

AGENDA
U.S. ENVIRONMENTAL PROTECTION AGENCY (EPA)
FIFRA SCIENTIFIC ADVISORY PANEL (SAP)
OPEN MEETING
SEPTEMBER 15 - SEPTEMBER 17, 2015

FIFRA SAP WEB SITE <http://www.epa.gov/scipoly/sap/>
DOCKET NUMBER: EPA–HQ–OPP–2015–0424
U.S. ENVIRONMENTAL PROTECTION AGENCY
CONFERENCE CENTER LOBBY LEVEL
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Development of a Spatial Aquatic Model (SAM) for Pesticide Assessments

Please note that all times are approximate (see note at the end of the Agenda).

Day 1 Tuesday, September 15, 2015
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9:00 A.M. Opening of Meeting and Administrative Procedures -- Fred Jenkins, Ph.D., Designated Federal Official, Office of Science Coordination and Policy, EPA

9:05 A.M. Introduction and Identification of Panel Members – Stephen Klaine, Ph.D., FIFRA Scientific Advisory Panel Chair

9:10 A.M. Welcome and Opening Remarks – James Cowles, Ph.D., Deputy Division Director, Environmental Fate and Effects Division, Office of Pesticide Programs (EFED, OPP), EPA

9:20 A.M. Background, Objectives, and Conceptual Model – Nelson Thurman, M.S., Environmental Fate and Effects Division, Office of Pesticide Programs EPA

9:45 A.M. Model Components – Meridith Fry, Ph.D., Environmental Fate and Effects Division, Office of Pesticide Programs EPA

10:30 A.M. Break

10:45 A.M. Data Inputs – Michelle Thawley, M.S., Environmental Fate and Effects Division, Office of Pesticide Programs, EPA

11:45 A.M. Lunch

1:00 P.M. Accounting for Time of Travel – James Carlton, Ph.D., Environmental Fate and Effects Division, Office of Pesticide Programs), EPA

1:45 P.M. Defining Likely Pesticide Application Window – Paul Mastradone, Ph.D., Environmental Fate and Effects Division, Office of Pesticide Programs, EPA

2:30 P.M. Break

2:45 P.M. Wrap-up -- Nelson Thurman, M.S., Environmental Fate and Effects Division, Office of Pesticide Programs, EPA

3:00 P.M. Public Comments

4:30 P.M. Adjourn

<p>Day 2 Wednesday, September 16, 2015</p>
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9:00 A.M. Opening of Meeting and Administrative Procedures – Fred Jenkins, Ph.D., Designated Federal Official, Office of Science Coordination and Policy, EPA

9:05 A.M. Introduction and Identification of Panel Members – Stephen Klaine, Ph.D., FIFRA Scientific Advisory Panel Chair

9:10 A.M. Public Comments Continued

10:00 A.M. Charge to Panel

Question 1. The conceptual watershed model for the Spatial Aquatic Model (SAM) accounts for spatial and temporal variability in soil, land cover, weather, and crop/management inputs and integrates outputs at watershed pour points by area-weighting.

- a. Please discuss the strengths and limitations of the conceptual watershed model for representing spatial and temporal variability in pesticide concentrations in water.*
- b. Please comment on how clearly this conceptual approach is explained. What additional documentation, description, and/or characterization is necessary to ensure clarity and transparency?*

10:45 A.M. Break

11:00 A.M. Charge to Panel

Question 2. Please comment on the model organization and improvements to model code.

- a. SAM is organized into three components (scenario generator, hydrology, and calculator) to reduce redundant calculations, increase model efficiency, and make use of pre-processing for creating standalone scenarios and hydrology (Section 2.1). USEPA OPP found this to be the best approach for handling the large quantity of the spatial and temporal inputs, while preserving the user's ability to run unique simulations every time. *Please comment on the separation of independent processes (e.g., hydrology, pesticide transport) to maximize computational efficiency and minimize user run-time.*
- b. USEPA OPP has improved the PRZM model code to eliminate inefficiencies and excessive calculations. For example, simplifying the soil into a single surface layer, as described in Section 2.1.1, increased computational time by 10-fold with negligible change in results. *Please comment on this general approach to improve the model's speed and efficiency without sacrificing accuracy and provide any additional recommendations for improving model efficiency.*

12:15 P.M. Lunch

1:15 P.M. Charge to Panel

Question 3. Section 2.3 describes initial model evaluation steps for SAM to evaluate model uncertainty, sensitivity, and performance in comparison to measured (monitoring) data. Additional model evaluations occur in Sections 4.4 and 5.3.

