gillman and Valade): My wife and I operate Gillman and Valade funeral homes and Crematory in Connecticut. I'm a member of CFDA as well as Cremation Association of North America.

Cremation Association of North America (CANA) Members
Barbara Kemmis (CANA): I'm the executive director of the Cremation Association of North America and CANA. I was invited by CFDA leadership to apply for this working group. Depending on the goals of this group, my role could be more data-driven. We do business trends research as well as capacity research for cremation. We've done some national work and work in states like New Jersey, Massachusetts, New York, and Connecticut.

Retort Manufacturers
Rob Paraniuk (Matthews): I am the senior outside sales consultant with Matthews Environmental Solutions. I call on 23 states also internationally, and I'm here to provide as much detail and information on the equipment as possible.

Environmental Consultants
Chris Ecsedy (CJE Environmental): I'm with CJE environmental, and I've worked on several permit applications to get permits for the crematory facilities.

Alex Eisen-Cuadra (Achieve Environmental): I'm the CEO and founder of Achieve Environmental. I've done crematory air quality permitting in 30 or 40 states at this point.

Overview and Expected Outcomes

Jaimeson: As Michael introduced, CFDA and their lobby and members reached out to the legislature this year with concerns about the ability for certain crematory retorts to be replaced given the Department's permit application review processes. For some facilities that were placed into service many years ago, the replacement of those retorts under current rules using the Department's default emission factors seemed to be incompatible with applicable regulations, and so folks were seeking a solution to that problem. The vision of Special Act 26-33 is to bring together a cross section of stakeholders and critically review how the Department's emission factors, specifically for mercury and fine particulate matter, were developed and how they are used in air permit reviews. Our expected outcome is to report out on where those numbers came from, how those numbers are used, if there are newer numbers that are available in this instance, provide recommendations for the use of updated emission factors, and best practices that could assist the review of air permit applications and other approvals that are necessary under state law in order to facilitate the replacement of some of these older retorts.

I'll give a quick introduction as to why air permits are required and what the purpose of an air permit is. An air permit is very different than a building permit. If you've ever done any home improvement, you know the building inspector comes out and tells you what's necessary, they inspect, and then you have a building permit, and it's pretty much done. An air permit is different in that 1) it authorizes the construction of the source and 2) it has operational requirements. It is a living document, not a one-time thing that you can look at once and then put to the side. Our permits must be posted at the facility and reviewed periodically over time. They have record keeping and reporting requirements in them. They also have monitoring requirements to monitor the operation of the piece of equipment to ensure that it is being operated in accordance with the permit. Why do we issue permits? The primary purpose of a permit is to protect ambient air quality. EPA promulgates ambient air quality standards for six common pollutants: ozone, lead, sulfur dioxide, particulate matter, nitrogen dioxide, and carbon monoxide. Not only do they promulgate these standards, but they also review them periodically, and from time to time they increase the stringency of these standards. These standards are meant to protect human health and the environment. The Clean Air Act and state regulations require air permits for the specific purpose of reviewing new sources of air pollution and ensuring that as new sources of air pollution are built, the air quality where those sources are built is maintained in compliance with those air quality standards, and that emissions of hazardous air pollutants like mercury, which is a potent and persistent neurotoxin, are limited to limit public exposure. In Connecticut and essentially all the other New England States and many other jurisdictions across the country, human crematory retorts require air permits. The air permit process is essentially a pre-construction review based on scientific information and the design specifications of the piece of equipment to evaluate whether or not the way the equipment is proposed to be operated will be compatible with air pollution control regulations and requirements. Essentially, if you can check all the boxes and make that demonstration to the Commissioner, then you can construct your piece of equipment to operate it as proposed.

What is an emission factor? According to EPA, an emission factor is a representative value that attempts to relate the quantity of a pollutant emitted within industrial activity. For our purposes, it's a representative value that seeks to relate the quantity of air pollution emitted from a retort to the mass of charge disposed of in the crematory retort. Why do we have emission factors and how are they used? They're used as a conservative, cost effective, and efficient means of estimating the mass of pollution emitted from a source, in this instance, crematory retorts, and to evaluate the impact of those emissions

on air quality and compliance with environmental standards. We use emission factors because site specific emissions data may not exist for the unit, or it may be costly to obtain. When we are not using an emissions factor, we use an actual emissions test where someone has been required to sample the emissions from a piece of equipment, typically an identical model, and relate that to what is being proposed. That can be particularly expensive for a facility. For small businesses, if you are not in control of other units in other locales, you really can't compel somebody to test and give you the data to say "this is representative of my unit that I will I plan to install here in Connecticut." So, we use these emissions factors as a conservative surrogate for having to do extensive testing.

