

**AGENDA**  
**FIFRA SCIENTIFIC ADVISORY PANEL (SAP)**  
**OPEN MEETING**  
**December 2-5, 2008**

**FIFRA SAP WEB SITE <http://www.epa.gov/scipoly/sap/>**  
**OPP Docket Telephone: (703) 305-5805**  
**Docket Number: EPA-HQ-OPP-2008-0673**

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

**Scientific Issues Associated with Worker Reentry Exposure Assessment**

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

**Tuesday, December 2, 2008**

- 9:00 A.M. Opening of Meeting and Administrative Procedures** – Sharlene Matten, Ph.D., Designated Federal Official, Office of Science Coordination and Policy, EPA
- 9:10 A.M. Introduction and Identification of Panel Members** – Steven Heeringa, Ph.D., FIFRA Scientific Advisory Panel Chair and Janice Chambers, Ph.D., DABT, ATS, FIFRA Scientific Advisory Panel Session Chair
- 9:20 A.M. Welcome and Opening Remarks** –Tina Levine, Ph.D., Director, Health Effects Division, Office of Pesticide Programs, EPA
- 9:30 A.M. Occupational Exposure and Crop-Activity Grouping/Clustering**  
Jeff Dawson and Jeff Evans, Health Effects Division, Office of Pesticide Programs, EPA
- 11:30 P.M. LUNCH**
- 12:30 P.M. Agricultural Reentry Task Force** – Stefan Korpalski, Grayson Research, LLC  
**Development of Postapplication Exposure Data and the Transfer Coefficient Database**
- 3:00 P.M. BREAK**
- 3:45 P.M. Review of ARTF Crop-Activity Clustering Proposal: EPA**  
Matthew Crowley, Philip Villanueva, and Jeff Dawson, Health Effects Division, Office of Pesticide Programs, EPA
- 5:30 P.M. ADJOURN**

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**Wednesday, December 3, 2008**

- 9:00 A.M. Opening of Meeting and Administrative Procedures**  
Sharlene Matten, Ph.D., Designated Federal Official, Office of Science Coordination and Policy, EPA
- 9:05 A.M. Introduction and Identification of Panel Members**  
Janice Chambers, Ph.D., DABT, ATS, FIFRA Scientific Advisory Panel Session Chair
- 9:15 A.M. Workday Duration and Exposure/Risk Assessment: EPA**  
Matthew Crowley, Health Effects Division, Office of Pesticide Programs, EPA
- 10:45 A.M. BREAK**
- 11:00 A.M. Review of ARTF Crop-Activity Clustering Proposal / Exposure and Risk Assessment / Pesticide Illness Trends: California Department of Pesticide Regulation (CDPR)**  
Joseph Frank, Ph.D., California Department of Pesticide Regulation
- 12:00 P.M. LUNCH**
- 1:15 P.M. Agricultural Reentry Task Force: Comparison of the OH Cluster TCs to Biomonitoring Data – Curt Lunchick, Bayer CropScience**
- 1:45 P.M. Public Comments**
- 3:00 P.M. BREAK**
- 3:15 P.M. Charge to the Panel Topic A: Crop-Activity Grouping/Clustering**

In 1995, the Agency issued a data call-in (DCI) notice requiring the development of information on the exposure potential associated with labor activities in agriculture which occur in previously treated areas (e.g., harvesting). The central premise in the

development and collection of such exposure monitoring data is that activities which exhibit similar magnitudes and patterns of exposure can be grouped together for exposure assessment purposes. It would also follow that crop-activity combinations not actually monitored, but that were similar from both ergonomic and agronomic perspectives, can be represented by those that were monitored. Based on this premise, the Agency has identified several key factors for consideration by the Panel. They include the identification of labor activities in agriculture, evaluation of the possible grouping approaches for similar crop-activity combinations, and categorization of certain activities as no/low contact in the Agency's Worker Protection Standard (40CFR170). Specifically, the Agency identified the following issues for the Panel to consider:

**QUESTION 1:** Please comment on the strengths and limitations of the approaches and data sources used to identify the universe of hand labor activities for exposure assessment purposes. Please identify any activities that EPA has not listed for the crops included in the scope of the DCI.

