

## Spray Drift Workgroup – Final Report to PPDC

### Executive Summary

The Spray Drift workgroup to the Pesticide Program Dialogue Committee met five times over the course of the last year in response to EPA's request for input on how to mitigate risks to water from pesticide use. The workgroup was pleased that the OW and OPP are working together on this issue. The workgroup decided to focus primarily on:

- Labeling to mitigate spray drift;
- The role of education, training, and stewardship; and
- Practices and equipment to mitigate drift and adverse effects from drift.

For the purposes of the discussion, the workgroup agreed on the following concepts:

- Spray drift means pesticide droplet and particle movement that occurs during the initial application resulting in deposition onto non-target sites. Spray drift does not include particle movement onto non-target sites caused by erosion, migration, volatilization or wind blown soil particles that occurs after application.
- All pesticides must meet the FIFRA standard for registration and use.

Issues the EPA decided were beyond the scope of this workgroup include: 1) the content of EPA's proposed rule concerning whether use of a pesticide requires a National Pollution Discharge Elimination System (NPDES) permit (because the rule concerned aquatic pesticide applications, not pesticide spray drift, and because the comment period for the rule was closed and it was still in internal Agency review) and 2) the off-target movement of pesticides through volatilization.

In addition, the workgroup discussed "complex issues" surrounding spray drift, including:

- What constitutes "harm" from spray drift?
- Design standards vs. performance standards
- Tailoring regulatory restrictions to local conditions, and
- Determining the real world impacts of pesticide labeling

The following report for each of these topics presents a summary of what the workgroup did, consensus findings, and, where possible, consensus recommendations to EPA to be considered by the full PPDC. Where consensus was not achieved, individual workgroup members provided additional comments for EPA consideration. These comments do not reflect the position of the workgroup as a whole but are included to provide EPA with a complete range of views on the topic.

The workgroup found pesticide labeling statements regarding drift to be wordy, unenforceable, confusing, impractical, and/or contradictory. The workgroup recommends that EPA pursue mechanisms (e.g., PR Notice, Label Review Guide) to standardize labeling statements across products and to improve spray drift mitigation labeling statements by using shorter, clearer, enforceable language. The workgroup spent

considerable effort analyzing label statements and providing recommendations to increase their effectiveness.

The workgroup concluded that training and education programs and programs to communicate with the affected community are a critical complement to regulatory requirements and recommended that such programs should be continued or expanded.

The workgroup recommended that EPA explore with appropriate experts and practitioners establishing performance standards for pesticide application equipment and practices designed to minimize drift. The workgroup regards advances in drift reduction technology (DRT) as being a promising way to reduce spray drift over the long run and recommends that EPA should continue its support for the DRT project and encourage the use of such equipment and practices. DRT testing needs to include assessments of the DRT's effect on the efficacy of pesticides and the economic impacts of their adoption.

The workgroup meaningfully explored differing ideas of what constitutes "harm" from spray drift. However, the group did not agree on a central concept of harm.

The workgroup recommends that EPA work with States to explore mechanisms that tailor regulatory restrictions to local conditions. There were recommendations that EPA consider the TMDL or watershed management approaches and the county bulletin approach used by the Endangered Species Protection Program and explore the use of GIS systems.

The workgroup recommends that EPA strengthen the collection, use, and public availability of information regarding real world effects of its labeling to determine whether existing regulatory requirements successfully prevent harm from spray drift. If the existing regulatory requirements have failed to produce the expected levels of protection, EPA should attempt to discern the reasons.

## I. INTRODUCTION

The two EPA Offices involved with pesticides and water, the Office of Pesticide Programs (OPP) and the Office of Water (OW), have been working together under FIFRA and CWA to protect the nation's waters. The two Offices jointly sponsored this workgroup on pesticide spray drift under the auspices of the Pesticide Program Dialogue Committee (PPDC), an advisory committee chartered under the Federal Advisory Committee Act (FACA), to seek stakeholder input on how to mitigate risks to water from pesticide use.

## II. WORKGROUP MEMBERS

The workgroup has broad representation with members from academia, industry, public interest groups, federal & state agencies and grower groups. Workgroup members are:

ORGANIZATION

NAME/AFFILIATION

Academia/Education/  
Public Foundation

Jose Amador, Director  
Agriculture Research & Extension Center, Texas A&M  
Weslaco, TX

Chemical Industry/  
Trade Associations

Jennifer Shaw\*  
Stewardship Group for Food, Feed and Fiber  
Syngenta  
Greensboro, NC

Michele Schulz\*  
Syngenta  
Greensboro, NC

Frank Gaspirini  
Responsible Industry for a Sound Environment  
Washington, DC

Ray McAllister / Dee Ann Staats  
Science and Regulatory Policy  
CropLife America  
Washington, DC

Scott Schertz  
National Agricultural Aviation Association  
Illinois Aerial applicator

Jim Thrift  
Agricultural Retailers Association  
Washington, DC

Environmental/  
Public Interest  
Groups

Carolyn Brickey, Executive Director  
Protected Harvest  
Tucson, AZ

Michael Fry  
American Bird Conservancy  
The Plains, VA

Susan Kegley  
Pesticide Action Network North America  
San Francisco, CA

Jennifer Sass  
NRDC  
Washington, DC

Mary Booth\*

Environmental Working Group (EWG)  
Washington, DC

Steve Taylor  
Environmental Resources Coalition  
Jefferson City, Missouri

Larry Elworth  
Center for Agricultural Partnerships  
Ashville, North Carolina

Federal Agencies

Allen Jennings, Director  
Office of Pest Management, USDA

Michael S. Majewski, Research Chemist  
U.S. Geological Survey

State/Tribal  
Government

Art Baggett  
California State Water Resources Control Board (CA SWRCB)  
Sacramento, CA

Dave Scott  
Association of American Pesticide Control Officials (AAPCO)  
Chair - Off Target Movement of Pesticides Committee  
Purdue University  
West Lafayette, IN

Gene Foster  
Oregon Department of Environmental Quality

User/Grower Groups  
Farmer Representative

Lori Berger, Director of Technical Affairs  
California Specialty Crops Council  
Tulare, CA

Rebeckah Adcock  
American Farm Bureau Federation  
Washington, DC

Terry Witt  
Oregonians for Food and Shelter  
Salem, OR

George Wichterman  
Lee County, Florida Mosquito District  
Ft. Myers, FL

- **Note:** Mary Booth, who represented the Environmental Working Group (EWG), left EWG in the summer of 2006. She provided input to the Spray Drift

workgroup for the first two meetings. EWG did not provide a replacement for the workgroup.

- Jennifer Shaw, who represented Syngenta, attended the first three meetings and Michele Schulz attended the fourth and fifth meeting.
- Dee Ann Staats, who substituted for RayMcAllister from Croplife America, attended the conference calls during the drafting of the report.

