Summary of Comments and Responses on the September 1986 Supplemental Proposal to Revise the Guideline on Air Quality Models

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I. Introduction

The Guideline on Air Quality Models(Revised)[1] was published in July 1986. The purpose of the guideline is to promote consistency in the use of air quality models within the air management process. The guideline provides model users with a common basis for estimating pollutant concentrations, assessing control strategies and specifying emission limits.

During the public comment period on the above guideline, EPA received requests to consider several additional new modeling techniques. However, some developers did not submit those models to EPA until much later. Due to insufficient time for public review, these models could not be included in the revised guideline. In a separate regulatory proposal on September 9, 1986, EPA sought public comment on four additional models (51 FR 32180). These four additions, if promulgated in a final rule-making notice, will require modifications to the Guideline on Air Quality Models(Revised). EPA has placed in Docket A-80-46 for public examination all the technical support material received on these four models and draft changes to the guideline text. The changes show where and how these four models would be incorporated in the guideline should they be adopted. Written comments were sought by October 9, 1986. However, due to requests from several groups, the comment period was extended until December 9 (51 FR 37418). Both Federal Register notices are contained in Appendix A of this document. The purpose of this document is to summarize the comments received and to present EPA responses to the major issues raised by the commenters on this supplemental proposal.

Summary of Comments

All comments received on this proposal are available from Docket A-80-46 items V-D and V-H . Names of organizations that submitted written comments as well as their assigned docket reference number are shown in Appendix B of this document. Although a total of 31 items are listed, many of the early submittals are only a request for an extension of the comment period. The comments can be divided into the following separate categories:

- whether to use the Rough Terrain Diffusion Model (RTDM) as a third level screening technique for complex terrain applications;
- what the meteorological input requirements of the RTDM model should be;
- whether to adopt the American Petroleum Institute's (API) modifications to the Industrial Source Complex (ISC) model;
- whether to adopt the Offshore and Coastal Dispersion (OCD) model as a preferred model for applications to sources located over water.

No comments were received on the proposal concerning the inclusion of AVACTA II as an alternative model in Appendix B of the guideline (i.e., for use on a case-by-case basis).

EPA Responses to Comments

The summary of responses is organized according to the above categories. In some instances, summarizing the comments themselves required some interpretation. Whenever possible the exact words used by the commenter were used in the comment summary. However, in many instances it was necessary to reword or substantially condense the comments. In those instances, every effort was made to maintain the exact meaning of the commenter. Following the summary of comments on each separate topic, the EPA response to these comments is given. Where there are subtopics in the comment summary, the response is separated into subparagraphs. Guidance and editorial changes associated with the resolution of these issues are incorporated in the appropriate sections of the guideline and are published as Supplement A (1987) to the "Guideline on Air Quality Models (Revised)."

II. Rough Terrain Diffusion Model (RTDM) - Model Status

Comment Summary (Approve RTDM)

The majority of commenters urged EPA to adopt its proposal on the use of RTDM as a third-level screening model for use in rural complex terrain applications because of superior performance over other existing models such as the COMPLEX I model and because it is a step forward. Some of these commenters also generally requested that EPA adopt the RTDM model as a refined model (i.e., can be used on a generic basis with site-specific data) for inclusion in Appendix A of the guideline because of technical merit.

EPA Response

Based on the comments, EPA maintains its proposal to recommend RTDM with specified default options as a third-level screening model for estimating air quality impact from stationary point sources in rural complex terrain; less sophisticated screening techniques remain available as an initial or a second-level screen. However, EPA's review of available studies demonstrates that RTDM, as a refined model with full on-site data, can substantially underpredict concentrations. Since no new analysis was presented by the commenters to alter this conclusion, EPA does not agree with the commenter's proposal to adopt RTDM as a refined model in Appendix A of the guideline at this time. RTDM with full on-site data may be used as a refined model on a case-by-case basis by following the demonstration criteria described in Section 3.2.2 of the guideline.

Comment Summary (Technical Changes)

While arguing for their position to adopt RTDM, the commenters also suggested several technical changes:

- there should be an option to use the stack top wind speed for determining plume rise and the plume height wind speed for determining dilution;

- since RTDM results in a very narrow plume width prediction, receptors should be spaced more closely to unequivocally locate the maximum concentration;

- EPA should recommend applying RTDM for any terrain above stack top and not require dual modeling for terrain in between stack top and plume centerline.

EPA Response

The RTDM model, when used as a third-level screen, is designed to accept as input, measured winds at only one height. EPA recommends that wind data input to RTDM should be based on fixed measurements at stack top height. For stacks greater than 100m, the measurement height may be limited to 100m in height relative to stack base. This recommendation is broadened to include wind data representative of plume transport height where such data are derived from measurements taken with remote sensing devices such as SODAR. Note that RTDM already uses wind speed at stack top to calculate the plume rise and the critical dividing streamline height, and the wind speed at plume transport level to calculate dilution, as the commenter desires. The default values for the wind speed profile exponents, shown in Table 5-2 of the guideline revisions as IDILUT=1, are used in the model to extrapolate the wind speed from the measured height to other heights. Additional guidance on the routine use of measured (site-specific) wind speed profile exponents is not possible at this time due to limitations in the availability of such data and lack of experience in their application within the technical community. Where such data are available, they may be considered on a case-by-case basis after consultation with the appropriate EPA Regional Office.

The receptor spacing requirements for RTDM have been clarified in the guideline text by indicating the need for detailed review of the site's topography, carefully exercised judgement, and consultation with the EPA

Regional Office. Due to the site-specific nature of this evaluation, however, receptor spacing can not be precisely prescribed on a generic basis.

Because RTDM is considered here to be a complex terrain screening model, its use in a situation where a receptor is on terrain above stack height must remain consistent with guidance provided for other screening models. In the absence of a refined model, EPA recommends bracketing the highest concentrations by using both simple terrain and complex terrain models for receptors between stack height and plume height. Please see Section 5.0 of the guideline[1] for a more detailed explanation of this method. When a refined model such as CTDM is implemented, this approach will be re-examined. This point has been explained in the prior public comment summary document[2] and is not an issue in this rulemaking.

Comment Summary (Do Not Approve RTDM)

One commenter opposed EPA's proposal to even adopt RTDM as a screening model because:

- RTDM does not address other phenomena where high concentrations can occur (e.g., on the lee side of hills, or during fumigation and stagnation conditions in deep valleys). The highly conservative nature of the currently approved complex terrain screening models compensates to some extent for not addressing any of these phenomena.

- EPA's Complex Terrain Dispersion Model (CTDM) is now at an advanced stage of development;

- both the Westvaco and Widows Creek data bases show a substantial number of instances in which the concentrations at specific monitoring stations were underpredicted by RTDM, as proposed. RTDM has not been sufficiently tested to ensure protection of the ambient air quality standards and it is possible that the model was "tuned" to perform better on the Westvaco data base.