**QUESTION 2:** The ARTF has recommended various crop-activities be grouped together or clustered for the purposes of estimating exposure and has proposed and conducted or purchased one or more exposure monitoring studies to be used to represent each cluster. The regulatory agencies also agree with the concept of clustering like crop-activity combinations for this purpose. Please comment on the following:

- a. The methods used by ARTF for the purposes of creating clusters for exposure assessment purposes.
- b. Statistical, agronomic, or other support for or against (1) the ARTF-proposed clusters; (2) the Agency evaluation of the ARTF-proposed clusters, and (3) the Agency-suggested alternative cluster schemes outlined below. Please include the rationale and reasoning for any Panel-recommended changes or modifications. The SAP Review Code in the list refers to Table 3 (attached), which provides a summary of the ARTF clusters, the Agency-suggested alternatives, and relevant page numbers in the Agency's background document.
  - i. Hairy Leaf Field Crops (clusters HH, HHt, and HS) [SAP Review Code A]
  - ii. Smooth-leaf Field Crops (clusters SH, SSR, SSS, SW and Sx) [SAP Review Code B]
  - iii. Waxy-leaf Field Crops (clusters WIH, WIS, and Wm) [SAP Review Code C]
  - iv. Orchard Crops
    - (1) Cluster OH and the Agency suggestion for a separate cluster for thinning [SAP Review Code D-1]
    - (2) Clusters OHn and OW crop [SAP Review Codes D-2 and D-4]

(3) Cluster OP [SAP Review Code E-3]

v. Trellis Crops

(1) Cluster THb [SAP Review Code E-1]

(2) Cluster THg and the Agency suggestions to further separate into clusters for hand harvesting wine grapes (THwg) and table/raisin grapes (THtg) as well as utilizing the hand harvesting table/raisin grape cluster to represent girdling [SAP Review Code E-2]

(3) Cluster TP and the Agency suggestion to group with cluster OP (as shown in Figure 31 of the Agency's background document) [SAP Review Code E-3]

(4) Cluster Tx [SAP Review Code E-4]

vi. Greenhouse and Nursery Crops

(1) Clusters GHf and GHv [SAP Review Code F-1]

(2) Cluster GN and the Agency suggestion to have an additional cluster for hand-harvesting nursery crops (GHn) [SAP Review Code F-2]

vii. Crop Irrigation (cluster I) [SAP Review Code G]

viii. Mechanical Harvesting Cotton (clusters CHp, CHm, and CHt) [SAP Review Code H]

ix. Turf (clusters DH and DM) [SAP Review Code I]

**5:30 P.M. ADJOURN**

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**Thursday, December 4, 2008**

- 9:00 A.M. Opening of Meeting and Administrative Procedures**  
Sharlene Matten, Ph.D., Designated Federal Official, Office of Science Coordination and Policy, EPA
- 9:05 A.M. Introduction and Identification of Panel Members**  
Janice Chambers, Ph.D., DABT, ATS, FIFRA Scientific Advisory Panel Session Chair
- 9:10 A.M. Follow-up from Previous Day's Discussion**  
Health Effects Division, Office of Pesticide Programs, EPA
- 9:30 A.M. Charge to the Panel Topic A: Crop-Activity Grouping/Clustering cont'd**

**QUESTION 3:** As indicated in the background document, the Agency recognizes the limitations associated with using certain statistical tests (such as the nonparametric Wilcoxon and Kruskal-Wallis tests) to provide a broad rationale for the separation or combination of studies to form clusters. Specifically, these tests do not adequately account for or consider a number of complex features of the data such as repeated measurements on the same worker and nesting. Again, as stated in the text, a mixed-model approach that incorporates the hierarchical nature of the data is likely to be more appropriate and to more definitively address the issues of interest regarding the degree to which specified crop-activity combinations might be combined. In Exhibit F, the Agency provides a case study example of this alternate (mixed model) approach for determining reasonable groupings of transfer coefficients (TCs) from exposure studies involving various crop activities thought to be ergonomically and/or agronomically similar.

