AGENDA
FIFRA SCIENTIFIC ADVISORY PANEL (SAP)
OPEN MEETING
March 6 - 7, 2012

FIFRA SAP WEB SITE http://www.epa.gov/scipoly/sap/
OPP Docket Telephone: (703) 305-5805
Docket Number: EPA-HQ-OPP-2011-1017

U.S. Environmental Protection Agency
Conference Center - Lobby Level
One Potomac Yard (South Bldg.)
2777 S. Crystal Drive, Arlington, VA 22202

Methods for Efficacy Testing of Bed Bug Pesticide Products

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

Day 1
Tuesday, March 6, 2012

8:30 a.m. **Opening of Meeting and Administrative Procedures** – Joseph Bailey, Designated Federal Official, Office of Science Coordination and Policy, EPA

8:35 a.m. **Welcome and Introduction of Panel Members** – Martha Sandy, Ph.D., FIFRA SAP Session Chair

8:40 a.m. **Opening Remarks** – Steven Bradbury, Ph.D., Director, Office of Pesticide Programs (OPP), EPA

8:50 a.m. **Overview: U.S. Bed Bug Problem and the Role of Efficacy Studies** - Lois Rossi, Division Director, Registration Division, OPP, EPA

9:10 a.m. **Laboratory Methods for Efficacy Testing of Bed Bug Pesticide Products** - Kevin Sweeney, M.S. - RD, OPP, EPA

10:15 a.m. **Break**

10:30 a.m. **Laboratory Methods for Efficacy Testing of Bed Bug Pesticide Products** - Kevin Sweeney, M.S. - RD, OPP, EPA

12:00 p.m. **Lunch**

1:00 p.m. **Public Comments**

2:00 p.m. **Charge to Panel**

Charge 1) Laboratory test methods

The draft guidelines describe laboratory test methods for evaluating the efficacy of a variety of bed bug pesticide products. Please discuss:

(a) Whether, given the objectives and the types of products being evaluated, the test methods are appropriate to evaluate the efficacy of bed bug products with regard to kill and knockdown; repellency; pesticide resistance; and discriminating dose.

(b) Whether there are additional or alternative laboratory test methods beyond those discussed in the draft guidelines for testing the efficacy of bed bug pesticide products.

2:30 p.m. **Charge 2) Standardized test system elements and conditions (Section (h) pp. 10)**
The draft guidelines describe standard elements and conditions that are recommended for each type of efficacy evaluation. Please discuss:

(a) The appropriateness of suggested environmental conditions (such as temperature and humidity).

(b) The proposed test organism. In particular, please discuss:

(i) Whether the testing should be done only with one species, the common bed bug, Cimex lectularius and whether it is appropriate to use unfed adult bed bugs with a sex ratio of 1:1 to test adulticide products.

(ii) The advantages and disadvantages of including a susceptible strain in every test and whether the Harlan strain is the preferred susceptible strain.

(iii) The advantages and disadvantages of including a resistant strain in every test and how an investigator should select a resistant strain or strains.

(iv) The adequacy of the use of field collected bed bug strains from urban areas in three regions of the U.S. to represent the variability in susceptibility of bed bug populations for conducting efficacy evaluations.

(v) The recommended approach for grouping and evaluating the data from the tested bed bug strains to assess efficacy of bed bug products.

(c) The advantages and disadvantages of including a positive control in every test.

3:30 p.m. **Break**

3:45 p.m. **Charge 3) Specific guidance for laboratory studies for resistant ratio determination, characterization of bed bug strain susceptibility, and discriminating dose selection (Section (i) pp.11)**
The draft guidelines propose a method to collect the data necessary to calculate a resistance ratio. Resistance ratios should be calculated for bed bug populations collected from the field in three regions in the U.S. The lethal dose values to be used in these calculations are to be derived from probit analysis. For pyrethroid insecticides, deltamethrin is proposed as the laboratory standard. From the collected data and resistance ratio values, the procedure recommends an approach to select a discriminating dose for a product. Please discuss:

(a) Which insecticides should be chosen as standards for other insecticidal modes of action.

(b) Whether it is useful to compare the resistance ratios of bed bug field populations to the resistance ratio for a corresponding dose of deltamethrin when evaluating pyrethroid insecticides.

(c) Whether a resistance ratio of 100x is adequate to screen field strains for resistance against insecticides and if not, what other approaches are recommended for detecting resistance in bed bug populations.

(d) What type(s) of data analysis and statistical testing would be most appropriate for these data sets.

(e) The discriminating dose selection for products, including whether the LD90 value of the least susceptible field population is the best value to use as the basis for discriminating dose selection.

