



UNITED STATES ENVIRONMENTAL PROTECTION AGENCY

REGION 8

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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 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.

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 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 difficulty 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
Dennis Doll
Dan deRoeck