### III. BACKGROUND INFORMATION

#### A. Workgroup meeting dates

The PPDC Spray Drift workgroup has met five times at EPA's Potomac Yard facility in Arlington, Virginia: March 29 & 30, 2006; June 13, 2006; September 6 & 7, 2006; November 7 & 8, 2006 and March 7 & 8, 2007. The workgroup also had conference calls to discuss workgroup agendas, issues and products.

#### B. Workgroup goals

The Mission Statement for the workgroup identified four goals: 1) improving understanding of the perspectives of all stakeholders regarding pesticide spray drift; 2) finding common ground for further work toward minimizing both the occurrence and potential adverse effects of pesticide spray drift; 3) developing options for undertaking work where common ground exists; and, 4) exploring the extent of drift, even with proper usage, and the range and effectiveness of potential responses to unacceptable levels of off-target drift. The spray drift workgroup provides its advice to the EPA through the PPDC.

#### C. Workgroup process:

The workgroup received basic presentations on the scientific approach EPA's pesticide program uses to assess the potential extent of spray drift resulting from application of a pesticide; the two laws under which EPA regulates pesticides in water: the Clean Water Act (CWA) and the Federal Insecticide, Fungicide, and Rodenticide Act (FIFRA); state perspectives on and approaches to addressing spray drift, pesticide labeling, various education & training programs, the ORD/OPP Drift Reduction Technology (DRT) project and workgroup member perspectives. The workgroup had conference calls and face-to-face meetings to discuss pesticide spray drift issues. Additional information about spray drift appears on EPA's website at: [www.epa.gov/pesticides/factsheets/](http://www.epa.gov/pesticides/factsheets/)

#### D. National Pollutant Discharge Elimination System (NPDES) Rule and how it relates to this drift workgroup:

On November 27, 2006 EPA issued a regulation stating that the application of a pesticide in compliance with relevant requirements of FIFRA does not require a NPDES

permit in two specific circumstances. These circumstances are: (1) The application of pesticides directly to waters of the United States in order to control pests. Examples of such applications include applications to control mosquito larvae, aquatic weeds, or other pests that are present in waters of the United States; and (2) The application of pesticides to control pests that are present over waters of the United States, including near such waters, where a portion of the pesticides will unavoidably be deposited to waters of the United States in order to target the pests effectively; for example, when insecticides are aerially applied to a forest canopy where waters of the United States may be present below the canopy or when pesticides are applied over or near water for control of adult mosquitoes or other pests. Additional information about this rule appears on EPA's website at: [www.epa.gov/npdes/agriculture](http://www.epa.gov/npdes/agriculture)

This final rule does not address drift over and into waters of the United States from pesticide applications to land. As stated in the preamble to the final rule, EPA will continue to follow its long-standing practice of not requiring NPDES permits for agricultural pesticide applications that are conducted in compliance with relevant FIFRA requirements. EPA also said in the final rule that the Agency has established a multi-stakeholder workgroup under the PPDC to explore policy issues relating to the terrestrial application of pesticides that may drift into aquatic environments.

This rule has been challenged by environmental groups and industry groups in court and is awaiting judicial review.

#### IV. WORKGROUP TOPICS

##### A. SCOPE

###### 1. What the workgroup did

Members of the workgroup discussed what topics fell within the scope of the workgroup's Mission Statement during the first meeting and had conference calls after the meeting to reach consensus on scope.<sup>1</sup>

Issues the EPA decided were beyond the scope of this workgroup include: 1) the content of EPA's proposed rule concerning whether use of a pesticide requires a National Pollution Discharge Elimination System (NPDES) permit (because the rule concerned aquatic pesticide applications, not pesticide spray drift, and because the comment period for the rule was closed and it was still in internal Agency review) and 2) the off-target movement of pesticides through volatilization.

###### 2. Consensus

###### *a. Findings*

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<sup>1</sup> See Appendix 1 for the Scoping Document.

Workgroup members decided to focus on: 1) labeling to mitigate spray drift; 2) the role of education, training, and stewardship; and 3) practices and equipment to mitigate drift and adverse effects from drift.

For the purposes of the discussion, the workgroup agreed on the following concepts:

- Spray drift means pesticide droplet and particle movement that occurs during the initial application resulting in deposition onto non-target sites. Spray drift does not include particle movement onto non-target sites caused by erosion, migration, volatilization or wind blown soil particles that occurs after application.
- All pesticides must meet the FIFRA standard for registration and use.

The workgroup further agreed that while spray drift potentially may affect humans and non-target wildlife and plants, the primary focus would be on the effects of spray drift on water quality. It was agreed that factors that contribute to spray drift effects on water may also impact humans and other non-target organisms; therefore, recommendations and considerations by the workgroup on effects of spray drift on water quality may also be applicable to humans and other non-target organisms

Issues the EPA decided were beyond the scope of this workgroup include: 1) the content of EPA's proposed rule concerning whether use of a pesticide requires a National Pollution Discharge Elimination System (NPDES) permit (because the rule concerned aquatic pesticide applications, not pesticide spray drift, and because the comment period for the rule was closed and it was still in internal Agency review) and 2) the off-target movement of pesticides through volatilization.

#### *b. Recommendations*

### 3. Other Comments

The individual workgroup members provided the following additional comments for EPA consideration in connection with this topic. These comments do not reflect a consensus of the workgroup, and therefore the reader should not necessarily assume any other workgroup member agrees with an author's comment.

- Attempts to reduce harm from off-site airborne pesticide movement through management of spray drift alone will be inadequate to address the issue of harm from drift. Volatilization drift is a major component of drift for volatile and semi-volatile pesticides (vapor pressure > 10<sup>-6</sup> mm Hg) that contributes substantially to human and wildlife exposures and harm through inhalation. With a few exceptions, EPA does not yet routinely

evaluate bystander inhalation exposures from volatilization in the risk assessments, except for fumigant pesticides and pesticides used in ULV applications for mosquito control. For some pesticides and some populations, volatilization is the primary source of exposure. In many cases, volatilization drift has caused serious harm to people.<sup>2</sup> In monitoring studies conducted by the California Air Resources Board and Department of Pesticide Regulation<sup>3</sup> and PANNA,<sup>4</sup> concentrations have been measured above levels of toxicological concern for acute, sub-chronic, and/or chronic/cancer toxicity, determined by comparison of estimated doses received from inhalation to doses EPA designates as Levels of Concern in recent FQPA risk assessments. (Kegley, Sass, Fry)

- The reports from the California Department of Pesticide Regulations (DPR), Toxic Air Contaminant Program, Monitoring Reports available at: <http://www.cdpr.ca.gov/docs/empm/pubs/tac/tacstdys.htm> , stated the following: “While many pesticides were detected, and some quite frequently, air concentrations were low compared to health screening levels. None of the air concentrations exceeded the screening levels for any of the exposure periods (acute, subchronic, chronic). The hazard indices (cumulative risk) for the 28 pesticides monitored simultaneously did not exceed one, indicating a low health risk.” For the seven pesticides that were not included in the evaluation of chronic risk, “the estimated combined cancer risk or probability for the occurrence of cancer from exposure to these pesticides is estimated to be 4.8 in 100,000,000 more than 20 times less than the normal benchmark of negligible risk of one in 1,000,000”(March 2003 report). “The majority of pesticides for which Air Resources Board (ARB) has conducted ambient or application-site air monitoring have been detected at levels subsequently determined not to pose an immediate risk to human health by this preliminary DPR review”(1986-1995 report). The May 2002 report merely presents air monitoring data without drawing conclusions. (Staats)
- EPA’s definition of drift in the 2001 Draft PR Notice excludes both volatilization and runoff: “Spray drift shall not include movement of pesticides to non- or off-target sites caused by erosion, migration, volatility, or windblown soil particles that occurs after application or application of fumigants unless specifically addressed on the product label with respect to drift control requirements.” (McAllister)

## B. LABELING

### 1. What the workgroup did:

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<sup>2</sup> California Department of Pesticide Regulation Pesticide Illness Surveillance Program, <http://www.cdpr.ca.gov/docs/whs/pisp.htm>.