EPA Response

EPA agrees that the RTDM model does not address all meteorological phenomena in complex terrain. That is why EPA has recommended the use of

RTDM as a screening technique until research produces a refined model. The goal of the modeling guidance is to ensure that the best possible scientific procedures are implemented for operational use. From the information presented to EPA through the public comment and review process, it is apparent that RTDM as proposed by EPA, with assigned predetermined values irrespective of site-specific conditions, is more accurate, while still providing conservative estimates. It is also based on better scientific theory[5] than existing complex terrain screening models.

The commenter did not provide credible scientific data to sustain the argument that a model must be as highly conservative to encompass concentrations produced by all meteorological phenomena such as lee side effects, fumigation, and stagnation. Existing screening models were never intended to address these phenomena nor do they have the necessary "physics" to do so. The commenter appears to be arguing for disallowing the use of RTDM because it is less conservative and may result in less stringent emission limits than those provided by current models. EPA has anticipated the need for improved complex terrain models and has conducted over the last five years the Complex Terrain Model Development program[3,4]. The goal of this research program is to develop reliable atmospheric dispersion models that are applicable to large pollutant sources located in complex terrain. RTDM, which deals with stable plume impaction, is a step in this direction. Research programs to consider other phenomena such as lee side effects and stagnation are underway or are being considered by EPA's Office of Research and Development and by others. Until this research can fully address how to model these phenomena, the use of RTDM with specified default parameters as proposed is the best available method. To fill a void in knowledge, EPA is encouraging the placement of monitors at locations where these other phenomena are suspected to cause a violation of the NAAQS (e.g., potential lee side effects downwind of the Lovett Generating Station operated by Orange & Rockland Utilities).

Although the CTDM model is in an advanced stage of development, approval of RTDM as proposed should not be affected. RTDM is not competing with CTDM. Adopting RTDM presents an opportunity to improve EPA's present screening techniques for modeling in complex terrain. The CTDM model, which is still in a research and development mode, is a more physically realistic model. Once CTDM is fully operational, experience in its use, data requirements, etc. will still be needed. When this experience is gained, EPA may propose CTDM as a refined air quality model. Nevertheless, there will still be a need for a reasonably accurate, yet simple screening model that yields conservative concentration estimates, which is the role filled by the RTDM model.

The various tests of the RTDM model have been summarized and referenced in the EPA proposal (51 FR 32180) and the reports describing the details of these tests have been placed in Docket A-80-46. EPA believes these tests provide an adequate demonstration of this model's ability, with specified default parameters, to provide sufficiently accurate but consistently conservative concentration estimates. Rather than limit the issue of accuracy to a receptor-by-receptor basis as suggested by the commenter, EPA's position has always been that the performance of any model, whether for complex terrain or some other application, should be based on the ability to predict highest concentrations on a network-wide basis. EPA has found that under and overprediction varies from site to site. This has been demonstrated for even the widely used flat terrain model MPTER. In applying models to evaluate attainment of short-term deterministic ambient standards or PSD increments, EPA has always examined whether the highest, second-highest value in the network, not the value at a specific monitoring site[1] is within the NAAQS limits. For this type of application RTDM is conservative.

The possibility of "tuning" the model was raised by EPA as a cautionary remark to the model developer at the time RTDM was being developed. Subsequent scientific review[5] by the American Meteorological Society-EPA Steering Committee on the performance of eight complex terrain dispersion models concurred that the RTDM model was a clear choice. Additional evaluation of the performance of this model was made by one of the commenters on this proposal (Docket Item V-D-19). This evaluation also showed that this model is more accurate than the COMPLEX I screening model.

Comment Summary (Model Performance)

One commenter provided data to show that when applied to the Widows Creek plant, RTDM in the specified default mode was more accurate than EPA's COMPLEX I model. RTDM also provides conservative estimates for 10 of 12 possible combinations of available meteorological data. The commenter's suggestions for mitigating the two situations with underestimated concentrations include requiring a multiyear (e.g., 3 years) analysis or multiplying the predicted concentrations by a correction factor (e.g., 1.2). The need to use a correction factor does not diminish RTDM's superiority over COMPLEX I.

EPA Response

EPA appreciates the commenter's data on the performance of the RTDM model at the Widows Creek plant. Much useful information was obtained from this analysis. However, because of the limited terrain height compared to plume height at this facility, the analysis could not determine the performance of the peak concentrations expected during plume impaction which would occur when the plume intercepts high terrain. When the highest, second-highest concentration is used in assessing potential violations of short term NAAQS, RTDM's predicted concentrations are consistently closer to the corresponding measurements than COMPLEX I regardless of which of the 12 meteorological data sets are used as input. Meanwhile, the underpredictions for RTDM are within the error margin associated with other Gaussian models. As stated in the guideline[1] (page 10-3), "errors in highest estimated concentrations of ± 10 to 40 percent are found to be typical, i.e., certainly well within the often-quoted factor-of-two accuracy . . . ." On the other hand, substantial overpredictions by RTDM, greater than this margin of error, occurred with most of the meteorological data combinations that could have been selected.

The commenter's suggestions to apply "correction factors" to concentration estimates from RTDM, if only one year of data is used, is contrary to EPA's modeling guidance (Please see Section 8.2.11 of the guideline[1]). EPA is sympathetic to the commenter's suggestion to increase the period of data record to 3 years if this improves confidence in the model prediction. However, while urging up to 5 years of on-site data, the guideline does not require using more than one year where a longer period of record for on-site data is not available.

Comment Summary (Impact Assessment)

One commenter stated that the proper basis for assessment of the impact of RTDM's approval is not current emission limits but rather the alternative emission limits that would result from applying currently approved EPA rough terrain models to sources whose limits are not now based on approved models. EPA must compare the allowable emissions from such sources, when modeled with currently approved rough terrain models, to the emissions allowed by RTDM in order to fairly present the net impact of approving RTDM. The commenter claimed that there would be a greater total increase in emissions than calculated by EPA.

EPA Response

EPA does not agree with the commenter's statement that emission limits based on currently approved EPA complex terrain screening models should have been used for all sources in evaluating the impact of the RTDM model. In its analysis, EPA did consider all existing sources in complex terrain with emission limits based on the Valley and COMPLEX I screening models. For these sources current emission limits were compared with those that would be derived from RTDM, as the commenter desired. However, many sources in complex terrain have emission limits set on some basis other than the currently approved models. EPA also considered these sources and compared their emission limits based on alternative modeling techniques with those that would be based on RTDM. Since EPA does not plan to impose retroactively the revised modeling guideline to change the emission limits for these latter sources, the comparison with RTDM is appropriate and the EPA analysis is valid. It would be wholly inappropriate to base a comparison on emission limits derived from Valley or COMPLEX I where these models were not actually used. Contrary to the commenter's claim, the analysis by EPA, placed in the Docket, showed that the magnitude of the potential increases in national emissions associated with the use of RTDM will not be appreciable.

Comment Summary (Miscellaneous)

The model developer recommended that RTDM (Version 3.2) supercede the previous Version 3.1 which contained two programming errors.

