A Progress Report for Advancing Ecological Assessment Methods in OPP:
A Consultation with the FIFRA Scientific Advisory Panel
April 5 - 6, 2000

Questions to the Panel

Questions on Aquatic Technical Progress Report

1. The interim exposure model proposed for Level 1 is GENEEC. This model essentially simulates direct application of a pesticide to a 1 hectare, 2 meter deep pond. GENEEC generally yields higher estimated concentrations than those found in the environment, but occasionally monitoring data does exceed GENEEC estimates. Does the Panel believe that it would be a good use of resources to pursue a more conservative (e.g., shallower water body which may be more representative of small, sensitive areas) scenario or does the GENEEC appear to be conservative enough? Please provide rationale.

2. Do the various tests and range of aquatic species tested in Level 1 and 2 appear to be sufficient to protect more sensitive species within taxa when extrapolation factors are applied, given potential large differences in sensitivity based on mode of action? Please provide guidance.

3. In reference to amphibians,

   A. EFED is proposing the addition of amphibian testing when a small margin of safety exists (less than one order of magnitude) between expected concentrations of a chemical and its toxicity in other taxa? Does the SAP agree with this approach and/or are there additiional factors which should also be considered.
   B. EFED is proposing to use the Frog Embryo Teratogenesis Assay-*Xenopus* (FETAX) test as an interim amphibian test model. Do the Panel members agree and do the Panel members have any additional or alternative suggestions to make in this area?

4. Does the SAP agree with using a regression-based approach to evaluate chronic tests instead of the currently used hypothesis testing approach, where the data support this analysis (regulatory endpoint of EC_X vs NOAEC)? Please provide rationale.

5. ECOFRAM noted that chronic endpoints such as hatching success may be affected by short-term exposures at critical life-stages, while endpoints such as growth may be more reflective of cumulative exposure. Therefore, they suggested that the Level 1 chronic risk quotient be the ratio of the model-estimated peak EEC to the EC_X or NOAEC to reflect the need to be protective at Tier 1. Does the SAP agree with this use of a peak exposure as a chronic effects screening measure in lieu of using a time-weighted average at Level 1? Please provide rationale and guidance.

6. For exposure modeling, EFED's preferred current approach is to use actual historical weather data instead of using a random weather generator? Does the Panel agree with this approach and does the Panel have any additional suggestions or proposals that would improve this?

7. In reference to variability in model input parameters,

   A. Is the consideration of variability in PRZM/EXAMS model input parameters through Monte Carlo analysis at Level 2 useful, or should this consideration be taken up at Level 3? Please discuss.
   B. Would the SAP suggest any other approaches to address this variability?

8. Regarding the derivation of a common slope factor for extrapolations in Level 2 dose-response estimates to evaluate effects on more sensitive species, does the SAP have a recommendation for an approach for deriving a generic slope?

9. Does the SAP have recommendations on sediment toxicity testing, especially regarding appropriate level of assessment, and benthic fish testing species/protocols? Please be specific.

10. Does the SAP have recommendations regarding population and community models which might be most suitable for regulatory evaluations?

11. Does the SAP agree with considering regional evaluations at Level 3, and focusing on a 90% crop/use scenarios at Level 2, in order to direct initial evaluations toward high-end risk sites? Please discuss.

12. In reference to species sensitivity distributions,

   A. How many species within a taxa should be tested at Level 3 to adequately characterize a species sensitivity distribution without the need for extrapolation factors?
   B. How should the aquatic taxa be grouped for evaluating species sensitivity distributions?

13. In reference to additional sublethal effects testing,

   A. Does the SAP concur that additional sublethal effects testing (such as immunocompetence) at Level 3, when a specific mode of action is of concern, will improve risk evaluations? Please provide rationale.
   B. Are there specific sublethal effects that the SAP would recommend as most useful to assess? Of particular interest are sublethal effects that may affect endpoints potentially suitable for regulatory decision-making (e.g., survival, fecundity).