<sup>3</sup> California Department of Pesticide Regulation Toxic Air Contaminant Program, Monitoring Reports, <http://www.cdpr.ca.gov/docs/empm/pubs/tac/tacstdys.htm>.

<sup>4</sup> Drift Catcher Results, Pesticide Action Network North America, <http://www.panna.org/campaigns/driftCatcherResults.html>.

OPP presented overviews of FIFRA labeling requirements and how they are tied to risk assessments for pesticides. The workgroup used pesticide labeling case studies for an insecticide, permethrin, and an herbicide, 2,4-D, to examine and make recommendations on spray drift labeling language.

- *Permethrin insecticide*

Permethrin was used as a case study for labeling during the third workgroup meeting (September 6 & 7). Permethrin was chosen as a case study because it was undergoing reregistration review and there was an opportunity to recommend additional spray drift labeling before the Reregistration Eligibility Determination (RED) was completed.

OPP provided an overview of the permethrin RED regarding spray drift and water quality concerns. This included a summary of the use patterns, spray drift labeling requirements, and how CWA listings and ecological incidents are used in the RED process. A background presentation for labeling was provided by OPP.

The workgroup formed four teams each considering the labeling directions relating to a particular type of application method: aerial; groundboom, airblast, public health/areawide programs. Each team developed recommendations for revising the labeling for permethrin products. Some of the recommendations pertained directly to how permethrin is used; other recommendations potentially applied to spray drift labeling on all types of pesticides; and still other comments potentially would apply to overall labeling for all pesticides.

Wind based directional buffers were discussed. The EPA staff stated that modeling for buffers incorporate pesticide movement for both runoff and direct deposition and would require revision of models to accommodate directional buffers.

Labeling recommendations were provided to the RED chemical review manager for permethrin after the third meeting. The RED chemical review manager incorporated short term labeling recommendations for the RED and discussed longer term labeling recommendations.

- *2,4-D herbicide*

The workgroup wanted to examine an herbicide as well as the insecticide permethrin and 2,4-D herbicide labeling was discussed at the fourth workgroup meeting (November 7 & 8). 2,4-D was chosen because there have been spray drift issues with the chemical and, as a result, labeling

had been thoroughly vetted with stakeholders before the 2,4-D RED was finalized in 2005.

The 2,4-D chemical review manager provided background information about the spray drift labeling adopted for 2,4-D. The workgroup discussed using the spray drift labeling developed for 2,4-D for other pesticides.

- *National Agricultural Aviation Association (NAAA)*

Scott Schertz provided examples where strict adherence to labeling statements is at odds with drift mitigation. For instance, a Dimilin label states “Nozzles must always point backward parallel with the air stream and never be pointed down more than 45 degrees.” Scott and NAAA noted that this statement has an internal conflict, and the pointing backward part may work for high speed airplanes but it does not work for low speed aircraft and helicopters. Another example was an Assail label statement “Nozzles must always point backward parallel with the air stream.” Scott and NAAA noted that strict observation of this language eliminates the ability to use any other deflection angle than 0 degrees. This will often force the applicator to use a nozzle that produces a finer droplet pattern than desired for drift control to obtain acceptable pest control. When a coarser droplet spectrum is attainable with an angle greater than 0 degrees, this may provide acceptable control with less drift potential. This type of label language can also be found on other pesticide products. For example, a small solid stream nozzle, operated at high pressure and orientated back in the air flow may result in the lowest drift potential.

Workgroup members presented their labeling perspectives to the workgroup at the last meeting, e.g. Susan Kegley discussed labeling needs to protect bystanders and agricultural workers and Scott Schertz discussed how labeling can be a barrier to adopting cutting-edge spray drift reduction technology.

The workgroup also discussed several general issues related to pesticide labeling including:

- What is the objective of labeling? Who is the target audience?
- How is it connected to the risk assessment?
- What is the proper relationship between labeling and training, for ag and consumer users? Enforceability of the label is important and may be different for these application-type groups.
- How best to facilitate communication of label requirements between applicator and grower/property owner?
- How best to address sensitive sites on the label?

## 2. Consensus

### *a. Findings*

The Workgroup identified a number of problems with product labeling designed to mitigate spray drift:

- Inconsistent labeling statements across products
- Labeling statements that are too wordy
- Labeling requirements that are unenforceable
- Labeling statements that are confusing, impractical, and/or contradictory
- Labeling statements that are poorly organized and/or presented
- Existing language on sensitive sites is generic and often difficult to enforce.

### *b. Recommendations*

EPA should pursue mechanisms (e.g., PR Notice, Label Review Guide) to standardize labeling statements across products and to improve spray drift mitigation labeling statements by using shorter, clearer, enforceable language.

The workgroup also recommends that EPA consider more far-reaching changes to pesticide labeling to ensure that provisions concerning spray drift receive sufficient prominence:

- Clearly identify and differentiate enforceable statements and advisory statements on the label,
- Place all relevant directions for each method of application, e.g., aerial, ground boom, airblast in a separate section,
- Establish enforceable “performance standards” such as droplet size and deposition and/or “design standards” such as maximum wind speed and boom height,
- Because the application methods differ for these uses, require that products with mosquito adulticide uses be registered separately from products with directions for aerial application on agricultural sites,
- Do not put Best Management Practices (BMPs) for spray drift prevention on pesticide labeling because they are too lengthy and may vary significantly by locality. Develop a way to make BMP information readily accessible to applicators and update them as needed. Referencing websites and local contacts were suggested.
- Establish a process that allows relevant stakeholders to review generic label language and format to ensure that the labels are clear, enforceable, and practicable. Such a process should be streamlined as much as possible.

### 3. Other Comments

The individual workgroup members provided the following additional comments for EPA consideration in connection with this topic. These comments do not reflect a consensus of the workgroup, and therefore the reader should not necessarily assume any other workgroup member agrees with an author's comment.