One commenter urged EPA to make RTDM, as well as all other EPA recommended models, publicly available through the National Technical Information Service (NTIS).

EPA Response

To correct the programming errors identified by the model developer, EPA agrees to substitute Version 3.2 of RTDM for Version 3.1 in this rulemaking. EPA has tested Version 3.2 of RTDM that was submitted by this developer and has found the changes (to the earlier Version 3.1) to be correct, necessary and with little impact on maximum estimated concentrations.

EPA agrees with the commenter views to make readily available to the public all EPA recommended models. EPA has notified the RTDM model developer of EPA's intent to release RTDM through NTIS for public distribution in a manner similar to other models recommended for regulatory applications. (See Docket Items VI-I-1, VI-D-1).

Conclusion

EPA reaffirms its proposal to modify the guideline to list RTDM as a third level screening model for estimating air quality impact from stationary point sources in rural complex terrain. Users who may wish not to commit the additional resources necessary to use RTDM as a third-level screening model are not required to do so; the existing initial or a second-level screening technique remains available for use. Since it has been demonstrated that RTDM with full on-site data can underpredict concentrations substantially, EPA does not recommend RTDM as a refined model at this time; however, it remains an available option for users, subject to case-by-case approval.

III. Rough Terrain Diffusion Model (RTDM) - Data Input

Comment Summary (Use of Remote Sensing Devices)

Commenters stated that specifying stack top wind measurements precludes the use of SODAR [which can not provide reliable measurements at lower heights, e.g., 50m or less], but can provide reliable wind measurements at heights typical of plume transport.

EPA Response

EPA does not intend to preclude the use of remote sensing devices (e.g., SODAR) to directly measure wind speed and direction at plume transport height, provided that the necessary data quality assurance and recovery rate requirements are met. Section 5.2.1.4 of the guideline[1] is being revised to explicitly state that SODAR may be used to measure winds as indicated here.

Comment Summary (On-site Data)

Some commenters stated that EPA should require little, if any, on-site data because RTDM is only a screening model. Some suggested that EPA should allow the use of NWS data exclusively because using these data, RTDM is still more accurate than COMPLEX I.

EPA Response

EPA does not agree with the commenter's statement that RTDM should not require any on-site data because it is a screening model. The Guideline on Air Quality Models (Revised), on page 5-4 that was subject to prior public comment, states that the input of on-site (site-specific) data for the present second-level complex terrain screening models is preferred. It has always been EPA's intention that on-site data be used in these models, e.g., COMPLEX I. Allowing the use of off-site data with the third-level screening technique, RTDM, would be inconsistent with this guidance. Since EPA did not seek comments on the use of off-site data for RTDM, the Agency does not consider this matter an issue in the present rulemaking.

Comment Summary (Wind Input)

One commenter suggested that 10m winds may be measured on-site, but no additional on-site data (such as stability and temperature) should be required. Another commenter stated that it is not necessary to limit the use of RTDM (as a screen) to situations in which only upper level [100m] stack top on-site data are available and EPA should not require these data. While use of stack top winds may be preferable, and while it may be appropriate for EPA to ask RTDM users to gather such data, other wind data [as low as the 10m level] can be used if necessary without having a significant adverse effect on the model's performance. Specifically, RTDM has been tested with both surface level (10m) on-site data, and even NWS data, and it still provides conservative predictions that are closer to observed concentrations than the predictions provided by COMPLEX I. They further added that, as a minimum, the use of on-site surface level data should be allowed on a 2-year interim basis until upper level on-site wind data are available in order to apply RTDM either as a screening or as a refined model. Other commenters, however, supported EPA's position to require stack top wind data.

EPA Response

EPA has examined all the arguments presented by the commenters and continues to recommend that for input to RTDM winds should be based on fixed measurements at stack top height. For stacks greater than 100m, the measurement height may be limited to 100m in height relative to stack base. This recommendation is broadened to include wind data representative of plume transport height where such data are derived from measurements taken with remote sensing devices such as SODAR. EPA's rationale is that the best data from the scientific point of view should be input to RTDM. This rationale is augmented further in the response to comments below.

EPA's recommendation to use measurements representative of wind flow at stack top is consistent with the prevailing scientific opinion that use of stack top winds is superior in complex terrain, as the commenter acknowledges, and that in complex terrain these winds can not be estimated accurately from surface level measurements. The use of stack top winds is also consistent with present modeling guidance given in Section 9.3.3.2 of the guideline[1] which was subject to an earlier rulemaking.

Although the sensitivity analysis to determine the performance of the RTDM model when used with different wind measurement levels as presented by one of the commenters is very interesting, a serious limitation exists. As pointed out earlier in Section II, the limited height of terrain at the Widows Creek facility precluded comparisons (between model predictions and observed concentrations) during conditions when the plume centerline actually impinges on high terrain; a condition that must be considered when determining the design concentration. Based on the limited analysis presented by the commenters, EPA cannot conclude that more conservative estimates are always obtained when lower level winds (than at stack top height) are used as input to RTDM.

EPA's rationale for its recommendations is that the scientific integrity of this model is enhanced with the input of these winds. EPA has made known its position on wind data since July 1985 and thus there has been ample time to plan for, if not complete much of, the data collection process. (See Docket Item IV-E-3). For these reasons, the need for an interim period, during which the best scientific data are exempt from use in RTDM, is not technically justified.

Nevertheless, the Agency does not wish arbitrarily to preclude any source from using RTDM for lack of necessary data input. Thus, the Agency encourages source owners to allow for time necessary to (1) gather input data needed for new models, (2) execute the model to determine the emission limit; and (3) submit the documentation for rulemaking action. Since EPA is interested in the most scientifically credible analysis, the Agency will work with the source to develop reasonable schedules for collecting and using these data in RTDM.

Comment Summary (Miscellaneous)

Several commenters also requested clarification between the data input requirements stated in the proposed text and the "10 meter (default)" statement for anemometer height in the proposed table.

EPA Response

The commenters' suggestions to clarify the data requirements in the text and table have been implemented. In addition, the variable ITIPD has been set to 1 (i.e., is used), as recommended by the model developer, to correct an error in the original EPA proposal (see Docket Item IV-I-21).

<u>Conclusion</u>

EPA reaffirms its recommendation that, for input to RTDM as a third-level screening model, winds should be measured at stack top height. For stacks greater than 100m, the measurement height may be limited to 100m in height relative to stack base. Appropriate allowance for the use of measurements from remote sensing devices is also provided. EPA's rationale is that the best data from the scientific point of view (i.e., winds representative of conditions at stack top height) should be input to this model to improve confidence in the predicted concentrations.