Questions on Terrestrial Technical Progress Report

1. The Terrestrial ECOFRAM Workgroup recommended that the LC_{50} test be modified by calculating an incipient LC_{50}, defined by the point on the study when the LC_{50} does not decrease by more than 1% over two days. (This modification was proposed through OECD as described in background Document #4.) Can the SAP comment on the utility of the recommended LC_{50} test modification to account for exposure durations for pesticides with moderate to long residue dissipation rates in wildlife foods, soil, and drinking water sources?

2. EFED has proposed two approaches for discerning appropriate exposure duration windows for calculating cumulative or time-weighted average exposures for short- and medium-term lethality risk assessments. These are (1) setting the window to match toxicity test duration and (2) extending the window over protracted period limited to some minimal effect point.

   A. Can the SAP express a preference for either approach and provide a rationale?
   B. If not, can the SAP define a more appropriate approach that utilizes existing data sets (i.e., without resorting to additional data requirements for pharmacological/pharmacokinetics data)?
   C. Should exposures (in the absence of additional data) be calculated as averages or cumulative over the assigned exposure window? Please provide the rationale.

3. Because of the present lack of avian inhalation and dermal toxicity data, EFED has proposed an equivalency factor approach, based on laboratory rodent acute toxicity potency comparisons across exposure routes, to normalize exposures from dermal and inhalation routes for birds.

   A. Does the SAP believe that, in the absence of specific pharmacological/pharmacokinetics data, that this approach is reasonable and if so, why?
   B. If not, can the SAP provide insight into quantitative methods, using the existing data sets, to facilitate a comparison of different exposure routes to the existing toxicity data presently required for birds?
   C. There is recognized need, in higher Level of Refinement assessments, for additional toxicity data for routes of exposure other than oral to reduce extrapolation uncertainties. Can the SAP provide any detailed guidance on developing testing protocols (technical points to consider or knowledge of existing methods) for avian effects in birds via the dermal or inhalation routes?

4. Published studies suggest that for some pesticides and birds, exposure via preening can be an important route. Can the SAP comment on the need for considering this route of exposure? If the route is believed to be appropriate for consideration, is the SAP familiar with any quantitative methods for including this route into the overall exposure assessment?

5. EFED is trying to determine the best basis for acute effects characterization in the risk assessment process. Can the SAP provide guidance on selection of either the acute single oral dose or the dietary toxicity study as the basis for acute lethality assessments?

6. In the opinion of the SAP, what are the minimum study requirements for each Level of Refinement for both lethal and reproductive effects? How many species should be tested at each Level of Refinement to adequately characterize a species sensitivity distribution?

7. EFED has recommended modifications to the avian reproduction test to provide dose-response information for sensitive endpoints. Can the SAP provide suggestions for protocol design and/or the most important considerations that should be factored into the design of the study?

8. EFED has proposed options for interspecies extrapolation factors for both lethal and reproduction risk assessments.

   A. Can the SAP comment on whether the proposed method is appropriate?
   B. Can the SAP recommend an alternative or additional approach, with supporting detail?
   C. Is the proposed approach for reproduction effects appropriately conservative under the existing limitations of available data, and if so, why?
   D. If not, does the SAP have a preference for an approach for reproduction effects extrapolations at this time?

9. Can the SAP provide guidance on what additional species would be the most appropriate for testing for both lethal and reproductive effects at the higher Levels of Refinement?

10. The Terrestrial Technical Progress Report presents methods for predicting dose-response slopes for extrapolated sensitive species.

    A. Does the SAP have suggestions on ways to improve these methods or can an alternative approach be taken?
    B. Can the SAP suggest methods for similar extrapolations for reproduction effects?

11. Can the SAP provide guidance on the methods for developing natural history information on avian species in agro-ecosystems that would be appropriate for use in probabilistic assessments? This would include information on avian census, time budget and dietary proportions on and off treated fields, available food sources, and others.

<u>Closing Question</u>

1. What approach would the SAP recommend to move toward validating the risk assessment processes presented in the Technical Progress Reports? Please provide specific recommendations.