- All available toxicological information should be on the label in symbolic form. To reduce the likelihood of adverse effects from drift, EPA should ensure that applicators are able to make fully informed decisions about which product minimizes the likelihood of adverse effects if drift does occur. Knowledge of the toxicological properties of the active and other ingredients in pesticide products should thus be an essential part of any pesticide label. This information should include not only the acute toxicity of the product mixture that is currently on the label, but also the status of each component of the product as a potential carcinogen, reproductive or developmental toxicant, neurotoxicant, wildlife hazard or water contaminant. This information should be displayed symbolically in a way that can be readily understood by non-English-speaking applicators. The Globally Harmonized System (GHS) of classification and labeling is a useful model developed and adopted by the European Union that should be adopted in its entirety by US EPA. (Kegley, Sass, Fry)
- EPA's safety review requires over 100 toxicology and environmental studies on pesticides. Requiring all these safety data on the label would result in a voluminous document that is not practical and is inconsistent with the other recommendation in this report of making the label concise. (Staats, Adcock)
- Labels should NOT become voluminous dissertations on any and all tenuous concerns or allegations relating to possible, albeit unlikely or unproven, effects of a pesticide. The most certain way to ensure that labels are NOT taken seriously by users is to fill them with propaganda by making the warnings and instructions so onerous that average users are intimidated by the sheer quantity of the text. (Adcock)
- With infrequent exception, pesticide applicators use good judgment, seek training and make every effort to properly follow product labels. Among agricultural users, the goal is to apply pesticides properly so as to protect their investment, but most importantly to protect the health of their employees, their families and neighbors, and the environment. (Adcock)
- Humans make mistakes. Any labeling strategy that is to be effective in controlling spray drift must take human failings into account and not assume perfect compliance. No matter how "perfect" a label is, if control measures do not take into account the fact that humans are fallible and/or not always willing to inconvenience themselves for the benefit of others, control measures will be not be effective and harm will occur. There is ample evidence that people do not read pesticide labels or follow label

instructions. For example, consumers routinely apply more pesticide than the label rate, applicators frequently do not have the equipment or training necessary to prevent drift, and economic pressures can sometimes mean that it is easier to ignore problematic weather conditions and proceed with an application that will almost certainly result in substantial drift. EPA must build in a margin of error to accommodate human failings. (Kegley, Sass)

- A sensitive site should be defined on the label as “a non-target area where harm could be anticipated to occur if pesticides are transported to the area.” “Harm” should be defined on the label, using the Indiana definition. (Kegley, Sass, Fry)
- Label Clarity Should Be Evaluated To Assess User Understanding and Compliance. (This comment is to add detail to the consensus statement.) EPA does not currently conduct user testing of labels to observe whether or not the intent of EPA’s control measures is understandable by applicators. To assess label effectiveness as a means of communicating important safety and use information, it would be necessary for EPA to carry out statistically valid field surveys that observe applicator interpretation and understanding of pesticide label instructions. It is difficult to anticipate the myriad ways that people can misinterpret a statement until you’ve actually observed their behavior and queried their understanding. One only has to note the range of mistakes people make in the application of pesticides and the associated adverse effects to see the inadequacy of the current approach that assumes perfect understanding of pesticide labels. (Kegley, Sass)
- Labels should also include reasonably enforceable application directions. However, these direction should not be so “black and white” and inflexible that the enforcement officials are absolved of using good professional judgment in establishing whether drift has in fact caused harm due to a label violation, i.e., labels directing “no drift”. (Adcock)
- Do not make these standards so restrictive that they preclude the flexibility for an applicator to exercise professional judgment. (Scott, Schertz, Thrift)
- Applicators should be given a droplet spectrum goal, but leeway on how to achieve it. (Wichterman, Schertz)
- Many times strict compliance with a label conflicts with itself and is at odds with drift mitigation. (Schertz)
- There are many variations in aerial application equipment and configurations and one generic statement does not fit all situations. (Schertz, Wichterman)
- There is confusion as to what is required and what is recommended.
- Labels should be improved to include concise, meaningful information on the known risk associated with a pesticide. (Adcock)
- Some tolerance for diminutive exposure should exist and not be considered drift. (Adcock)
- Labels are expected to be written in a meaningful way that are possible to comply with and are expected to be carried out. A requirement to allow

for a substantial margin of error to accommodate human failings is not a responsible regulation. (Schertz)

- Labels already give ranges of product application rates. This is a requirement that is already on the labels and is followed and enforceable. (Schertz)

## C. EDUCATION, TRAINING & STEWARDSHIP

### 1. What the workgroup did

EPA staff, workgroup members and state extension representatives provided background information on a number of existing programs to train pesticide users to apply pesticides in a manner that reduces spray drift including:

- Professional Aerial Applicators Support System Program update (PAASS) – Scott Schertz/aerial applicator and Kevin Keane/EPA-OPP
- Pesticide Applicator Certification program – Kevin Keane/EPA-OPP
- Crop Life America (CLA)– Spray Drift Task Force summary,
- Stewardship programs – Al Barefoot/DuPont Co. provided examples of stewardship programs.
- Center for Integrated Pest Management (CIPM) program – Ron Stinner Southern Region IPM Center and North Carolina State University
- Michigan Agriculture Environmental Assurance Program (MAEAP)– update by Gina Davis, Michigan Department of Agriculture

### 2. Consensus

#### *a. Findings*

The workgroup concluded that training and education programs and programs to communicate with the affected community are a critical complement to regulatory requirements. Specifically, the workgroup agrees with EPA's suggestion made to the full PPDC that EPA help to facilitate a meeting involving USDA, states, user groups, and pesticide companies to develop a comprehensive strategy for securing adequate funding for education and training programs.

In addition, the workgroup endorses state and user group programs that direct applicators to review a comprehensive checklist of factors affecting drift prior to each application.

#### *b. Recommendations*

The workgroup recommends that training and education programs, and federal funding for such programs, be continued or expanded.

### 3. Other Comments

The individual workgroup members provided the following additional comments for EPA consideration in connection with this topic. These comments do not reflect a consensus of the workgroup, and therefore the reader should not necessarily assume any other workgroup member agrees with an author's comment.

- ARA believes that only trained and certified applicators should have any consideration for label flexibility and label interpretation. Training without testing or experience alone, gives a false sense of environmental protection, only testing and recertification will make applicators the main factors in drift mitigation. (Thrift)
- Penalties are an important disincentive for non-compliance. We agree that education and training are important components of a program to reduce drift. We also point out that substantial penalties for violations are an important component of a program to ensure applicator compliance and should be incorporated into US EPA's enforcement program. (Kegley, Sass, Fry)
- Agricultural growers applying products on their own operations have unique experiences and perspectives on how to improve pesticide labels. Grower applicators are knowledgeable stewards of their land and equally capable of properly applying pesticides according to well designed label instructions. Environmental and health protections would not be improved by allowing only commercially-certified applicators to use pesticides. Rather commercial-only use would primarily serve to guarantee a captured market and higher profits for the commercial providers at the expense of experienced farmers. (Adcock)

#### D. TECHNOLOGIES TO MITIGATE DRIFT

##### 1. What the workgroup did

Presentations were provided to the workgroup by EPA and workgroup members to provide background information on spray drift reduction technology (DRT). Workgroup members discussed their experiences with various technologies and opportunities to use DRTs during face-to-face meetings and on conference calls. Subjects discussed included:

- DRT project – Norman Birchfield and Jay Ellenberger/EPA
- Nozzles, boom height, wind speed
- Weather and meteorological conditions

##### 2. Consensus

###### *a. Findings*

The workgroup regards advances in DRT as being a promising way to reduce spray drift over the long run. The workgroup gained the understanding that a variety of DRTs exist and are commercially available. EPA's DRT project is intended to increase the adoption of DRTs by developing a standardized evaluation process so that incentives can be developed through government programs and through acknowledgement on pesticide labels.