IV. Industrial Source Complex (ISC) Model

Comment Summary (Do Not Support EPA's Proposal)

For a variety of reasons, several commenters did not support the modification to the building downwash algorithm in the ISC model as exactly proposed by EPA. Some claimed the EPA proposal to select the worst of two estimates (from the API version and the original ISC model) was inconsistent with the API approach. Some claimed that this proposed approach has no physical basis and is based on model-to-model comparisons. When ISC predicts higher values than the API version, it is because ISC assumes downwash under stable conditions and low wind speeds, an unlikely event based on field data and literature review. In addition, the version of the ISC model proposed by EPA contained some features that were not included in the version of ISC proposed by API (i.e., stack tip downwash, buoyancy-induced dispersion, final plume rise and different wind profile exponents).

EPA Response

The refinements in the treatment of building wake effects in the ISC model as proposed by API are: (1) reduced plume rise due to initial plume dilution; (2) enhanced plume spread as a linear function of the effective plume height; and (3) specification of building dimensions as a function of wind direction. EPA agreed that all three refinements would improve the realism of the ISC model. Most of the controversy in this rulemaking is related to the best method to implement the second refinement as explained next.

In the present ISC model, the effect of building wake on plume spread occurs abruptly for effective stack heights less than Good Engineering Practice (GEP) formula height. That is, for any plume height from a stack with greater than GEP formula height, the building wake is assumed to have no effect on plume spread, but for a plume height from a stack with less than formula height the full wake effect is assumed. Wind tunnel studies[6] have suggested as a refinement that it is important to compute plume enhancement (the vertical and crosswind spreading of the plume due to building wakes) as a continuous function of stack height. Based on this information, API proposed a linear "decay" function. Although there is uncertainty about the correct shape of this "decay" factor, EPA felt that the API approach was reasonable and proposed it.

After further analysis of the data provided by API, EPA found that most of these data were collected at sources with small stack height to building height ratios (H_S/H_B) of approximately 1.5. A change in the shape of the linear decay factor could have a modest effect on concentrations for these sources, but a substantial effect on sources with $H_S/H_B > 1.5$. Since it was uncertain how accurately the API linear treatment works for these latter cases, EPA originally proposed to select the highest of two estimates (from the API version and the original ISC model) in order to avoid arbitrarily selecting lower concentrations. EPA's concern about the potential under-prediction of the proposed API version stems from the apparent systematic tendency for the present ISC model to underestimate downwash concentrations.[7] Thus, for large sources, which usually have $H_S/H_B > 1.5$, the misapplication of the API results would result in a further, more serious, underestimation of potential impact during downwash conditions. The intent of EPA's original proposal can be accomplished by limiting the use of the API modifications to sources with $Hs/H_B \leq 1.5$ while requiring sources with $Hs/H_B > 1.5$ to use the ISC model in UNAMAP Version 6, as described in more detail later in this section.

EPA's analysis has also indicated that API downwash modifications perform in a similar manner to ISC for sources with $Hs/H_B \leq 1.5$ during stable, low wind speed conditions contrary to the commenter's assertion. This analysis is shown in Docket Item VI-E-3.

The API modifications were adopted on a different version of the ISC model than that originally proposed by API because of timing. API explored the possibility of making these refinements during the Third Conference on Air Quality Modeling in January 1985[2]. However, documentation of these refinements was not submitted to EPA until early 1986. By that time, the ISC model was already in the process of being changed, from UNAMAP Version 5 to Version 6, also a result of public comment at the third modeling conference. Thus, EPA could only propose the API downwash algorithm in conjunction with the new UNAMAP Version 6 of ISC. One commenter has subsequently incorporated the API modifications into the ISC model in UNAMAP Version 6 and identified this approach as ISC-6MOD. This approach is discussed in detail at the end of this section.

Comment Summary (Support EPA's Proposal But Require More Tests)

Several commenters stated that the API data do not provide EPA with sufficient basis to approve the inclusion of the API modifications as proposed by EPA. The API tests are limited and are not applicable to elevated receptors, a wide range of potential critical meteorological conditions, and stack height (Hs) to building height (H_B) ratios greater than 1.3. Moreover, the use of standard deviation of wind direction fluctuations (sigma-A) to estimate lateral dispersion (sigma-y) was shown to improve the performance of the API version of the ISC model and should have been proposed by EPA. One commenter stated a concern for the application of the API modifications in the urban mode of the ISC model (where the McElroy-Pooler (M-P) dispersion coefficients are employed) until a rigorous evaluation indicates this to be appropriate.

EPA Response

EPA has already limited the application of the ISC model to receptors on terrain below stack height and it is unnecessary to further limit the API downwash modification to elevated receptors as the commenter suggests.

Building downwash usually occurs close to the point of release and it is unlikely that any significant differences in terrain height exist within such short distances from the point of release.

EPA agrees with the commenter that the performance of the API modifications to ISC under all meteorological conditions has not been addressed by API. However, the meteorological conditions are adequately accounted for by the API test data for the application being proposed here.

EPA agrees with the commenter that the API modifications to the ISC model appear to be limited to certain stack height to building height ratios. EPA's review of the data shows this ratio extends up to about 1.5. Where the Hs/H_B ratio is greater than 1.5, EPA believes that the data presented to date do not support the API modification or, in turn, any changes to the current procedure in the ISC model in UNAMAP Version 6 for these ratios.

EPA does not recommend the use of sigma-A to estimate sigma-y for a couple of reasons. First, the relationship between sigma-A and sigma-y is site-specific and no generic guidance is available for applicability to other locations. Second, the use of sigma-A to estimate sigma-y implies that another variable is needed to determine vertical dispersion or sigma-z. This so called "split sigma" approach is not recommended by EPA.[2]

EPA disagrees with the commenter's suggestion to limit the application of the API modifications of the ISC model to the rural version of that model. The API modifications are an attempt to provide more realistic concentration estimates during building downwash conditions. The downwash phenomenon is a function of building geometry with respect to the wind. The commenter presented no data and EPA has no reason to believe that the downwash phenomenon occurs differently in rural than in urban environments.

In addition, for the far-wake region concentrations converge to values that would occur in the absence of the building. Therefore, it is technically sound to assume that the downwash algorithm proposed by API can be used in rural as well as urban settings. The adequacy of the M-P dispersion coefficients themselves was addressed previously by EPA[2] and is therefore not an issue in this rulemaking.

If EPA were to accept the commenter's conjecture that using the API modifications is inappropriate in urban settings, sources located in urban areas and with $H_S/H_B < 1.5$ would be required to use the present ISC model. This creates a problem because the better API downwash technique, acknowledged by both EPA and the model developer, could not be applied to these sources. The commenter did not present for EPA's consideration an alternative approach for these urban sources. Thus, EPA rejects the commenters conjecture and has decided to accept the application of the API modifications for both rural and urban settings in the ISC model.

Comment Summary (Alternative Approach: ISC-6MOD)

The model developer submitted an alternative approach which incorporates in principle the ideas contained in the API proposal to modify the downwash algorithm but minimizes the differences with the ISC UNAMAP Version 6 by incorporating many of the new features of the ISC model except for stack tip downwash and buoyancy-induced dispersion. The commenter stated that the two features not included are implicitly accounted for in the API scheme to treat downwash. The commenter referred to this proposed version as ISC-6MOD which is most similar in concept to the model originally proposed by API and does not result in significantly different maximum concentrations.

