Steps in Model Evaluation

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1. Good Housekeeping – Models must be externally peer-reviewed. Coding must be examined and approved.

   Different agencies have different ways of doing this. Standardizing this part of the process might be a good idea, but let's not get hung up on this aspect.

   Consideration must recognize the intended application. Don't criticize because of the omission of something that is unimportant. Models should be parsimonious.

2. The Obvious -- Comparisons must be made between model outputs and observations.

   Tracer studies are crucial, in the area of intended application.

   Tests against data should involve observations independent of data sets used to develop or refine the model.

   Plots of predicted versus observed concentrations are scarcely rewarding, in the situations of current concern (primarily urban cases).

3. Consider the Audience -- Evaluate in terms understood by end users.

What the users need is predictions of where people will be at greatest risk -- use the LD-10 level, or PAG.

One suggestion – judge the performance of a model system by quantifying the proportion of people who receive incorrect guidance. The model that yields the minimum value would obviously garner some favor. As a first step, assume uniform population distributions. Later, we could address the niceties.

4. Anticipate Future Needs -- Field studies suitable for model evaluation need to be widely accessible.

Field studies must make measurements of the properties that will be needed by the next generation of models, not only those relevant to today's codes.

5. Coordinate – A forum is needed, where field studies and model evaluations are discussed and examined.

The Office of the Federal Coordinator is the official organization with relevant existing authority. Do we need to invent something new?