Scope and Deliverables

Jaimeson: Our scope/charge under the Special Act is to first evaluate the available data and emissions factors, specifically with respect to mercury vapor and fine particulate matter, from crematory retorts, to look at the variability in that data and the representativeness of that data, and to look at how owners and operators in Connecticut truly operate their equipment. Again, the emission factors that we have now are conservative. They take into account the range of operations that past applicants have presented to the Department. Based on the Department's experience, we concluded that if individuals want to do from A-Z with this particular piece of equipment, then these are the expected emissions from that broad range of operations. We then ask if those emissions are protective of human health and the environment and if they are adequately protective in this specific location. Those numbers and the operations of the unit could be tailored in such a manner that restrictions on operations using those default numbers could, in some instances, enable an individual to obtain a permit, but there is an end point at which we cannot restrict the proposed operations of the source enough using those default emissions factors to allow for the unit to be built in a specific location. There are two options in that instance: 1) present better data to the Department about how the unit operates and demonstrate that that is more representative, or 2) take a look at what we're using as our defaults and see if our defaults can be updated based on the best science now, eight years later, to see if we can be less conservative in how we have been looking at the units. We will also be looking at best practices and potential emissions control technologies that might be used to reduce emissions using either the defaults or better information so that a source can be located at a site where it normally it wouldn't be compatible. Controls like filtration or carbon injection and filtration are possible to reduce mercury vapor emissions, but we'll do a deeper dive into that with our consultant friends, our friends from DPH, and the equipment manufacturers. After all those discussions, we'll evaluate how we use these emission factors, look at our best practices, provide a set of recommendations about how those things are used to make determinations, look at the setbacks and rules of thumb that can be used to make the permit process a little bit easier for small businesses, and update these emissions factors as necessary.

Our deliverable will be a report to the legislature that's due on January 15th, 2027. We will present all our findings and evaluations and our recommendations. This may result in recommendations to make changes in policy, regulation, or statute in order to achieve the ends of ensuring that the replacement of the existing reports or the installation of new retorts is adequately protective of human health and the environment.

Roles and Responsibilities

Jaimeson: The Special Act requires that DEEP provides the administration of the working group. DEEP will be primarily charged with work group administration and coordination. We will schedule meetings. We will be the central repository for all of information that is reviewed and distributed amongst everyone. We will be taking and distributing notes for each meeting. We will do a significant amount of data collection, presentation, and submission for everyone to review. We will submit some

recommendations, and we will be charged with primary authorship of the report and the recommendations. For our non-DEEP participants, we ask of you that similarly, you provide data collection, presentations, and submission, which gives you an opportunity to have your say in what you believe are the appropriate emissions factors and uses and discuss how your operating practices may differ from some of the conservative assumptions that we've made in terms of our emissions factors. We'll also ask you to critically review all of the data that is submitted. We'll ask you to submit your recommendations, and then once we start to share drafts of the report, you will have the opportunity for editorial review of the reports and the recommendations.

Timeline and Milestones

Jaimeson: Today is our kick-off. We are looking to have the next three meetings on the fourth Thursday of the month. Our next meeting will be regulatory review on July 23. The Special Act compels us to look at regulations of other jurisdictions and the federal EPA with respect to human crematory retorts. Meeting 2, on August 27, will be more data focused, and we will be looking at emissions factors, control equipment, and best practices. We hope that during that meeting, there will be an opportunity for our equipment manufacturers to present (without divulging proprietary information) on how your units operate and the aspects of your units that either contribute to or mitigate the emissions of fine particulate matter and mercury vapor. The third meeting, on September 24, will be our brainstorming meeting to look at the recommendations that staff and other participants have and to begin to put together our outline for the report. We're going to take a break to let staff start to draft the report, and then in November, we'll reconvene and distribute a draft of the report to the work group and give folks the opportunity to review and comment. We will receive those comments, incorporate them into the report, and be ready for internal review in late December, and then submit the final report to the legislature in January. Peer-to-peer conversation is essential and encouraged, so we will circulate a listing of participants and contact information after this meeting. For communications regarding the work group, please send them directly to me at jaimesonsinclair@ct.gov with CC's to Olivia (olivia.harris@ct.gov) and Jordana (jordana.graveley@ct.gov). If I'm not in the office, at least one of us will get back to you.