The Agency believes the proposed approach illustrated in Exhibit F uses more appropriate statistical and quantitative procedures for determining which exposure monitoring studies can or should be combined. Please discuss thoughts and/or concerns with the analytical approach outlined in Exhibit F and on the annotated SAS code provided as an attachment to Exhibit F. Please provide feedback on the results of the case study which indicates that it would not be inappropriate to consider TC values associated with hand harvesting activities in orchards to be distinct from TC values associated with hand thinning activities in orchards (see SAP Review Code D-1 in Table 3 below and Figure 25 in the Agency's background document).

**10:45 A.M. BREAK**

**11:00 A.M.**

**QUESTION 4:** Please comment on the classification of crop-activity combinations in Agency Exhibit C, identified with a cluster code of "No TC", as involving no or very low exposure. Please identify any crop-activity combinations classified as "No TC" in Exhibit C which should be categorized differently because of their associated exposure potential. Likewise, please identify any combinations which should be categorized as "No TC" which are currently included in other clusters. Please explain the basis for any such recommendations.

**12:30 P.M. LUNCH**

**1:30 P.M. Charge to the Panel Topic B: Workday Duration**

The Agency discussed its methodology for assessing post-application exposures with an emphasis on the workday duration input. A central tendency value of 8 hours per day is typically used by the Agency. The data also show, as seen in several sources, certain portions of the population work longer over the course of a day (e.g., 10 or 12 hours). However, the Agency believes that, in most cases, employing a central tendency estimate of 8 hours per day yields an appropriately protective estimate of risk because of the combined impact of several other inputs in the exposure and risk assessment process. Specifically, the following issues have been identified for the Panel to consider:

**QUESTION 1:** Please comment on the strengths and limitations of the data sources used to quantify the duration of a workday for farmworkers, as well as any additional sources of information that could be used for the analysis of farmworker workday duration. If any are identified, please comment on the possible impacts they might have on the results of the analysis conducted by the Agency.

**3:00 P.M. BREAK**

**3:15 P.M.**

**QUESTION 2:** Please comment on the Agency's conclusion that using 8 hours per day for exposure assessment purposes and given the conservativeness of the other inputs results in estimates of farmworker exposures at the high end of the distribution of actual multi-day exposures. To the extent that the Panel believes that this is not the case, please suggest alternative approaches.

**4:30 P.M.**

**QUESTION 3:** Please comment on whether the Agency's approach to single-day exposure assessments results in farmworker exposure estimates that fall in the high end of the distribution of actual single day exposures. To the extent the Panel thinks that is not the case, please suggest alternative approaches that may generate such estimates.

**5:30 P.M.    ADJOURN**

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**Friday, December 5, 2008**

- 9:00 A.M.    Opening of Meeting and Administrative Procedures**  
Sharlene Matten, Ph.D., Designated Federal Official, Office of Science  
Coordination and Policy, EPA
- 9:05 A.M.    Introduction and Identification of Panel Members**  
Janice Chambers, Ph.D., DABT, ATS, FIFRA Scientific Advisory Panel  
Session Chair
- 9:10 A.M.    Follow-up from Previous Day's Discussion**  
Health Effects Division, Office of Pesticide Programs, EPA
- 9:30 A.M.    Charge to the Panel Topic B: Workday Duration**  
**Discussion of Question 3 cont'd**
- 10:45 A.M.    BREAK**
- 11:00 A.M.    Panel Discussion**
- 12:00 P.M.    ADJOURN**

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, Sharlene Matten, via telephone: (202) 564-0130; fax: (202) 564-8382; or email: [matten.sharlene@epa.gov](mailto:matten.sharlene@epa.gov).