- a. *What additional sensitivity analyses would the SAP recommend for model evaluation?*
- b. Current model evaluation compared SAM estimates to available atrazine monitoring data collected at daily to weekly intervals. Given the importance of robust, frequently-sampled monitoring data for evaluation, *what additional monitoring or other types of data are currently available to test and evaluate how well SAM meets EPA objectives of transparent processes and clear, consistent, and reasonable products for risk assessments and risk characterization?*

2:30 P.M. Break

2:45 P.M. Charge to Panel

Question 4. To substantially lessen the number of scenarios and improve computational speed of the model, USEPA OPP evaluated the option of grouping soil map units into classes based on factors that have the greatest impact on pesticide loss due to runoff and erosion (USDA water

quality index, described in Section 3.3). A comparison of runoff volume, pesticide mass, and pesticide concentration outputs showed little difference between the two approaches. ***Please comment on any implications for using soil grouping classes for watershed-scale modeling.***

4:00 P.M. Charge to Panel

Question 5. In order to generate the soil-land cover-weather station scenarios needed for modeling, USEPA OPP took spatial data at different scales and re-gridded them to the same scale for aggregation (Section 3.2). Based on comparative testing of the model (Sections 2.3, 4.4, and 5.3), this appears to be a feasible approach. ***Please comment on the implications for aggregating spatial inputs across varying scales.***

4:45 P.M. Adjourn

Day 3 Thursday, September 17, 2015

9:00 A.M. Opening of Meeting and Administrative Procedures – Fred Jenkins, Ph.D., Designated Federal Official, Office of Science Coordination and Policy, EPA

9:05 A.M. Introduction and Identification of Panel Members – Stephen Klaine, Ph.D., FIFRA Scientific Advisory Panel Chair

9:10 A.M. Follow-up from the Previous Day Discussions

9:20 A.M. Charge to Panel (Cont'd)

Question 6. As described in Sections 5.1 and 5.2, USEPA OPP has evaluated an approach for representing concentrations at the pour points of drainage networks that involves aggregating upstream drainage areas into integer-day stream travel-time zones, and the use of mathematical convolution to represent in-stream dispersive spreading of both influent runoff volumes and pesticide masses. ***Please comment on the use of this approach, and on any modifications or alternative approaches that USEPA OPP might consider for accomplishing the same ends.***

10:00 A.M. Charge to Panel

Question 7. USEPA OPP has not yet investigated possible adaptations of the approach referred to in Q8 to simulate reactive and/or sorbing chemicals. Please comment on the potential for modifying this approach to simulate such chemicals.

- a. Given the risk assessment purpose of SAM, *please comment on the applicability of the described approach in dual-compartment (aqueous and benthos) systems for representing chemical decay and sorption during transport in surface waters across a range of spatial scales.*
- b. *Please recommend any watershed-scale monitoring datasets that may be suitable for use in evaluating estimated concentrations of pesticides that sorb non-negligibly to sediment, and any possible sources of data for representing the benthic sediment layer in surface waters throughout the country.*

11:00 A.M. Break

11:15 A.M. Charge to Panel

Question 8. Pesticide applications often depend on planting dates, crop growth, and harvest dates, which vary with weather. To improve upon the initial approach of stratifying planting and harvesting dates within states by using a Plant Hardiness Zone map (Section 3.1.4), USEPA OPP tested the potential for using empirical data (USDA weekly crop progress reports) and, where such data are incomplete, crop growth models (Section 5).

- a. *Please comment on the use of crop planting dates and growth stages to provide reference points for pesticide application windows. How applicable is this approach for predicting the application window for all types of conventional pesticides (e.g., herbicides, growth regulators, fungicides, insecticides, etc.). For pesticide or pest types for which this approach may not work, what alternative methods are available?*
- b. As noted in Section 4.2, empirical crop progress data are not available for all crops, all areas, or all years. *Please recommend any additional data sources that could provide useful information on spatial and temporal (year-to-year) variability in crop planting, growth, and harvesting dates for use in modeling.*
- c. Where empirical data are missing, USEPA OPP explored the possibility of using crop growth/phenology models such as growing degree days (GDD) to fill in missing data. *Please comment on the number of crops with available GDD models and availability of alternative models/data for other crops or crop groupings.*

12:00 P.M. Lunch

1:00 P.M. Charge to Panel (Cont'd)

Question 9. The test version of SAM provides the user with options for defining the extent of the pesticide application window and the distribution of pesticide applications across that window (e.g., uniform distribution, triangular distribution). Crop progress reports or, in their absence, crop growth models, offer an option for defining the application window and shape of the distribution (Section 5). *Please comment on the use of empirical data or models to define the distribution of pesticide applications within an application window.*

2:30 P.M. Closing Remarks – Stephen Klaine, Ph.D., FIFRA Scientific Advisory Panel Chair

Fred Jenkins, Ph.D., Designated Federal Official, Office of Science Coordination and Policy,
EPA

3:00 P.M. Adjourn

Note: Please be advised that agenda times are approximate; when the discussion for one topic is completed, discussions for the next topic will begin. For further information, please contact the Designated Federal Official for this meeting, Dr. Fred Jenkins, via telephone: (202) 564-3327; fax: (202) 564-8382; or email: jenkins.fred@epa.gov.