Next Steps

Jaimeson: Our next steps will be calendaring the forthcoming meetings so you will have them on your schedule. We will continue to work in the Teams format. We will also distribute the regulatory review presentation prior to the next meeting so that you can review the information prior to the meeting and the meeting can be discussion-based. We recognize that owners and operators of crematories have less contact with the Department than some of the other folks with whom we interact with on air permitting, so this would be an opportunity to discuss and answer some questions for you. I will ask the equipment manufacturers and our colleagues at CANA. In upcoming meetings, we will be leaning on your expertise. I hope that you will be able to generate a few slides to talk about incineration technology and the models that you build. If you have data on their emissions profiles, please share that. We would also like to hear about emissions control equipment that you've seen used on your units or in practice. Similarly, we would ask that CANA offer educational materials germane to this conversation. If our DPH colleagues have some information that they would like to share, we would love to receive that.

Questions/Discussion

Chris: Regarding the scope, is it limited to PM2.5 and mercury? I'm concerned about the NOx emission factor, specifically when it comes to screening or refined modeling of NO2. If this work group resolves the PM2.5 and the mercury issues, we still may have a situation where we can't permit the crematory due to that parameter.

Jaimeson: The Special Act is specific to PM2.5 and mercury. Those pollutants have been controlling with respect to the questions and concerns that have been raised up to this point with respect to replacing some of the older reports, so we might have to address that concern outside of this group.
Tracy: The legislation makes clear that the primary focus is to tackle PM2.5 and mercury, so I think we need to tackle that first and make sure we satisfy those requirements, but there may be space to understand the concerns that you're raising around NOx emissions.

Michael: Will you be distributing the slides?
Jaimeson: Yes.

Micheal: As background, what started this wasn't emissions factors, it was actually boundary issues. CFDA was approached by a few crematories who had looked into replacing their retorts, but they could not because of boundary issue. We came to the legislature looking for a grandfather clause to allow the existing crematories with old, aged equipment to be allowed to replace those without having to meet the air simulation modeling and the current boundary regulations because you can't pick up the building and move it. DEEP was opposed to that, understandably, because they don't want to set a precedent for other industries that use incineration. I ended up calling every crematory in the state, and pretty close to half of them would not be able to meet the current boundary regulations.

Tracy: Is there any feedback on the proposed roles and responsibilities for the working group?

Jaimeson: I'd like to add a little clarity on emission factors and setbacks and how our rules work. There is technically no setback in Connecticut's air permit regulations associated with human crematoria. The requirement is that all incinerators, regardless of whether it's a human crematory or waste energy incinerator, meet our hazardous air pollution regulations. Our hazardous air pollution regulations specify an emissions limit that the unit must meet. Again, emission factors are a way of estimating what the emissions coming from the unit would be. If you take a conservative approach to estimating what the emissions will be from the unit, they may violate that emissions limit. That emissions limit depends on the distance from the stack of the crematory to the property line, but it doesn't limit the distance from the stack to the property line. What it says is the closer you are to the property line, the less you are allowed to emit, and the further you are away from the property line, the more you can emit. The problem for many facilities is that when you use our extremely conservative emissions factors, which again, are based on assumptions, such as what may be placed in that cremation container, then you would potentially see more emissions. Our conservative emission factors take that scenario into account because that scenario was presented to us by a variety of applicants, so that emission factor is pretty high. It is consistent with some emissions tests, but it's pretty high. So if you use that emission factor, it says you need to be further from the property line, but if we can find numbers that are more representative of how units operate here in Connecticut or if units are willing to take limitations on their operations, it is possible to come to a place where the unit may be sited closer than what is represented in our policy guidance as a rule of thumb of 155 feet. That's where the emission factors and perceived setback requirement dovetail.

Chris: Makes sense to me. In terms of our role, for data collection, would you be looking for stack testing done on these units? We've also talked about emission factors from other states. Is that the type of information you want?

Jaimeson: Whatever you can offer that is in the public domain and does not compromise your business relationships, we are absolutely willing to consider.

Barbara: Can you share the source for the emission limits for mercury? There are a number of studies estimating mercury in human bodies, mainly dental amalgam. CANA did some research on this in 2015 with the University of Minnesota school of dentistry that quantified mercury amalgams present in baby boomers' mouths and cremated similar amounts of mercury amalgam to see how much was actually emitted. Would that be helpful?