**Table 3: Reference Table for Charge Question 2 (b)**

ARTF Study		ARTF Proposal			Agency Proposal		SAP Review Code	Page No.
Category/ Study Code	Crop	Activity	Cluster Code	Description	Summary of Agency Review of ARTF Proposal	Cluster Code		
<b>Hairy-leaf, Field Crop Clusters</b>								
ARF045	Cucumbers	Hand Harvesting	HH	Hairy-leaf field crops: hand harvesting and similar contact activities	The Agency concurs with ARTF's proposal	HH	A	54-59
ARF049	Summer Squash	Hand Harvesting						
ARF024	Tobacco	Hand harvesting	HHt	Hairy-leaf (Tobacco): hand harvesting and canopy management	The Agency concurs with ARTF's proposal	HHt		
ARF022	Sunflowers	Scouting	HS	Hairy-leaf field crops: scouting and similar contact activities	The Agency concurs with ARTF's proposal	HS		
<b>Smooth-leaf, Field Crop Clusters</b>								
ARF051	Tomato	Tying	SH	Smooth-leaf field crops: hand harvesting and tying	The Agency concurs with ARTF's proposal	SH	B	50-54
AR1001	Strawberry	Hand Harvesting						
AR1023	Tomato	Hand Harvesting						
AR1024	Strawberry	Hand Harvesting						
AR1025	Cotton	Scouting	SSr	Smooth-leaf field crops: scouting in row conditions	The Agency concurs with ARTF's proposal	SSr		
AR1027	Tomato	Scouting	SSs	Smooth-leaf field crops: scouting in solid stand conditions	The Agency concurs with ARTF's proposal	SSs		
ARF009	Corn	Scouting						
ARF021	Dry Pea	Scouting	SW	Smooth-leaf field crops: hand weeding, thinning, and similar contact activities	The Agency concurs with ARTF's proposal	SW		
AR1006	Cotton	Hand weeding						
AR1018	Cotton	Hand weeding						
AR1019	Dry Pea	Hand weeding	Sx	Smooth-leaf field crops: intense contact activities	The Agency concurs with ARTF's proposal	Sx		
ARF010	Sweet Corn	Hand harvesting						
<b>Waxy-leaf, Field Crop Clusters</b>								

ARF050	Cabbage	Hand harvesting	WIH	Waxy-leaf field crops, low height: hand harvesting and similar contact activities	The Agency concurs with ARTF's proposal	WIH	C	59-61
AR1008	Cauliflower	Scouting	WIS	Waxy-leaf field crops, low height: scouting and similar contact activities	The Agency concurs with ARTF's proposal	WIS		
ARF011	Cauliflower	Scouting	Wm	Waxy-leaf field crops, medium height: all activities, plus full foliage weeding	The Agency concurs with ARTF's proposal	Wm		
ARF012	Cauliflower	Hand harvesting						
ARF037	Cabbage	Hand weeding						
<b>Orchard Crop Clusters</b>								
ARF025	Apples	Hand Harvesting	OH	Orchard crops: hand harvesting and similar contact activities	The Agency generally concurs with ARTF's proposal. However, one potential alteration to the proposed crop grouping could be an additional cluster for orchard crop thinning. The Agency believes this activity may be more contact-intensive and therefore could be considered separately in exposure assessments.	Possibly create a separate cluster for orchard crop thinning	D-1	63-69
ARF028	Oranges	Hand Harvesting						
ARF041	Oranges	Hand Harvesting						
ARF042	Grapefruit	Hand Harvesting						
AR1002	Peaches	Hand Harvesting						
AR1003	Apples	Thinning						
AR1014	Peaches	Hand Harvesting						
AR1021	Peaches	Hand Harvesting						
AR1016	Almonds	Mechanical Harvesting	OHn	Orchard crops: mechanically harvesting nuts	The Agency concurs with ARTF's proposal	OHn	D-2	
ARF033	Olives	Hand Pruning	OP	Orchard crops: hand pruning, scouting, and similar contact activities	<i>See Agency review comment for ARTF Proposal for Cluster TP</i>	<i>See OP/TP</i>	<i>See E-3</i>	
ARF047	Apples	Hand Pruning						
AR1017	Peaches	Propping	OW	Orchard crops: hand weeding and similar contact activities	The Agency concurs with ARTF's proposal	OW	D-4	
<b>Trellis Crop Clusters</b>								