EPA Response

EPA believes that the data and rationale presented by the commenter support the ISC-6MOD approach, which is based on the ISC model in UNAMAP Version 6 but does not include stack tip downwash and buoyancy-induced dispersion. However, data presented in support of applying ISC-6MOD show that use of these modifications is limited to H_s/H_B less than 1.5, especially in terms of the higher observed concentrations which are of regulatory concern. Where the H_s/H_B ratio is greater than 1.5, EPA believes that the data presented to date do not support the ISC-6MOD approach; the basic downwash approach in ISC UNAMAP Version 6 should continue to be used.

Conclusion

EPA agrees with the alternative approach presented by the model developer and believes that it represents the best scientific method available at this time. EPA will revise its modeling guidance and modify the ISC model in UNAMAP Version 6 to include the ISC-6MOD downwash algorithm in the regulatory default option switch (ISW(28)=1) for sources with $H_S/H_B \leq$ 1.5. However, for sources with $H_s/H_B > 1.5$, there is no scientific basis to change the ISC model. Since the basic building downwash algorithm proposed by API and the performance improvements remain essentially intact with ISC-6MOD, and since the existing ISC model will continue to be used when these modifications are inapplicable, EPA believes that the alternative approach effectively accomplishes the same goal as the original proposal and does not constitute a significant change. Thus, a re-proposal of the modified downwash algorithm OSC-6MOD is not necessary.

V. Offshore and Coastal Dispersion (OCD) Model

Comment Summary

Commenters were generally favorable on the proposal to adopt the OCD model as a refined model in the guideline. However, one stated that the OCD model should remain in Appendix B and not be designated as an EPA preferred model until the following technical issues are resolved:

- the OCD model appears to be continually underyoing substantial revisions and it is uncertain whether current model evaluation summaries are applicable for the version of OCD currently in use.

- detailed model evaluations of OCD using tracer data demonstrate significant underpredictions of peak measured concentrations.

EPA Response

The OCD model was proposed as a preferred or Appendix A model because it is a unique approach needed to fill a void in the existing regulatory program. The version of the OCD model recommended by EPA is designated by the Department of Interior, Minerals Management Service (MMS) as Version 3.0 (Rev 85329). EPA has asked and received confirmation from the MMS that the recommended version of this model was indeed used in the evaluation studies. (Please see Docket Item VI-D-2.) From the list of corrections shown by the commenter (Docket Item V-D-17, attachment E-1), it appears that these changes were needed to eliminate minor coding inconsistencies in the program. If this model is substantially revised in the future, EPA intends to ask the MMS to re-do the evaluation summaries and use additional data bases.

The OCD model as recommended by EPA was evaluated by the MMS using three data bases (Docket Item V-D-9). A review of the model evaluation results shows no consistent tendency for underpredictions for the ten highest ranked concentrations. From a regulatory point of view, these are among the most important statistics since model estimates should demonstrate compliance with the national standards, which are not to be exceeded more than once per year. Naturally, EPA has some concern about the ability of the OCD to predict the highest concentration. However, here also, the underprediction of about 16-30% for two of the data bases are in contrast with the overprediction of about 85% in the third data base. EPA examined the example referred to by the commenter, and it appears that the commenter is referring to examples where a hybrid OCD model, not proposed, is used. This should not be confused with the version of OCD addressed in this rule-making. Even so, the underprediction cited does not appear to be significant (i.e., 10-20 percent) and is within the error margin associated with other Gaussian models.

Comment Summary (Miscellaneous)

One commenter raised several other objections to the use of the OCD Model:

- over water dispersion characterized by OCD is much greater than that characterized by MPTER. This results in an inconsistency in the EPA modeling guideline. Dispersion over water has been demonstrated in numerous studies to be less than dispersion over land.

- the OCD model can accept monthly climatological values of certain parameters in lieu of measured hourly values. It is inappropriate for such important and widely varying parameters to be specified as a monthly average.

- the EPA model summary implies that the OCD model may be combined with another model and used for assessing air quality impact on complex terrain.

Another commenter questioned if the experiments to validate OCD were influenced by high altitude transport of onshore emissions.

EPA Response

The characterization of dispersion over water is an integral part of this model and cannot be evaluated separately. EPA does not require that all models remain completely consistent when these models are designed for different applications. The OCD model is not recommended by EPA for over land applications and should not be compared with the MPTER model.

The studies (referenced earlier) show very little difference between OCD's preferred and default methods for parameterizing offshore stability and determining the hierarchy of meteorological data. Generally, EPA prefers the use of available site-specific data rather than default values wherever possible. The MMS agrees that hourly data should be used and a preference for such data has been included in the modeling guidance.

Combining OCD with any other complex terrain model, such as COMPLEX I, cannot be approved on a generic basis. All hybrid models should be reviewed on a case-by-case basis. EPA will modify the model summary in Appendix A of the guideline to eliminate any possible confusion on this issue.

The three OCD model validation studies (referenced on page 23), relied on tracer gas measurements and, therefore, are not influenced by high altitude transport of onshore emissions.

Conclusion

EPA has concluded to adopt OCD as a preferred model to be listed in Appendix A of the guideline because:

1. The performance of the OCD model is judged by EPA to be acceptable. There is no other competing model to which the performance of OCD can be compared and relative accuracy quantified.

2. OCD is a unique or pioneering approach to specific analysis problems.

3. OCD has been used for regulatory application in the past and its selection results in a minimum disruption of regulatory programs.

4. OCD is widely released through NTIS.

5. The use of OCD has resulted in public familiarity with this model.

6. This model has met the solicitation requirements outlined in 45 FR 20157[1] including the practicality of the model, based on technical merit, for use in ongoing regulatory programs.

VI. AVACTA II Model

There was no comment on the proposal to include this model as an alternative model in Appendix B of the Guideline on Air Quality Models (Revised). Models listed in that category may be considered for use on a case-by-case basis as described on page 3-8 of the modeling guideline. Thus, EPA will adopt this model as proposed.

VII. References

1. Environmental Protection Agency, 1986. Guideline on Air Quality Models (Revised). EPA Publication No. EPA 450/2-78-027R. U. S. Environmental Protection Agency, Research Triangle Park, NC (NTIS No. PB 86-245248).

2. Environmental Protection Agency, 1986. Summary of Comments and Responses on the December 1984 Proposed Revisions to the Guideline on Air Quality Models. U. S. Environmental Protection Agency, Research Triangle Park, NC. [Docket Item IV-G-26]

3. Lavery, R. F., B. R. Greene, B. A. Egan, and F. A. Schiermeier, 1983. The EPA Complex Terrain Model Development Program. Preprints, 6th Symposium on Turbulence and Diffusion, March 15-22, 1983. Boston, Massachusetts. American Meteorological Society, Boston.

