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DRAFT

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On May 4, 1987, the Indiana Department of Environmental Management (IDEM) submitted comments on the February 4, 1987, Notice of Proposed Rulemaking (NPR) on the Indiana sulfur dioxide (SO2) State Implementation Plan (SIP). In its comments, IDEM raised two issues with respect to Gibson County: (1) the validity of SO2 ambient monitored exceedances in Illinois due to the Public Service of Indiana (PSI) Gibson Generating Station, and (2) the acceptability of PSI's model evaluation study for the Gibson Station. Based on our review of the technical support submitted by IDEM and PSI, we believe that the recent monitored exceedances are valid and should be considered in the development of emission limitations for the Gibson Station, and that the model evaluation studies are not approvable and the appropriate United States Environmental Protection Agency (USEPA) guideline model must be used in the development of emission limitations for the Gibson Station. Please understand that this letter reflects the position of both the Regional Office and USEPA's Model Clearinghouse. Further discussion of USEPA's review and conclusions is provided below.

Monitored Exceedances

Public Service of Indiana (PSI) has claimed that the meteorological conditions on November 28, 1986 (i.e., very light winds coupled with a strong temperature inversion) qualify as an exceptional event and, as such, the associated monitored SO2 exceedances should not be used in the "...determination of the compliance status of the Gibson Station." PSI argued that the stagnation/inversion conditions on this day were severe and may not occur frequently. (Note, only limited on-site data, including no acoustic sounder data, were submitted to support these claims.)

In response, we wish to note that USEPA's "Guidance on the Identification and Use of Air Quality Data Affected by Exceptional Events" (July 1986) states that "...natural events other than meteorological events and unintentional anthropogenic events, are, by their nature, exceptional events." Consequently, meteorological conditions generally do not qualify as exceptional events. In fact, the Guideline specifically states that stagnations and inversions are not considered exceptional. Furthermore, it is possible that less severe and/or more frequent stagnations/inversions could still produce elevated concentrations. Thus, we believe that the monitored exceedances on November 28, 1986, should be used for regulatory purposes. (Note, the emission limitation necessary to correct this monitored violation is on the order of 3 lbs/MMBTU.)

Model_Evaluation_Study

In 1981, PSI began to discuss with USEPA and the State a study for evaluating guideline and non-guideline models for the purpose of identifying the appropriate model to be used to derive an emission limit for the Gibson Station. On July 16, 1981, December 29, 1981, and August 2, 1982, the State of Indiana approved the proposed study.

On September 10, 1981, USEPA offered numerous technical comments on the proposed study. USEPA also stressed the importance of developing an agreed-upon written protocol before the study begins. On November 25, 1981, USEPA stated its belief that the study was not necessary at that time and recommended that "...further consideration of the study be halted."

On February 5, 1982, USEPA notified PSI that:

> PSI's proposed monitoring and model evaluation program does not conform to the criteria established in the "Interim Procedures for Evaluating Air Quality Models", and therefore the proposed program would be inappropriate as a means of developing technical support either for the acceptance of any specific non-reference model or for development of emission limits based upon use of such a non-reference model. For the above stated reason, the proposed program would be inadequate for purposes of evaluating a non-reference model, and such a model could not be used to support the new emission limits.

USEPA went on to recommend a meeting to discuss the technical concerns further.

A meeting was held on March 26, 1982 with PSI, PSI's consultant, the State, and USEPA. Numerous technical issues were still unresolved after this meeting. Despite these problems, PSI notified the State that it intended to begin its study on June 1, 1982.

On June 10, 1982, USEPA once again notified PSI that:

> PSI's present plan for model evaluation at the Gibson Generating Station is inadequate for purposes of evaluating the acceptability of using a non-reference model for regulatory purposes. Therefore, any conclusions developed by PSI as a result of such an inadequate study would be unacceptable as technical support for proposing any changes in modeling methodology applicable to the Gibson facilities.

USEPA stands by these previous letters. The final PSI study ("Model Evaluation and Compliance Study for the Gibson Generating Station", December 1986) is not approvable for the technical reasons cited in these previous letters (i.e., models and input data were not clearly defined prior to the collection of data, the spatial resolution in the monitoring network was insufficient, and the data sets, performance measures, weighting scheme, and scoring system were not agreed-upon prior to the collection of data). Thus, we do not accept PSI's conclusion that the existing emission limitations for the Gibson Station are adequate to ensure attainment and maintenance of the SO2 National Ambient Air Quality Standards (NAAQS).

In addition to rejecting PSI's model evaluation study on the basis of our previous unresolved concerns, we wish to note several additional flaws in the execution of the State-PSI protocol:

(1) Candidate Models - PSI's inclusion of another candidate model after the data base was collected violates the original State-PSI protocol.

(2) Model Development - The study year data base was inappropriately used for both model algorithm development (i.e., wind speed profiles) and model evaluation.

(3) Model Underprediction - PSI's "winning model" was shown to underpredict the highest, second high 1-hour, 3-hour, and 24-hour measured concentrations. This underprediction calls into question this model's ability to set an emission limit that will ensure attainment of the short-term SO2 NAAQS.

(4) Weighting Scheme - PSI has inexplicably changed the weighting assigned to the 1-hour average concentrations in the final report.

We also have reservation about the determination of background concentrations (i.e., use of 60 m wind data instead of 10 m wind data), the overall data base (i.e., top 365 "good" days rather than all data over the 21-month monitoring period) and the data sets used (i.e., failure to screen for autocorrelation and a threshold value, and inconsistent time periods for measured and predicted concentrations). Furthermore, PSI's analysis to determine the appropriate emission limit is deficient (e.g., as many years of on-site meteorological data (up to five years) as are available were not used, failure to consider monitored exceedances, questionable worst-case load determination).

In summary, USEPA believes that the recent monitored violation of the SO2 NAAQS is valid. USEPA also rejects PSI's model evaluation study. The State of Indiana should now be prepared to develop emission limitations for the Gibson Station based on the appropriate USEPA guideline model and the available monitoring data. Please note that it may be necessary to adjust the ambient monitoring data to reflect maximum allowable conditions.

If you have any questions concerning this letter, please call Mike Koerber at (312) 886-6061.

Sincerely yours,

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cc: Dean Wilson, OAQPS