ARF020	Blackberries	Hand harvesting	THb	Trellis crops: hand harvesting caneberrries and similar contact activities	The Agency concurs with ARTF's proposal	THb	E-1	69-76
ARF048	Juice/Wine Grapes	Hand harvesting	THg	Trellis crops: hand harvesting grapes and similar contact activities	The Agency is considering to further separate the THg cluster by having separate transfer coefficients for hand harvesting wine grapes and table/raisin grapes, respectively. The Agency also proposes to utilize the revised THtg cluster to represent girdling.	THwg	E-2	
AR1020	Table / Raisin Grapes	Hand harvesting				THtg		
AR1022	Table / Raisin Grapes	Hand harvesting						
ARF023	Table / Raisin Grapes	Scouting	TP	Trellis crops: hand pruning, scouting, and similar contact activities	The Agency is considering combining similar activities conducted in trellises and orchards. The respective ARTF-proposed clusters OP and TP, representing activities such as scouting and hand pruning, are very similar because shears or other devices would be used which preclude some level of contact with the treated plants. Also, corresponding to Review Code E-2, girdling would be removed from this cluster.	OP/TP	E-3	
AR1015	Table / Raisin Grapes	Cane turning	Tx	Trellis crops: intense contact activities	The Agency concurs with ARTF's proposal	Tx	E-4	
<b>Greenhouse and Nursery Crop Clusters</b>								
ARF055	Solidasters, Snapdragons, Lillies	Hand Harvesting	GHf	Greenhouse and nursery floriculture hand harvesting: all flowers and methods	The Agency concurs with ARTF's proposal	GHf	F-1	40-45
ARF020	Blackberries	Hand Harvesting	GHv	Greenhouse vegetables: hand harvesting and similar contact activities	The Agency concurs with ARTF's proposal	GHv		
ARF051	Tomatoes, fresh	Tying						
ARF039	Chrysanthemums	Pinching	GN	Greenhouse and nursery crops: all activities	The Agency generally concurs with ARTF's proposal. However, the Agency believes that there could be support for additional separation of hand harvesting nursery crops from	GN	F-2	
ARF043	Nursery Stock Citrus Trees	Hand Pruning						

ARF044	Nursery Stock Citrus Trees	Hand Harvesting		All crops: transplanting	other nursery crop activities.	GHn		
<b>Crop Irrigation Cluster</b>								
ARF036	Potatoes	Irrigation	I	Irrigation, any crop where hand line is possible	The Agency concurs with ARTF's proposal	I	G	78-80
<b>Mechanical Harvesting Cotton Clusters</b>								
AR1004	Cotton	Mechanical Harvesting	CHp	Cotton, mechanical harvesting: picker operator and raker (based on boll residues)	The Agency concurs with ARTF's proposal	CHp	H	61-63
			CHm	Cotton, mechanical harvesting: module builder operator (based on boll residues)	The Agency concurs with ARTF's proposal	CHm		
			CHt	Cotton, mechanical harvesting: tramper (based on boll residues)	The Agency concurs with ARTF's proposal	CHt		
<b>Turf Clusters</b>								
ARF035	Sod	Mechanical Harvesting	DH	Sod: mechanical harvesting, scouting, transplanting, and hand weeding	The Agency concurs with ARTF's proposal	DH	I	76-78
ARF057	Golf Course Turf	Maintenanc e	DM	Golf courses: maintenance activities	The Agency concurs with ARTF's proposal	DM		