The workgroup recognizes that adoption of new technologies will occur more rapidly if there are appropriate incentives. The workgroup also recognizes that efforts to encourage adoption of new technologies should be part of a larger program that includes appropriate training.

*b. Recommendations*

The workgroup encourages EPA to continue its support for the Drift Reduction Technology project and initiate testing of several technologies, including an assessment of the efficacy of those technologies and the economic impacts of their adoption, as a demonstration of the technology verification protocol under development.

The workgroup recommends that EPA should: 1) explore with appropriate experts and practitioners establishing performance standards for pesticide application equipment and practices designed to minimize drift, and 2) encourage the use of such equipment and practices.

3. Other Comments

The individual workgroup members provided the following additional comments for EPA consideration in connection with this topic. These comments do not reflect a consensus of the workgroup, and therefore the reader should not necessarily assume any other workgroup member agrees with an author's comment.

- New technologies offer greater promise for drift reduction in order to achieve significant reduction. The widespread adoption of these technologies is critical. Old technologies should be phased out in order to reach this goal. EPA should require the new technologies be adopted as they become significant tools of drift reduction and are economically feasible.(Brickey)
- Individuals of the workgroup are concerned that the testing requirements for DRT's are too costly and difficult for manufacturers of these products and may actually limit the adoption of drift reducing technology. (Schertz, Adcock)
- Flexibility for applicators should be limited: We agree that development of new technologies will be important in controlling application-related drift and recognize that many applicators may be capable of reducing drift

through appropriate use of technology. However, we are deeply concerned about giving any flexibility to those who lack the correct equipment or training. The discretion applicators are currently permitted to exercise is clearly inappropriate since it has led to a substantial number of acute poisoning incidents and numerous sub-acute or chronic poisonings. We are also concerned to note that EPA is considering incentivizing the use of new technologies to spray in conditions (wind speed, as an example) that currently exceed recommended standards, or to allow use of higher application rates than would otherwise be permitted, or to reduce the width of a required buffer zone. This is unacceptable and would almost certainly lead to even more harm from drift than we currently have now because it would be abused to push the limits of conditions under which applications could legally be made. (Kegley, Sass)

- The vast majority of current pesticide applications are conducted with concern and professionalism. This is proved by the low number of complaints given a very large number of applications. (Schertz, Adcock)

## E. WHAT CONSTITUTES “HARM” FROM SPRAY DRIFT?

### 1. What the workgroup did

The workgroup touched on the complex issue of “harm” during the first three face-to-face meetings of the workgroup. But because there had not been explicit discussion of, much less agreement on, what constitutes “harm,” EPA asked the workgroup to explore the issue at its November 2006 and March 2007 meetings.

### 2. EPA’s proposed starting point for discussion

EPA identified five potential approaches to describing how to achieve the goal of preventing harm from spray drift. They are summarized below:

*The “No Bad Results” Standard.* Under this standard, “harm” could be defined in terms of specific adverse outcomes such as, human illness, death of wildlife, or crop or property damage. The following two examples illustrate how this standard might apply. In the first example, a portion of the application of pesticide X drifts from the intended target onto a school playground where students are playing during recess, and several students become sick. That situation would constitute harm. In the second example, if the same events took place while no people were present and the residues dissipated before anyone returned, the drift would not constitute “harm.”

*The “No Residues at Toxic Levels” Standard.* Under this standard, “harm” could be defined as “residues that reach levels.” This standard would mean that any residue resulting from drift would be considered harmful only if the

level were high enough to pose a risk. For purposes of applying this standard, it would not matter whether any adverse effects actually ensued from the drift event. Thus, under this standard, the second example given above – drift of pesticide sprays onto a playground during a time when no people were present – would constitute harm so long as the residues exceeded a particular safety-based threshold. The application of this standard would require a determination of what was a “toxic amount,” i.e., what quantity of spray drift residue would be great enough to pose a risk. In addition, because different receptors have varying sensitivity to toxic effects, this standard might potentially involve multiple safety thresholds, e.g. for crops, non-target wildlife, and people.

*The “Minimize Drift” Standard.* Under this standard, “harm” could be defined as any drift that exceeds a level consistent with the implementation of all economically feasible techniques to reduce spray drift resulting from the application of the pesticide, even if such techniques reduce drift below a level that could cause any adverse effects on humans or the environment. The enforcement of this standard would not depend on the impact drift has at a particular site, but rather on whether the user followed the required procedures for applying the pesticide. For example, this standard would judge “harm” not to have happened if drift resulting from a completely lawful application caused a fish kill. On the other hand, failure to comply with a label restriction regarding the size of a buffer between a treated field and a lake would be considered “harm” even if no adverse effects on aquatic life were found.

*The “FIFRA” Standard.* The Agency may register a pesticide if EPA finds that data show use of the pesticide does not cause “unreasonable adverse effects on the environment.” See FIFRA sec. 3(c)(5). FIFRA defines “unreasonable adverse effects on the environment” as “any unreasonable risk to man or the environment, taking into account the economic, social, and environmental costs and benefits of the use of any pesticide. . . .” See FIFRA sec. 2(bb). Under this standard, “harm” could be defined in terms of the point at which risks outweigh benefits, i.e., when use of the pesticide causes “unreasonable adverse effects on the environment.” An argument for using this standard is its consistency with the statutory standard under which EPA regulates pesticides.

The following example illustrates how such the FIFRA standard could apply. Assume that EPA has evaluated pesticide X and found it to be highly beneficial for control of mosquitoes that transmit West Nile Virus and other serious diseases, but that such use might occasionally cause serious damage to ornamental plants in areas near where pesticide X is sprayed. Assume further that, based on these findings, EPA decides under FIFRA to allow the use of the product to control mosquitoes because the benefits outweigh the risks and therefore the product does not cause “unreasonable adverse effects on the environment.” Thus, since the EPA approval of this use anticipates some incidental damage to ornamental plants could occur from lawful use, an incident

in which pesticide X killed a person's rose garden when sprays drifted from the intended target – mosquito habitat – into the person's yard would not constitute harm under this standard.