4. Schiermeier, F. A., T. F. Lavery, D. G. Strimaitis, A. Venkatram, B. R. Green, and B. A. Egan, 1983. EPA Model Development for Stable Impingement on Elevated Terrain Obstacles. Proceedings, 14th International Technical Meeting on Air Pollution Modeling and Its Applications, Copenhagen, Denmark.

5. White, F. D., Ed., and J. K. Ching, R. L. Dennis and W. H. Snyder, 1985. Summary of Complex Terrain Model Evaluation. EPA Publication No. EPA 600/3-85-060. U. S. Environmental Protection Agency, Research Triangle Park, NC. (NTIS No. PB 85-236891).

6. Huber, A. H., and W. H. Snyder, 1982. Wind Tunnel Investigation of the Effects of a Rectangular-Shaped Building on Dispersion of Effluents from Short Adjacent Stacks. Atmos. Environ, 176:2837-2448.

7. Environmental Protection Agency, 1981. An Evaluation Study for the Industrial Source Complex Dispersion Model. EPA Publication No. EPA 450/4-81-002. U. S. Environmental Protection Agency, Research Triangle Park, NC. (NTIS No. PB 81-176539).

Appendix A

ENVIRONMENTAL PROTECTION AGENCY

40 CFR Parts 51 and 52

[AH-FRL-3030-4, Docket No. A-80-46]

Requirements for Preparation, Adoption, and Submittal of Implementation Plans

AGENCY: Environmental Protection Agency (EPA).

ACTION: Supplemental notice of proposed rulemaking.

SUMMARY: EPA is issuing a supplement to the notice of proposed rulemaking that was published on December 7, 1984 [49 FR 48018]. Today's notice proposes to include (1) addition of a specific version of the Rough Terrain Dispersion Model (RTDM) as a screening model, (2) modification of the downwash algorithm in the Industrial Source Complex (ISC) model, (3) addition of the Offshore and Coastal Dispersion (OCD) model to EPA's list of preferred models, and (4) addition of the AVACTA II model as an alternative model in the "Guideline on Air Quality Models, Revised," EPA 450/2-78-027R. The revised guideline lists the air quality models required to estimate air quality impact for sources of air pollutants which appear at 40 CFR 51.24 and 52.21. The purpose of the proposed changes is to augment the guidance in response to a substantial number of public comments urging the Agency to do so. EPA is soliciting public comments on these four proposed changes only.

DATES: The period for comment on these proposed changes closes October 9, 1986.

ADDRESSES: Written comments should be submitted to: Central Docket Section (LE-131), U.S. Environmental Protection Agency, 401 M Street, SW., Washington, DC 20460, Attention: Docket A-80-46.

Copies of reports referenced herein, as well as all public comments are maintained at Docket A-80-46. The docket is available for public inspection and copying between 8:00 a.m. and 4:00 p.m., Monday through Friday, at the address above. A reasonable fee may be charged for copying. A copy of the proposed revised pages to the guideline may be obtained from the Docket or the address below.

FOR FURTHER INFORMATION CONTACT: Joseph A. Tikvart, Chief, Source Receptor Analysis Branch, Office of Air Quality Planning and Standards, U.S. Environmental Protection Agency, Research Triangle Park, North Carolina 27711; telephone (919) 541-5561 or Jawad S. Touma, telephone (919) 541-5681.

SUPPLEMENTARY INFORMATION:

Background

In March 1980, EPA issued a Notice soliciting air quality models developed outside the Agency for potential inclusion in the planned revisions to the Guideline on Air Quality Models [45 FR 20157]. EPA received nearly 30 air quality models from private model developers. These were reviewed for technical feasibility and for utility to potential users. In addition to a review by EPA for technical merit, documentation, validation, and coding, a submitted model is open to public review and comment.

On December 7, 1984 [49 FR 48018], EPA proposed amendments to its regulations concerning air quality models and announced that it would hold a public hearing on these proposed amendments. On December 20, 1984 [49 FR 49484], EPA announced the Third Conference on Air Quality Modeling to provide a forum for public review. A transcript of all oral comments received at the conference, as well as a record of all written comments, is maintained in Docket A-80-46. EPA is in the final stages of the rulemaking process on the revisions to the Guideline on Air Quality Models and will announce these revisions in a separate **Federal Register** notice.

During the public comment period, EPA received requests to consider several additional new modeling techniques. However, the developers did not submit those models to EPA until much later. Due to insufficient time for public review, these models could not be included in the revised guideline. In this separate regulatory proposal, EPA is seeking public comment on four additional models as described below. These four additions, when promulgated, will require modifications to the "Guideline on Air Quality Models, Revised." A copy of those pages proposed for revision is also available in Docket A-80-46, Item IV-J-2 for public review and comment.

Proposed Action

A. Rough Terrain Diffusion Model

The "Guideline on Air Quality Models, Revised" describes two levels of sophistication of models: Screening and refined. Screening models provide a conservative estimate of the air quality impact of a source. The purpose of screening models is to eliminate from further consideration those sources that clearly will not cause or contribute to ambient concentrations in excess of either the National Ambient Air Quality Standards (NAAQS) or the allowable prevention of significant deterioration (PSD) concentration increments. Refined models consist of those analytical techniques that provide more detailed treatment of physical and chemical atmospheric processes, require more detailed and precise input data, and provide more specialized concentration estimates. As a result, they provide a more accurate estimate of source impact and the effectiveness of control strategies.

Due to a lack of scientifically sound and proven techniques, the guideline does not recommend any refined air quality model for determining pollutant concentrations from sources in "complex terrain" areas (where the height of the terrain exceeds the height of the source being modeled). Such a model would apply in situations where the impaction of effluent plumes on terrain at elevations equal to or greater than plume centerline during stable atmospheric conditions are believed to cause air quality problems. In the absence of an approved case-specific, refined, complex terrain model, the guideline specifies screening models in two categories, depending on the level of sophistication and the amount of input data required. The Valley Screening Technique is recommended for first level screening with an assumed worst case; COMPLEX I and the SHORTZ/LONGZ models are recommended with hourly measured meteorological data as second level screening techniques for rural and urban applications, respectively.

Because there is perceived to be an immediate need, EPA received numerous public comments suggesting that it place a high priority on accelerating the development of a refined complex terrain model based on current research and/or recommend such a model based on review of candidate models. Many commenters, notably from the utility industry, proposed the Rough Terrain Diffusion Model (RTDM) as a preferred, refined model that can fill this need. One of the technical improvements in RTDM is the ability to determine the critical streamline, i.e., whether a plume will likely flow over, around or impact on a terrain obstacle. Further discussion on this model is contained in Docket Items IV-D-22 and 27; IV-H-21; IV-K-8 and 11; and IV-B-1.

