

PROCEDURES FOR EVALUATING NEW AIR DISPERSION MODELS

8TH MODELING CONFERENCE
September 22,23 2005

EVALUATE NEW MODELS

- **APPENDIX W TO 40 CFR PART 51-
GUIDELINE ON AIR QUALITY MODELS-
ADDRESSES NEW AIR QUALITY MODELS**
 - **SECTION 3.1.1**
 - **SUBSECTION B. WHEN A MODEL IS FOUND TO
PERFORM BETTER THAN THE LISTED MODEL, IT
IS RECOMMENDED AS A PREFERRED MODEL**

EVALUATE NEW MODELS

SUBSECTION B. IF NO MODEL PERFORMS BETTER THAN THE CURRENT PREFERRED MODEL, THEN OTHER FACTORS ARE CONSIDERED

- PAST USE
- PUBLIC FAMILIARITY
- RESOURCE REQUIREMENTS
- AVAILABILITY

EVALUATE NEW MODELS

**SUBSECTION C. THE SOLICATION OF NEW
REFINED MODELS WHICH ARE BASED ON
SOUNDER SCIENTIFIC PRINCIPLES AND
MORE RELIABLY ESTIMATE
CONCENTRATIONS IS CONTINUOUS.**

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SUBSECTION C. THE NEW MODEL MUST:

- BE COMPUTERIZED
- HAVE A USERS GUIDE
 - INCLUDES THE MATHEMATICS OF THE MODEL
 - DATA REQUIREMENTS
 - OPERATIONAL CHARACTERISTICS
- HAVE A COMPLETE SET OF TEST DATA
- BE USEFUL TO THE TYPICAL USERS

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SUBSECTION C. THE NEW MODEL MUST:

- BE AVAILABLE AT A REASONABLE COST
- NOT BE PROPRIETARY
- BE SUBJECTED TO A PERFORMANCE EVALUATION
- BE SUBJECTED TO A SCIENTIFIC PEER REVIEW

EVALUATE NEW MODELS

- **SECTION 3.2 ALTERNATIVE MODELS MAY BE USED IF:**
 - **THE NEW MODEL PRODUCES EQUIVALENT CONCENTRATIONS; OR,**
 - **A PERFORMANCE EVALUATION INDICATES THAT THE NEW MODEL PERFORMS BETTER; OR,**
 - **THE PREFERRED MODEL IS LESS APPROPRIATE**

EVALUATE NEW MODELS

- **SECTION 3.2 ALTERNATIVE MODELS**
 - **AN EPA PROTOCOL PROVIDES A STATISTICAL TECHNIQUE FOR EVALUATING PERFORMANCE FOR PEAK CONCENTRATIONS**
 - **AN ASTM REFERENCE PROVIDES A GENERAL PHILOSOPHY FOR DEVELOPING STATISTICAL EVALUATIONS**

EVALUATE NEW MODELS

- **SECTION 3.2 ALTERNATIVE MODELS. THE ALTERNATIVE MODEL MUST:**
 - HAVE A SCIENTIFIC PEER REVIEW
 - BE APPLICABLE TO THE PROBLEM
 - HAVE THE NECESSARY DATA BASES
 - NOT BE BIASED TOWARD UNDERESTIMATES
 - HAVE A PROTOCOL ON METHODS AND PROCEDURES

EVALUATE NEW MODELS

- **THE EPA PROTOCOL**
 - **BASED ON FRACTIONAL BIAS:**
 - $FB = 2 [PR-OB] / [OB+PR]$
 - **BASED ON THE HIGHEST 25 VALUES**