The "No Drift" Standard. Under this standard, "harm" could be defined as any detectable amount of drift beyond the intended site of treatment. Here the ability to identify reliably the presence of a pesticide on a site to which it had not been applied would constitute "harm." Thus, for example, harm would occur if enforcement personnel could quantify a pesticide residue in samples taken outside of the area targeted for pesticide treatment, irrespective of whether the residue reached a level sufficient to pose a risk. Since analytical methods vary in their sensitivity, implementation of this goal would raise the question of what level of drift is "detectable."

The Workgroup also heard how regulators in Indiana have approached this issue. Currently, Indiana regulations state: "A person may not apply a pesticide in a manner that allows it to drift from the target site in sufficient quantity to cause harm to a nontarget site." "Sufficient Quantity to Cause Harm" means an amount of pesticide that results in any of the following:

- (A) Pesticide residues in excess of tolerances or standards
  - (B) Documented health, illness, stunting, deformation, discoloration; or other effects that are detrimental to the non-target site.
- If Federal MCL or a tolerance exists, use that as the standard for "harm". If pesticide drifts onto a crop that has no established tolerance (such as an organic food crop) then a violation has occurred.
  - Situational issues contribute to estimate of potential "harm", e.g. application near a school.
  - Economic "harm" also counts.
  - Observable fish and wildlife damage.

### 3. Consensus

#### *a. Findings*

The workgroup meaningfully explored differing ideas of what constitutes "harm" from spray drift. However, the group did not agree on a central concept of harm.

#### *b. Recommendations*

### 4. Other Comments

The individual workgroup members provided the following additional comments for EPA consideration in connection with this topic. These comments do not reflect a consensus of the workgroup, and therefore the reader should not

necessarily assume any other workgroup member agrees with an author's comment.

- Concern that detected pesticides will not necessarily be considered as “harm.” (Kegley, Sass, Fry)
- If “harm” is not reasonably defined, simply detecting off-target residue in any amount may be considered illegal. (Adcock)
- Utilize the FIFRA standard of “no unreasonable adverse effects” to define “harm.” (McAllister, Adcock)
- Inserting the registration cost-benefit concept from FIFRA’s phrase “no unreasonable adverse effects” standard into the context of defining “harm” severely undercuts the power of enforcement for pesticide violations granted to the States by FIFRA. We further believe that “harm” to an individual or the environment is entirely separate from the “benefits” to society realized through the use of pesticides. EPA’s goals for label language should be to provide a clear mandate to applicators to prevent drift, and to provide state enforcement staff with unambiguous guidelines for taking enforcement actions against applicators who cause harm via spray drift. (Kegley, Sass, Fry, Foster, Majewski, Brickey, Baggett)
- All pesticides must meet the FIFRA standard for registration and use. The FIFRA standard for pesticide registration is for pesticides to be used in a manner so as not to result in “unreasonable adverse effect to humans or the environment.” The goal of EPA regulation and policy should be to uphold and enforce the FIFRA use standard by mitigation of the effects of drift by its reduction and therefore the potential of “harm” from drift. Whenever drift cannot be eliminated due to the limitation of application practices, some level of off target drift is unavoidable, this may be de minimis, if “harm” does not result from it. (Berger)
- EPA’s goals for controlling spray drift should include:
  1. Developing regulations that work to prevent spray drift
  2. Clearing up the ambiguities that applicators and enforcement staff now face in interpreting labels
 Doing everything possible to keep particle deposition on the property being treated is the best approach for eliminating harm from spray drift. (Kegley, Sass, Fry, Foster, Majewski, Brickey, Baggett)
- In the context of enforcement policy and regulatory intent “harm” should be understood to mean for example, economic damage to other crops, observable damage to fish, wildlife, or their habitat, or illness in humans or domesticated animals. “Harm” should also include exposures to pesticides that are in excess of an appropriate tolerance, water quality criterion, maximum containment level, or other appropriate regulatory benchmarks. “Harm” from drift does not include the mere detection of pesticide products off site when no

adverse effect is observed or appropriate benchmark exceeded.  
(Schertz, Adcock)

- In the context of enforcement, “harm” should be defined to mean damage to crops, damage to fish or wildlife or their habitat, or illness in humans and domesticated animals. In addition, “harm” should include the creation of a situation in which adverse outcomes can reasonably be anticipated, such as an application that might drift onto a school yard, whether or not any children are present at the time of the application. “Harm” should also include exposures that are in excess of a tolerance, water quality criterion, maximum contaminant level, or other appropriate regulatory benchmark. (Kegley, Sass, Fry, Foster, Majewski, Brickey, Baggett)
- Any amount of chemical that drifts away from the application site and makes its way into other fields, homes, schools, or workplaces is potentially problematic and should be regulated as such. Neither the registrants nor EPA know the long-term effects of exposure to small amounts of spray drift many times per year, year after year, to many different chemicals. It is impossible to say that harm will *not* occur from low levels of off-target spray drift that may land near schools, yards, parks and homes. Many types of harm that have been linked to chemical exposures may take time to manifest as something recognizable as harm, such as cancer, Parkinson’s disease, or birth defects. In light of these unknowns, we do not believe that EPA should endorse any level of off-target pesticide particle movement as acceptable. In short, it is essential that EPA make every effort to ensure that neighboring properties not be required to accept *any* level of chemical trespass unless there is unequivocal scientific/toxicological proof that the levels of chemical trespass do not cause harm. (Kegley, Sass, Fry, Majewski, Foster, Brickey, Baggett)
- The potential for incidental spray drift of pesticides is inherent with any spray application process due to the physical dynamics governing transport of particles or droplets through the air. Therefore, a zero drift standard is neither realistic nor achievable for effective results under FIFRA . For certain applications, such as vector control, drift is desirable in order to attain an effective result. FIFRA is the law governing the registration and use of pesticides. FIFRA Regulations at 40 CRF 156.10(i)(1) state “When followed, directions for use must be adequate to protect the public from fraud, and from personal injury and to prevent unreasonable adverse effects on the environment.” “Harm” is not defined within FIFRA. For the purposes of the work group discussion, “harm” could be interpreted to mean “fraud, personal injury, and/or unreasonable adverse effects.” The goal of EPA should be to approve label language for Directions for Use on pesticides products that reduce spray drift to the extent feasible so that application does not cause “fraud, personal injury, and/or unreasonable

adverse effects on man or the environment” (in accordance with the FIFRA standard) or “harm.” (Staats, Adcock)