5:00 p.m. **Meeting Adjourns**

Day 2
Wednesday, March 7, 2012

8:30 a.m. **Opening of Meeting and Administrative Procedures** – Joseph Bailey, Designated Federal Official, Office of Science Coordination and Policy, EPA

8:35 a.m. **Introduction of Panel Members** – Martha Sandy, Ph.D., FIFRA Scientific Advisory Panel Session Chair

8:40 a.m. **Follow-up from Previous Day Discussions**

9:00 a.m. **Charge to Panel**

Charge 4) Exposure times to product treatments [Sections (j) (pp. 13) and (l) (pp.17)]
For residual surface and impregnated material testing, the draft guideline proposes two possible approaches to exposing bed bugs to pesticide product applications in the laboratory: 1) single dose with a fixed exposure time of 24 hours followed by mortality assessments through 96 hours unless all bed bugs die or control mortality exceeds 10%; and 2) single dose with an exposure time that is continuous until all bed bugs die or control mortality exceeds 10%. The single dose is generally the lowest label recommended dose for the product. Please discuss:

(a) Whether the exposure times provide sufficient data to measure the efficacy of a bed bug pesticide or whether other exposure times or testing scenarios should be used.

(b) Whether percent mortality values or lethal time values should be used as endpoints to assess the success of product applications and the advantages and disadvantages of each one.

9:45 a.m. **Charge 5) Specific guidance for laboratory studies for forced exposure (no-choice) residual surface treatment tests (Section (j) pp.13)**
The methods described for testing residual surface treatments recommend five types of surfaces: unpainted plywood; linoleum tile; concrete board; cotton sheet; and medium pile carpet. Please discuss:

(a) Whether the experimental unit described in the draft guidelines will provide sufficient data to show how effectively and how quickly a bed bug product knocks down and kills bed bugs, when applied as a residual treatment to surfaces.

(b) Whether there is a single surface type that could be used as a standard or representative surface for testing product residual activity in lieu of testing multiple surfaces as recommended in the draft guidelines.

(c) Whether there are modifications or additional tests that could be recommended to improve residual surface treatment testing.

(d) What type(s) of data analysis and statistical testing would be most appropriate for these data sets.

10:30 a.m. **Break**

10:45 a.m. **Charge 6) Specific guidance for laboratory studies to determine if bed bugs are repelled by, or attracted to, pesticide product residues (Section (k) pp. 15)**
For pesticide product treatments to be efficacious, bed bugs must contact pesticide residues. Testing methods should determine whether or not pesticide residues alter bed bug behavior, either by repellence from or attraction to pesticide treated areas. Please discuss:

(a) Whether the experimental unit described in the draft guidelines will provide sufficient data to measure the duration and extent to which a pesticide product's residues repel bed bugs.

(b) Whether conditioning of experimental bed bug harborages is necessary.

(c) Whether individual responses and/or group responses should be used to determine whether bed bugs are repelled by pesticide product residues in harborages.

(d) What type(s) of data analysis and statistical testing would be most appropriate for these data sets.

12:00 p.m. Lunch

1:00 p.m. **Charge 7) Specific guidance for laboratory studies for testing pesticide impregnated material products (Section (l) pp. 17)**

The draft guideline proposes no-choice and choice tests for treated materials. Both are to be conducted in the presence of a non-human host or artificial membrane system to provide a source of blood. The proposed tests evaluate mortality, blood feeding inhibition, and preference for treated versus untreated surfaces. Please discuss:

(a) Whether the experimental unit is adequate for evaluating mortality and blood feeding inhibition following exposure to impregnated materials.

(b) Whether the use of an artificial membrane system to simulate an animal host and provide blood for questing bed bugs is adequate, or whether an animal host is necessary.

(c) Whether the assessment period is adequate.

(d) Modifications or additional tests that would improve pesticide impregnated product testing.

(e) Adequacy of the experimental unit to provide an experimental design and adequate data to evaluate repellency.

(f) What type(s) of data analysis and statistical testing would be most appropriate for these data sets.

2:00 p.m. **Charge 8) Specific guidance for laboratory studies of indoor fogger products (Section (m) pp.19)**

The methods described for indoor fogger testing recommend use of an experimental unit that includes a 216 cubic feet or larger Peet-Grady chamber. The test container for bed bugs has 20 holes (1/16" diameter) in it to simulate a crack and crevice treatment and a bed bug refuge. Please discuss:

(a) Whether the experimental unit is adequate for testing indoor foggers and misters.

(b) Modifications or additional tests that could be recommended to improve indoor fogger testing.

(c) What type(s) of data analysis and statistical testing would be most appropriate for these data sets.

3:00 p.m. Break

3:15 p.m. **Charge 9) Specific guidance for laboratory studies for testing ovicidal products (Section (o) pp. 22)**

Efficacious ovicidal products are likely to improve the effectiveness of bed bug management programs. The draft guidelines describe methods for evaluating product efficacy against eggs from direct application and contact with residual surface applications. Please discuss:

(a) Adequacy of the experimental unit for testing ovicidal products.

(b) Modifications or additional tests that could be recommended to improve ovicidal product testing.

(c) What type(s) of data analysis and statistical testing would be most appropriate for these data sets.

4:00 p.m. **Charge 10) Please provide comments on the overall clarity, accuracy and completeness of the draft guidelines: "Laboratory Testing Methods for Bed Bug Pesticide Products"**
Please provide any additional comments that highlight any areas of the draft guidelines that may need to be clarified and note any relevant topics that may be missing. **Please include references to any published literature that could help improve the completeness and clarity** of the draft guidelines.

5:00 p.m. **Meeting Adjourns**

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, Joseph Bailey, via telephone: (202) 564-2045; fax: (202) 564-8382; or email: bailey.joseph@epa.gov