

Lotus cc:Mail for Brenda Johnson

Author: Brenda Johnson at REGION4  
Date: 05/18/99 02:53 PM  
Priority: Normal  
TO: cathy\_wilson@ncair.net at IN  
CC: Kay Prince, Randy Terry, Stanley Krivo:  
BCC: Brenda Johnson  
Subject: ISC-Prime

Cathy:

The following questions are being sent in response to your telephone call on what is required to use the ISC-PRIME model for modeling demonstrations. First of all, ISC-PRIME is a not an EPA guideline model but has been under review by EPA. For regulatory purposes, the ISC3 model should be used. Case-by-case consideration and approval of non-guideline models are possible with the appropriate justification per section 3.2 of 40 CFR Part 51, Appendix W: Guideline on Air Quality Models. Any approval for ISC-PRIME, unless it became an EPA model, would be on a case-by-case basis and would not imply approval for use by other sources. Specifically, some questions/items that must be addressed for a case-by-case approval of ISC-PRIME include:

1. Why does ISC-PRIME offer a better theoretical simulation of the problem?
2. Based on the available performance evaluation data for ISC-PRIME, why would ISC-PRIME be expected to perform better than ISC3 for this application. To do this latter evaluation, the source/state should identify the evaluation data base(s) that is (are) similar to the situation for the proposed source. To assess similarity, the building/source geometry and the stack effluent characteristics should be compared for the evaluation data base and the proposed source. This could include a comparison of the stack height to building height ratios, and a comparison of the momentum and buoyancy fluxes.
3. Discuss the model evaluation of the ISC-PRIME model.

If this demonstration will be submitted to EPA as a SIP revision, we would prefer that a modeling protocol be submitted first. Approval of a non-guideline model should be approved prior to it use. Please let me know if I can be of further assistance. Have a great day....  
Brenda Johnson

Hello all!

It seems I need to weigh in here. Brenda is basically correct. The Calcagni memo doesn't seem to apply here, so there should be a fluid modeling demo. One or 2 fine points. They can physically raise the stack above GEP without our approval. They just can't take credit for the increase in a dispersion modeling run without justifying the increase through a fluid modeling demo or field study. Also, the 5000 tpy exemption applies only to plume enhancement techniques such as merging gas exhaust streams or manipulating other exhaust parameters. It does not apply to GEP questions. The height the stack was originally built to is considered GEP unless there is a demonstration proving otherwise. Credit for above GEP formula height cannot be granted (Calcagni memo aside) without a full demonstration to determine if excessive concentration criteria are met.

Unless I haven't made myself clear I don't think we need to have a call.

Gary

>>> <deanw> 04/29/99 11:54am >>>

I think we need to have a 3-way call on this one--Brenda, dean and Gary, and Warren if he wants. I am kind of busy with other Clearinghouse calls today, but could do it at say 11 am your time tomorrow or else 11am your time on Tuesday. I am out on Monday. Let me know. It saves on my long distance charges if you can call me.

-----Original Message-----

From: Johnson.Brenda@epamail.epa.gov <Johnson.Brenda@epamail.epa.gov>

To: deanw

Date: Thursday, April 29, 1999 7:38 AM

Subject: Re[2]: Stack height increase

- >
- > Welcome back Dean. The 1992 Calcagni and 1993 CP&L memos all relate to the need for stack
- > height increases due to downwash problems resulting from the siting of
- > new nearby structure. The CP&L stack increases were due to the need
- > to replace stack in an area of new structures which required a higher
- > stack. The 1992 memo This does not appear to be the case here. My
- > current issue arises from the state modeling the power plant for a
- > Title V permit. The plant was chosen because the state wanted to
- > look at the emission limits for some facilities that
- > hadn't been modeled in recent memory. They wanted to check out
- > compliance with the NAAQS.
- >
- > The stack height regulations can be a bit confusing. However, I've
- > often thought that the regulations assumed that an existing stack
- > height of a facility is considered GEP unless it is demonstrated

> otherwise. This demonstration is by fluid modeling, unless the stack  
> is being raised up to 65 m, unless the 5000 SO2 exemption applies, or  
> the siting of new structures causes a problem. Therefore, regardless  
> of what the BPIP program says the GEP height should be, you aren't  
> allowed to raise a stack to some arbitrary height above 65 m unless  
> fluid modeling is performed to justify that height, however small an  
> increase.