- The idea of accepting toxic drift as inevitable takes a narrow view of pest control. There are many ways to prevent toxic spray drift from impinging on neighboring properties, most notably by use of biological and cultural pest control methods wherever possible, by restricting the use of spray or blower technologies in the application of pesticides, by using the wind to ensure that off-target areas are not contaminated with pesticide spray, and by using substantial buffer zones around target areas. (Kegley, Sass, Fry, Brickey, Baggett)
- When conducting a “risk-benefit” analysis, EPA must engage those who suffer the risks when determining the appropriate balance of risk and benefit. At present, those involved in the discussion are primarily, if not exclusively, those who will benefit from use of pesticides, and the voices of those who suffer from the use of pesticides are not heard. (Kegley, Sass, Fry)
- What about the costs to society of severely limiting otherwise lawful use of a registered pesticide? (Adcock)
- We suggest that applicators utilize the Golden Rule to prevent harm from drift and treat others as you would wish to be treated. So if you would not want your kids to be on the other side of the fence when the application is occurring, you should not be doing that application. (Kegley, Sass)
- If the regulated community truly believes that they cannot conduct pesticide spray applications without off-target particle movement occurring, then EPA should require 24-hour advance written notification of all residents, workers and property owners within 1/4 mile of the application site so they may take action to protect themselves and their families from potential harm. Information provided should include anticipated date and time of application, name of the pesticide product, a list of active ingredients and other “inert” ingredients, and a copy of the Material Safety Data Sheet (MSDS) for the pesticide product(s) being sprayed. (Kegley, Sass, Brickey, Baggett)
- The paucity of toxicity data on inhalation exposures, the effects of simultaneous exposures to multiple pesticides, and the variability among different people in their sensitivity to pesticide exposure makes it impossible for EPA to definitively determine the extent of potential adverse effects from spray drift. In addition, epidemiological studies showing statistically significant adverse effects on humans are routinely omitted from risk assessments, which calls into question the validity of the toxicological endpoints selected by EPA. People living close to pesticide application sites and/or working with pesticides have significantly higher exposures than the average person and drift controls should protect these people as well. (Kegley, Sass, Fry)

- EPA may use the data submitted on toxicology, residues, environmental fate, and ecotoxicology data to evaluate the risk of the pesticide individually, as required under FIFRA, as well as to estimate the toxicity of mixtures using established methodology (“Supplemental Guidance for conducting Health Risk Assessments of Chemical Mixtures, EPA 630/R-00/002, August 2000 EPA Risk Assessment Forum Technical Panel”). Separate testing of mixtures is not warranted. The mixtures may never actually occur in the environment, and numerous studies on the toxicity of pesticide mixtures that do occur in the environment have shown that effects are consistent with well-established models. (McAllister, Adcock)
- The benefits of pesticides include the control of insects and molds that aggravate or cause diseases, including asthma. Pesticides are used to protect the public from diseases and infections like malaria, guinea worm, Lyme disease and West Nile virus. It is a common misconception that malaria has been eliminated in the United States. In fact, 1,337 cases of malaria were reported in 2002 in the U.S., including 8 deaths. The pesticides that are used in schools are the same types of sprays, gels and traps most people use in their homes. Pesticides may be used to eliminate disease carrying rodents like rats. Pesticides protect our water supplies by killing harmful bacteria and microorganisms. Pesticides may be used to protect pets by keeping fleas and ticks off dogs and cats. Pesticide use contributes to safe driving by keeping road signs, right-of-ways and railroad tracks visible and clear from weeds. Eliminating pesticides would jeopardize public health. (Staats, Adcock)
- Pesticides are tools of modern farmers that increase in productivity. For example, U.S. farmers produce 18% of the world’s food supply, but only on 10% of the world’s farm land. Over 2 trillion pounds of crops, livestock and dairy products are produced by American farms in a year. The U.S. has over 2 million farms. Individuals and family businesses operate over 99% of American farms; it’s a family industry. U.S. farmers and ranchers produce nearly 40% of the world’s corn and 25% of its beef. About 10% of an American’s income is spent on food compared with 22% in the U.K. or 50% in India. (Staats, Adcock)
- Farms and ranches provide food and habitat to 75% of the nation’s wildlife. Pesticides protect biodiversity by controlling noxious, invasive weeds and pests that kill other species. Pesticide use helps conserve natural lands by maximizing productivity in intensively farmed areas, leaving natural lands free for wildlife. Farmers frequently adopt practices to conserve soil and water resources. Herbicides are an integral part of reduced till or no-till farming that reduces soil erosion losses – benefiting aquatic environments by reducing sediment loads. Integrated pest management has become an essential strategy in pest control to control costs, manage resistance, preserve populations of beneficial insects and preserve a variety of

chemical tools that meet regulatory and societal goals for low risks to humans and the environment. (Staats, Adcock)

## F. DESIGN STANDARDS VS. PERFORMANCE STANDARDS

### 1. What the workgroup did

The workgroup discussed design and performance standards for mitigating drift at some points during the face-to-face meetings and conference calls. EPA provided a paper containing the following discussion to frame the issue area for the workgroup:

This issue arises in almost every regulatory program. Should regulators dictate exactly how the regulated entity should behave (design standards) or should the regulator define a level of performance and give the regulated entity the choice about how to meet the standard (performance standards)? For example, EPA could impose a requirement for pesticide labeling that states EITHER: “Do not allow spray to drift onto sensitive aquatic habitat at levels that cause harm.” (a performance standard) OR that states: “Do not apply when wind is blowing at more than 15 miles an hour in the direction of sensitive aquatic habitat” (a design standard).

At least three factors appear relevant to this fundamental choice:

- How the standard can be enforced (it may be easier to tell whether the regulated entity engaged in required conduct than whether his behavior produced the required outcome, or vice versa)
- The degree to which regulated entities would benefit from having flexibility in meeting a performance standard (a regulated entity might find a less expensive way of achieving the goal than following the prescribed design standards)
- The degree to which the regulated entity can be expected to comply

### 2. Consensus

The Work Group generally thought the EPA issue paper clearly described an important question and identified the relevant factors to consider in resolving the issue: enforceability, cost, and practicality. While the Work Group did not reach a consensus on how to frame specific requirements designed to mitigate spray drift, there was general agreement on the following points.

- Regulatory requirements – whether framed as design standards or performance standards – need to be enforceable and that the compliance

with the requirements should ensure that the regulatory goal was achieved. In other words, regulatory requirements should not leave the user with so much discretion that the user could lawfully choose to apply a pesticide in a way that results in levels of spray drift that cause unreasonable adverse effects on the environment.

- Specific design standards on pesticide labels could cause users to apply a pesticide in a manner that results in greater amounts of drift than the user could have achieved if the user had employed application practices not allowed by the product labeling. This appears to be the case with some labeling requirements that mandate equipment and spray pressures. (See section IV. B.) To minimize the potential for such outcomes, the Work Group encourages EPA to incorporate reviews by user groups into its procedures for developing standard label statements to convey risk mitigation requirements.
- The workgroup recognizes that both design and performance standards are potentially useful in reducing harm from spray drift. Design standards require specific equipment and/or applicator behavior, and performance standards define a required outcome but leave the choice of how to achieve that outcome up to the applicator. There is not a consensus on the relative weighting of these standards. Pros and cons of each approach are offered in the "other comments" section.