EPA recognizes the efforts of many groups to develop a refined model for complex terrain applications and, EPA has been conducting, over the last five years, the Complex Terrain Model Development program as documented in the Fourth Milestone Report (EPA/600/

3-84/110]. While this program is a significant step toward the solution of a complicated problem, completion of the research project is not expected before late 1986. In addition, EPA has also been evaluating the performance of eight currently available complex terrain models that were submitted as a result of 45 FR 20157. The first available data base developed under this program, Cinder Cone Butte, and also the Westvaco-Luke Mill data base were used to compare model predictions with observed air quality data. The performance of these models was evaluated using an extensive set of statistical measures recommended by the American Meteorological Society. Of the eight models tested, RTDM showed the best overall performance for both data sets. For more detail see "Evaluation of Complex Terrain Air Quality Simulation Models," EPA-450/4-84-017.

RTDM requires an extensive set of meteorological data input such as horizontal and vertical turbulence measurements and measured vertical temperature profiles (delta-T). A survey by the Utility Air Regulatory Group (UARG) has shown that this type of data is not presently collected at most power plant facilities in complex terrain areas [Docket Item IV-E-3] and model inputs would therefore be restricted to more routine meteorological measurements. At the January 1985 Conference on Air Quality Modeling, EPA expressed concern about how well RTDM would perform without the use of the more sophisticated on-site meteorological data. Also, EPA asked for more information on how well RTDM would perform relative to COMPLEX I for distances beyond two kilometers from the source. To respond to EPA's concerns about the use of RTDM with more routine data, UARG further evaluated RTDM model performance using the Cinder Cone Butte and Westvaco-Luke Mill data bases. Three meteorological input sets were used. First, for the full on-site case, meteorological inputs included on-site turbulence, wind profile and temperature profile measurements. Second, for the default case, only on-site temperature, wind speed, and wind direction measurements were used as model inputs. All other parameters were based on default values specified in the model. Third, for delta-T/default case, on-site temperature profiles were used, in addition to other model inputs being the same as case two above. The results indicated that RTDM only with default input sets (case 2 above) did not underpredict the highest concentrations. The other two (full on-site and delta-T/default) did underpredict high concentrations for some comparisons with observed data. For more detail refer to Docket Item IV-K-9.

In addition, UARG also evaluated RTDM model performance using 2 years of data from the Tennessee Valley Authority's Widows Creek power plant, located in northeastern Alabama where the number of monitoring sites is sufficient. A description of this evaluation is contained in Docket Item IV-K-8. The conclusion drawn from this study is that for the primary averaging times, there were instances of underpredictions of maximum concentrations while for the default data input set, the model overpredicted. The delta-T/default case was not tested.

Independent of these model evaluation studies, a considerable amount of high quality, research grade data were being collected under the EPA's continuing Complex Terrain Model Development program at the Tracy Power Plant east of Reno, Nevada. This area is surrounded by complex terrain in many directions. For 21 hours of data that had previously undergone full data quality control checks, UARG further tested RTDM. The analysis showed that RTDM with full on-site data, substantially underpredicted the concentrations, but RTDM with default data almost exactly predicted maximum concentrations. For more detail see Docket Item IV-K-11.

These evaluations indicate that, although RTDM may be technically superior to other models, including EPA's COMPLEX I screening model, when all the necessary on-site data are available, there is a potential for underpredictions. In the default mode, RTDM is not as sophisticated but provides a margin of safety necessary to ensure the protection of ambient air quality standards. In this mode, RTDM can more properly be characterized as a screening model. If on-site temperature, stability, wind speed and direction data are input to this model, RTDM may be classified as a third level screen—more sophisticated than the present second level screen, COMPLEX I, yet not as sophisticated as the model developers had assumed.

EPA is therefore seeking public comment on its proposal to further modify the revised guideline to list RTDM as a third level screen for estimating air quality impact from stationary point sources in rural complex terrain. EPA believes that this proposal has several good aspects. First, since it has been demonstrated that RTDM with full on-site data can underpredict concentrations substantially, EPA cannot recommend RTDM as a refined model at this time. EPA believes that it is more prudent to await results from its Complex Terrain Model Development program before recommending a refined model. Second, many users may not wish to commit the additional resources necessary to use RTDM as a third level screen, and EPA believes they should not presently be required to do so; less sophisticated screening techniques (i.e., more conservative) remain available. Finally, the RTDM model with full on-site data is an available option for users, subject to case-by-case approval.

B. Modifications to the Industrial Source Complex Model (ISC)

EPA received comments from the American Petroleum Institute (API) requesting the approval of a modified version of the building downwash algorithm in the Industrial Source Complex (ISC) model. A current shortcoming of ISC is that the effect of building wakes on plume dispersion occurs abruptly for effective stack heights less than Good Engineering Practice (GEP). That is, for any plume height greater than either 2.5 building heights or the building height plus 1.5 times the lesser of the building height or width, the building wake is assumed to have no effect on dispersion. For a plume height slightly less than GEP the full wake effect is assumed. This leads to an unrealistic physical discontinuity which is not duplicated either in physical simulation (e.g., wind tunnel) or by observation. For meteorological conditions under which downwash does not occur, the ISC model would be unchanged. The effect of the proposed changes to ISC is to replace the present "full downwash/no downwash" model with one that predicts progressively-increasing downwash with decreases in stack heights at and below GEP. The proposed modifications to ISC include: (1) The enhancement of the dispersion coefficients through the introduction of a linearly decreasing decay factor as a function of plume height (at two building heights downwind) above building height, instead of the current step function behavior at a specific height; (2) final plume rise reduced by initial plume dilution instead of the current approach where final plume height is unaffected by building downwash; (3) different effective building widths and heights for every ten degree wind sector; (4) optional input of hourly stack temperature, velocity and emission rates. For more detailed discussions of these changes, see Docket Items IV-D-28 and IV-1-23.

The modifications to ISC were evaluated by API with two sets of field data. The first set consists of tracer experiments at two natural gas compressor stations and the second consists of one year of air quality data collected at a 600 MW power plant. Model evaluation results indicated that the short-term version of the existing (unmodified) ISC model was underpredicting maximum ground-level concentrations, under moderate to high wind speeds and neutral stability conditions, by a factor of 2-4. The proposed modifications improve the physics of the model (i.e. do better than the ISC model at matching the meteorological conditions of the highest observed concentrations), although the results indicate a slight overprediction.

EPA proposes therefore to revise the downwash algorithm for the ISC model in the guideline by using the API modifications for applications to stacks shorter than the Good Engineering Practice (GEP) stack height. EPA recommends this change for the following reasons. First, EPA's own model evaluation program [An Evaluation Study for the Industrial Source Complex Dispersion Model, EPA-450/4-81-002] has indicated an apparent systematic tendency to underestimate the concentrations produced near the source by buoyant stack emissions subject to building wake effects. API's findings support these conclusions and have provided constructive help to develop realistic algorithms to accurately predict ground level concentrations. Second, although many other commenters stated that the ISC model's current downwash algorithm overpredicts ground level concentrations, this conclusion has not been supported by a comparison of actual measured versus predicted concentrations.

