Model Clearinghouse Information Storage and Retrieval System

Record Information Report

Record Number: 99-VIII-01 Fiscal Year: 1999 Region: 08 Last Update: 06/13/99
Name: ND Increment Expansion-March 99

State(s): NORTH DAKOTA
Pollutant(s): SO2
Regulation(s): PSD
Source(s): Mixed/Multiple Sources
Model(s): UNSPECIFIED
Subject(s): Emission Rates for Model Input
Urban/Rural: Rural Only
Oral/Written: Oral
Terrain: Low Terrain (below stack height)
Guideline: Guideline
Database: Off-site
Involvement: Review and Comment
Record Comments:

Issue: In March 25 1999 letter to Region VIII, ND asked what emissions should be input to a model to credit the increment for sources that are shutting down. The State suggested that the PSD Workshop Manual indicates that maximum actual emission be used for sources that are in operation and that consume increment. Region VIII contends that such emissions would provide too much credit since it assumes that the maximum actuals may not occur during adverse met conditions. The Region suggest that average annual emissions would be the most appropriate given the lack of continuous emission monitoring.
C/H Comments; Agree with Region VIII from a technical standpoint. The issue is somewhat analogous to past issues where sources wanted to use conservative screening models to estimate credits against increments. Again, in these cases it was deemed that too much credit would be allowed and the use of such models was deemed inappropriate. Given the time frame and lack of a coordinated HQ policy position on this one, the C/H suggested that Region VIII survey the other Regions to see if there would be any inconsistencies with their position.
Resolution: As a result of the survey, Region VIII found that their position was not inconsistent with those of the other Regions. Some Regions favored a more strict interpretation where the average annual would still be too high. As a result, Region VIII wrote a letter (below) to ND indicating that average annual emissions would be most appropriate.

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
REGION 8

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June 1, 1999

Ref:8P-AR

Mr. Dana Mount, P.E.
Director Division of Environmental Engineering
North Dakota Dept. of Health
P.O. Box 5520
Bismark, North Dakota 58506

Dear Dana,

This is in response to your letter of March 17, 1999 in which you requested guidance on
the appropriate emission rate to use in a modeling exercise the State is

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performing to
determine PSD increment consumption on Class 1 areas in North Dakota. In this case
your department is considering increment expanding sources in the modeling analysis,
and the issue is whether these sources should be modeled at the actual maximum
observed SO2 emission rate for each increment averaging period (i.e. three hour average,
24-hour average, and annual average) for the previous two years of operation. The issue
involves five major SO2 sources that have shut down since the minor source baseline date
was triggered on December 19, 1977. In your letter you reference the 1990 New Source
Review Workshop Manual, which would seem to support your proposed approach. As
you requested, in preparing our response we have discussed this issue with OAQPS and
the other Regional Offices to ensure national consistency in this issue.
While, in general, the approach outlined in the manual would provide a good estimate of
both increment expansion and consumption, it appears that your situation is a special case
because of the high variability of emissions from some of the largest major sources being
modeled. In discussions with Kevin Golden, your staff indicated that the ratio of peak
observed short term (3 and 24 hour average) to long term (annual) average emission rates,
ranged from about 1.5 - 2.5 to one. Much of this variability occurs sporadically and
appears to have a seasonal bias based on the sources operating level. The most accurate
way to characterize the increment expansion (or consumption) from a source of this type
would be to use continuous in-stack emission monitoring data from these sources in the

dispersion modeling effort. These hourly data would be paired with meteorological data
taken at the same time and used in the modeling. This method would take into account the
effect of both emissions and meteorological variability. The increment calculation would
be based on the dispersion modeling results for each averaging time based on whatever
emission rate all the source(s) were operating at when the dispersion model predicted the
highest second-high SO2 concentration in the Class 1 area, consistent with the form of
the PSD increments. The effect of both increment expansion and consuming sources
would be accounted by "netting" in the model, with increment expanding emissions

input
to the model as negative emission rates.
Clearly the analysis described above would be a resource intensive exercise, and would
not be feasible in this situation given the lack of CEM data. The difficultly in this case is
finding a conservative method to characterize increment expanding emissions that will
not result in too much "increment credit". We are concerned that using the peak observed
short term emission rate for each and every 3 and 24 hour period simulated in the model
would overestimate increment expansion because it is extremely unlikely that the source
was operating at this peak level at the time this "worst case" meteorology actually
occurred. We believe that our suggestion to use an annual average operating rate for all
averaging periods is a reasonable screening method that is equitable to all sources and
will not overstate increment expansion. While we are open to other suggestions, we are
not aware of any other method short of using actual hourly CEM data in the modeling,
that would ensure that excessive increment credit is not provided.
If you would like to discuss this issue further, please call either me at 303 312-6005, or
Kevin Golden at 303 312-6442.
Sincerely,
Richard Long, Director
Air and Radiation Programs
cc: Joe Tikvart, EPA
Dean Wilson, EPA Model Clearinghouse
Dan deRoeck, EPA