Jaimeson: We do have some of the data used by the University of Minnesota. We can share what we have, and you can share what you have, and that would be useful. Our emission factor is based on work that was done by Bay Area Air Quality Management District. To develop their emission factors, they took national data and then they "Californiaized" it for their population. We did a similar exercise with Connecticut; we took the national data and "Connecticutized" it, and then we came up with some average factors associated with death rates here in Connecticut. I'm under 60, but if I were to pass today, I have 4 mercury amalgam fillings left from my high school days, so those would be a concern with respect to our regulatory limit if the amount of mercury and my fillings is consistent with national averages. That is where some of the concern comes from.

Barbara: That's very helpful, thank you.

Michael: Quick follow up question on setbacks. You said there's no setback for crematories?

Jaimeson: For our purposes at DEEP, there is no setback with respect to air permitting. There is a setback with respect to DPH for new crematories. Under DPH's rules, a crematory or crematorium is the building. Under our rules, the crematory is the retort or the incinerator itself. Under current DPH rules, any building that was approved for a crematorium prior to 2017 can be closer than 500 feet from the nearest residential property, but anyone after that must be at least 500 feet away from the nearest residential property. That is an explicit setback. At DEEP, we don't have, in statute or regulation, any explicit setbacks. The requirement is that an owner operator coming in for a permit must demonstrate that they can meet our hazardous air pollutant emission limits. Those emission limits vary based on the distance to the property. It's not a limitation on the setback, but the closer you are to the property line, the less that limit is. The farther you are from the property line, the higher that limit is. So then what you're doing is comparing your actual emissions to what that limit is based on your property, and if your actual emissions are higher than what that limit allows, there are a couple ways you can deal with that. One way is to add on control equipment to reduce your actual emissions to below that limit. The other is to move the equipment farther from the property line, which increases the limit, and now without emissions control equipment, you may be able to comply. There's also an in between, where you do a little bit of emissions control and move the unit a little bit from the property line, but not a significant distance. The rule of thumb of 155 feet is 20 adult paces. I understand the inequity perceived in that for a source that was allowed to be built in the 90s at a much closer distance when we had far less data about crematory retort emissions. Again, our charge is ensuring that businesses can operate, but we also have adequate protection of human health and the environment.

Michael: Okay. I was just surprised and a little confused when you said that. In DEEP's New Source Review Permit Application Guidance for Crematory Units, on the last page, under things to keep in mind, it says "in order to comply with RCSA 22a-174-29, the stack for a proposed Crematory unit will need to be located at least 155 feet from the nearest boundary line." That number is right there on a DEEP document, so I just wanted clarification that.

Jaimeson: Correct. That means that if you use our numbers, you have to be 155 ft away. If you go up two paragraphs from that, it says that you can use our default emission factors, or you can present your own, in which case that 155 feet number really doesn't apply. It could be written better, and that is one of the recommendations that needs to come out of this: that we need to revisit that policy document that was written six years ago and clean it up.

Michael: Okay. Thank you.

Tracy: Is there any feedback on the meeting schedule? Are there any conflicts or concerns with the timing?

Michael: I won't be available for meeting 1 on 7/23, but I could have someone fill in for me if needed.

Barbara: These dates work well for me for now. Is there a best practice for sharing research with the group? I have some things I would like to share.

Jaimeson: Yes please.

Barbara: Is a week ahead good?

Jaimeson: As soon as possible is good, but 2-3 days before should be fine. Just be respectful of your colleagues and their ability to have a chance to review it prior to the meeting.

Alex: I think it would also be helpful to include a historical review of where we are and why we're there. I'm thinking of looking back at the 1990s studies with the California Air Resource Board and EPA and where those emission factors came from and sort of how they've evolved since then. It could also be helpful to look at EPA's national emissions inventory to see how it's calculated today with the 2020 and 2023 amendments. I also think it may be helpful to have somebody in this group with a background in analytical chemistry or a laboratory analysis. What I've seen with some of the stack test reports is that they don't always follow the EPA standards in terms of pull times and analytical instrumentation, etc., and that can result in some error. The meeting schedule works for me. Are we thinking the same around the same time, 11:30 am?

Jaimeson: Yes.

Jaimeson: Thank you all for your participation.