C. Offshore and Coastal Dispersion Model

EPA received comments from the Minerals Management Service (MMS) requesting the inclusion of the Offshore and Coastal Dispersion (OCD) model in the revised guideline as a recommended model for application to sources located over water [Docket Item IV-D-9]. This model has been approved for use by the MMS in 50 FR 12248. In subsequent communications between EPA and MMS, MMS has agreed that the application of this model should be limited to estimating air quality impact from offshore sources on onshore flat terrain areas. This model is not recommended by EPA for use in air quality impact assessments for onshore sources.

The OCD model was evaluated by the model developers in order to determine whether its performance was better than the original MMS model (CRSTER with stability classes A and B collapsed into C). Further discussion of this model is contained in Docket Items IV-D-9 and IV-I-22. Aerometric data from three separate offshore and coastal diffusion experiments were used in this evaluation. Two versions of the OCD model were tested. One required measurements of parameters (turbulence intensities) that are not made on a routine basis; the other version was run without the turbulence intensity data. The results indicated that both versions of the OCD model performed better than the original MMS model. Even without turbulence intensity data, the OCD model is a good screening model for assessing air quality impact from offshore sources under very stable atmospheric conditions. When these conditions are present, the highest onshore concentrations are expected from these offshore sources.

EPA is proposing to list the OCD model as a preferred model, in the revised guideline, for estimating air quality impact from offshore sources on onshore flat terrain areas. EPA's recommendation of this action is based on the findings that the materials submitted in support of this model meet the six requirements outlined by EPA in its notice soliciting air quality models developed outside the Agency in 45 FR 20157.

D. AVACTA II Model

EPA received a comment from the model developer AeroVironment, Inc. requesting the inclusion of the AVACTA II model as an alternative model in Appendix B of the revised guideline [Docket Item IV-K-13]. Models listed in Appendix B must meet the six criteria outlined in 45 FR 20157 and may be considered for use on a case-by-case basis subject to a demonstration.

EPA has determined that the material submitted in support of the model meets the six criteria and is proposing to list this model as an alternative model in the revised guideline.

Classification

The revisions being proposed herein to the previous proposal will not change the conclusions regarding Executive Order 12291, Regulatory Flexibility Act, Economic Impact Assessment, or Paperwork Reduction Act which were previously stated. Consequently this action is not considered major under E.O. 12291.

List of Subjects

40 CFR Part 51

Administrative practice and procedure, Air pollution control, Intergovernmental relations, Reporting and recordkeeping requirements, Ozone, Sulfur oxides, Nitrogen dioxide, Lead, Particulate matter, Hydrocarbons, Carbon monoxide.

40 CFR Part 52

Air pollution control, Ozone, Sulfur oxides, Nitrogen dioxide, Lead.

Authority: Secs. 165(e) and 320, Clean Air Act, 42 U.S.C. 7475(e), 7620.

Dated: August 11, 1986.

Don R. Clay,

Assistant Administrator for Air and Radiation.

[FR Doc. 86-19497 Filed 9-8-86; 8:45 am]

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ENVIRONMENTAL PROTECTION AGENCY

40 CFR Parts 51 and 52

[AH-FRL-3097-3, Docket No. A-80-46]

Requirements for Preparation, Adoption, and Submittal of Implementation Plans

AGENCY: Environmental Protection Agency (EPA).

ACTION: Proposed rule; extension of comment period.

SUMMARY: This notice extends the time period in which to file comments in response to the Supplemental Notice of Proposed Rulemaking in Central Docket No. A-80-46 (9/9/86, 51 FR 32180) concerning the proposed inclusion of four air quality models into the "Guideline on Air Quality Models (Revised)," EPA 450/2-78-027R. On September 29, Hunton and Williams on behalf of the Utility Air Regulatory Group requested that the comment period be extended in order to provide more time to evaluate and test the proposed ISC modifications. On October 1, the Natural Resources Defense Council requested that the comment period be extended in order to provide more time to examine and review the documents submitted to the Docket concerning the ISC and RTDM models. Other potential commenters have also expressed an interest in additional time to comment. As a result, as noted below, the public comment period has been extended to December 9, 1986.

DATE: Comments may now be filed on or before December 9, 1986.

ADDRESS: Written comments should continue to be submitted to: Central Docket Section (LE-131), U.S. Environmental Protection Agency, 401 M Street SW., Washington, DC 20406, Attention: Docket A-80-46.

FOR FURTHER INFORMATION CONTACT: Joseph A.Tikvart, Chief, Source Receptor Analysis Branch, Office of Air Quality Planning and Standards, U.S. Environmental Protection Agency, Research Triangle Park, NC 27711: telephone (919) 541-5561 or Jawad S. Touma, telephone (919) 541-5681.

SUPPLEMENTARY INFORMATION: The following item was included in the Docket but reference to it was inadvertently omitted from the original proposal. On page 32180, column 3, at the end of the 2nd full paragraph add: Docket Item IV-I-21, User's Guide to the Rough Terrain Diffusion Model (RTDM), (Rev. 3.10), September 1985.

Dated: October 10, 1986.

Don R. Clay,

Acting Assistant Administrator for Air and Radiation.

[FR Doc. 86-23634 Filed 10-21-86; 8:45 am]

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Appendix B

List of Commenters Appearing in Docket A-80-46

Docket Number	Commenter	Date of Document
V-D-1	Hunton & Williams	9-29-86
V-D-2	Tennessee Valley Authority	10-06-86
V-D-3	US EPA (OAQPS)	9-29-86
V-D-4	Pennsylvania Power & Light Co.	9-26-86
V-D-5	Hammermill Paper Co	9-29-86
V-D-6	Natural Resources Defense Council	10-01-86
V-D-7	Conoco, Inc.	10-01-86
V-D-8	Aluminum Co. of America	10-08-86
V-D-9	Westvaco	10-06-86
V-D-10	State of Maryland, Office of Environmental Programs	10-06-86
V-D-11	Middle South Services, Inc.	10-07-86
V-D-12	County of Santa Barbara, CA	10-03-86
V-D-13	Illinois Power Co.	10-03-86
V-D-14	U S Department of Interior, Minerals Managment Service	10-21-86
V-D-15	County of Santa Barbara, CA	10-15-86
V-D-16	TRC Environmental Consultants, Inc.	12-01-86
V-D-17	County of Santa Barbara, CA	12-04-86
V-D-18	General Public Utilities Corp.	12-02-86
V-D-19	Tennessee Valley Authority	12-08-86
V-D-20	Pennsylvania Dept. of Env. Resources	12-04-86
V-D-21	Potomac Electric Power Co.	12-08-86
V-D-22	Natural Resources Defense Council	12-09-86
V-D-23	Proctor & Gamble Co.	12-09-86

Docket Number	Commenter	Date of Document
V-D-24	Environmental Research & Technology	12-08-86
V-D-25	Hunton & Williams	12-09-86
V-D-26	Boston Edison	12-05-86
V-D-27	American Petroleum Institute	12-09-86
V-D-28	Middle South Services, Inc.	12-08-86
Late Arrivals:		
V-H-1	U S Department of Agriculture, Forest Service	12-17-86
V-H-2	Hunton & Williams	01-08-87
V-H-3	Hunton & Williams	02-02-87