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> \_\_\_\_\_ Reply Separator

>Subject: Re: Stack height increase

>Author: deanw

>Date: 04/28/99 06:49 PM

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>Brenda--In my new life I am chasing quite a few C/H issues, so don't have  
>time to look at your questions in detail  
>until later next week. (I probably need to talk to you to understand  
>exactly where you are coming from in your questions.) However, an interim  
>comment is : Isn't the June 29 1992 Calcagni memo in effect here. This  
>memo

>essentially says that stack height increases up to formula GEP are OK  
>without a fluid modeling demo. Also look in SCRAM for Nov 29 1992 memo  
>from Gary Blais and myself to you on CP&L plant.

>Maybe Gary can confirm what I am saying.

>Gary--don't know if you are aware but I am doing my old C/H job now,

>dean

>-----Original Message-----

>From: Johnson.Brenda@epamail.epa.gov <Johnson.Brenda@epamail.epa.gov>

>To: deanw

>Date: Wednesday, April 28, 1999 1:24 PM

>Subject: Stack height increase

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>> I have a stack height increase question. There is this major utility  
>> that has downwash problems identified in air dispersion modeling of  
>> their current emission limits for two stacks. The stack heights are  
>> 96m but below the GEP formula stack height of 133 m as determined by  
>> BPIP. SO2 NAAQS violations occur for the 24-hour averaging period  
>> using the actual stack height. The Company's consultant determined  
>> through air dispersion modeling with the ISC3 model that raising the  
>> stack to 110 m would resolve the downwash problems and the NAAQS

>> violations.

>>

>> The stack height regulations requires a demonstration for raising a  
>> stack above the 65 m de minimis stack height. The GEP Technical  
>> Support Document states that a demonstration may be required to  
>> increase the stack height to the formula GEP height. It is rather  
>> silent on whether or not a demonstration is required to incrementally  
>> raise a stack up to the GEP formula height. Past memos from the old  
>> SO2/Particulate Matter Programs Branch, specifically the 10/16/1991  
>> memo, "Dade County, Florida, Stack Height Increase" from Gwen Jacobs  
>> to Lew Nagler states that beyond the 65 m deminimis threshold, there  
>> is no de minimis exemption for stack height increases. I have

written

>> the State and the companies to state that a fluid modeling  
>> demonstration is required for stack height increases above the 65 m  
>> threshold to be creditable in regulatory modeling. Credit for  
>> incremental increases up to the formula GEP height are not allowed  
>> unless the fluid modeling demonstration is performed. the formula  
>> height is the height that one would normally build a stack to avoid  
>> downwash problems. If this is not originally done, he stack height  
>> regulations must be followed. The company does not see a need for  
this

>> to justify such a small increase in the actual stack height and wants  
>> to know if some other discretionary provisions exist for allowing the  
>> proposed 110 m to be used in setting the emission limits. I do not  
>> know of any.

>>

>> Please provide some input on the following questions:

>>

>> 1. The outstanding question here is whether or not fluid modeling is  
>> required to use the 110 m stack height in the setting of an emission  
>> limit.

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>> 2. If some demonstration is required, may air dispersion modeling be  
>> used. The company has performed ISC3 modeling using the 96 km stack  
>> height with and without downwash and shows that the high-second-high  
>> concentrations exceeding the 40% excessive concentration criteria is  
>> met which justifies a higher stack using 5 years of meteorological  
>> data for the 24-hour averaging period only. Is this approach

allowed

>> under the stack height regulations? I do not think so.

>>

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>> If I am in error in my assumptions or reading of the regulations and  
>> TSD please let me know where the error occurred. I have to give the

>> state some answer soon. Let me know when you can get to this issue.

>> Thanks

>> 3. Should the other SO<sub>2</sub> averaging periods be addressed in the ISC

>> modeling demonstration for excessive concentration if the company's

>> approach is acceptable.

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