An example of a workable combination of design and performance standards can be found in PR Notice 2005-1 regarding the labeling of adult mosquito control products. For example, the portion of that policy statement addressing the potential for contamination of water uses a design standard in the first sentence and a performance standard in the second sentence in the following text:

“Do not apply over bodies of water (lakes, rivers, permanent streams, natural ponds, commercial fish ponds, swamps, marshes or estuaries), except when necessary to target areas where adult mosquitoes are present, and weather conditions will facilitate movement of applied material away from the water in order to minimize incidental deposition into the water body. Do not contaminate bodies of water when disposing of equipment rinsate or washwaters.”

### 3. Other Comments

The individual workgroup members provided the following additional comments for EPA consideration in connection with this topic. These comments do not reflect a consensus of the workgroup, and therefore the reader should not necessarily assume any other workgroup member agrees with an author's

comment. The following points are taken from the presentation made by the Spray Drift workgroup to the full PPDC in November 2006.

- Commercial and non-commercial applicator representatives prefer performance based standards because:
  - Allows use of site-specific drift mitigation practices based on the experience of the applicator
  - Some design standards and site conditions actually increase drift potential (Adcock, Shertz)
- Bystanders and regulators should be able to easily discern if label directions are being followed. In general, giving applicators more flexibility by adopting performance-based standards makes it more difficult for bystanders and regulators to discern when a violation occurs. Those potentially affected by pesticide drift can help EPA and state officials with enforcement by ensuring that label restrictions and “correct” application techniques be transparent to both the applicator and those potentially affected by drift. Design standards accomplish this better than performance standards. For example, it must be possible for those affected to easily find out the required buffer zones and minimum/maximum wind speeds. A requirement that a bystander cannot easily observe should not be part of applicator “flexibility”. (Kegley)
- Regulatory representative prefer blend of performance and design standards because:
  - Easier to observe compliance and enforce if design standards are used
  - applicators need some flexibility to use the training and experience that they have and performance standards allow for this. \*\*Note: Training is needed to support use of performance standards. (Scott)
- Non-commercial applicators should be afforded flexibility in reasonably achieving performance standards (Adcock)
- More comprehensive discussion of non-commercial-applicator perspectives is needed (Thrift, Adcock).
- There should be some limits prescribed by EPA as to whether: 1) the applicator should spray or not, 2) the applicator should have the latest equipment. The Administrator shall determine whether such equipment is economically feasible, and shall require the use of such equipment, if necessary through a phase-in. EPA should not leave significant areas of conduct to the applicator’s discretion, such as when to buy critical safety equipment or when to spray. (Brickey)

## G. TAILORING REGULATORY RESTRICTIONS TO LOCAL CONDITIONS

### 1. What the workgroup did

Presentations by OPP & OW on using water quality information and data for old chemical registration were provided to the workgroup. The workgroup discussed this issue in detail at the last two face-to-face workgroup meetings.

## 2. Consensus

### *a. Findings*

Applicator attention to geography, local weather conditions, cropping patterns, and the presence of people and sensitive wildlife areas is essential to prevent harm from spray drift.

### *b. Recommendations*

The workgroup recommends that EPA work with States and applicators to explore mechanisms that tailor regulatory requirements to local conditions. These mechanisms could impose additional, more stringent controls on pesticide use that are appropriate for the specific geographic area where the pesticide would be applied.

The workgroup also recommends that EPA evaluate effective methods to communicate local conditions to applicators. Possible models include the TMDL or watershed management approach and the county bulletin approach under the Endangered Species Protection Program. EPA should explore the use of GIS systems to enhance communication of local conditions.

## 3. Other Comments

The individual workgroup members provided the following additional comments for EPA consideration in connection with this topic. These comments do not reflect a consensus of the workgroup, and therefore the reader should not necessarily assume any other workgroup member agrees with an author's comment.

Addressing this issue involves:

- Because EPA reviews a pesticide's safety for many concerns, including impacts on water and aquatic species, NPDES permits should not be required for applications that follow the label. (Adcock)
- Using a website similar to the EPA-OPP Endangered Species Regional Bulletins website to provide information/requirements for sensitive areas could be one approach for communicating information. (Kegley, Sass, Fry)
- Best working through local regulatory entities, where they exist.
  - Problem of who will evaluate local conditions where regulatory authority does not exist.
  - Problem with having adequate manpower to answer grower and applicator questions. (Elworth)

- Explore the use of existing tools (e.g. CA alert system, Ag Commissioners, ag extension) to include issues related to local conditions and crops (Berger, Adcock)

## H. DETERMINING THE REAL-WORLD IMPACTS OF PESTICIDE LABELING

### 1. What the workgroup did

The workgroup discussed this issue at the last two face-to-face workgroup meetings. EPA provided a paper containing the following discussion to frame the issue area for the workgroup:

First, to what extent do the models and assumptions used by EPA to estimate residue levels potentially resulting from spray drift reliably predict what will occur under a range of pesticide use conditions? Do the models and EPA's assumptions tend to understate or overestimate the residue levels that actually occur? What data does EPA collect to validate its models and assumptions? (Note that while the workgroup has requested information about EPA's models and standard assumptions, the workgroup has previously expressed a preference for focusing on the policy and regulatory, as contrasted with the scientific, aspects of the spray drift issue.)

Second, how do EPA requirements on pesticide product labeling affect pesticide use? Do pesticide users understand the requirements on pesticide labels? To what extent do pesticide users comply with the restrictions in labeling? What are the consequences for the environment and public health of following, or failing to follow, labeling requirements?

Third, what data does EPA collect to verify the extent of compliance with and impact of labeling requirements? Should applicators be required to keep records demonstrating how they applied a pesticide? If so, what records should be kept? Who should keep them? What is the role of monitoring data in answering questions about the extent of compliance? What types of monitoring (and how much) data are necessary to answer these questions? Who should perform such monitoring? How should monitoring data be used to answer these questions?

Fourth, enforcement action may be taken when unlawful drift occurs. What are the most appropriate ways to use enforcement programs to complement regulatory decisions to achieve desired results at the local level? What factors should determine the type of enforcement action? How can enforcement actions be consistent?

### 2. Consensus

*a. Findings*

*b. Recommendations*

EPA should strengthen the collection, use, and public availability of information regarding real world effects of its regulatory approaches, especially labeling, including: 1) collecting objective monitoring data of water quality and other environmental receptors, 2) information on enforcement actions by state regulatory agencies, 3) incident databases (including both proper use and misuse incidents), and 4) assessments of users' understanding of label statements. It is important for EPA to distinguish between drift, runoff, and other sources of water contamination.

EPA should particularly emphasize the collection of data that are valid, robust, and publicly available. EPA should also work with stakeholders to identify and resolve information technology issues that might impede the collection of these types of data. By strengthening the use of these additional sources of information, the workgroup intends for EPA to evaluate, first, whether the data demonstrate that existing regulatory requirements are being successful in preventing harm from spray drift, as anticipated when EPA imposed them. In doing so, EPA should consider how the information not only sheds light on EPA assessments of individual pesticide chemicals but also what it indicates about the overall impact of pesticide use. Second, if the analysis of this information indicates that harm is occurring, EPA should attempt to discern the reasons that the existing regulatory requirements have failed to produce the expected levels of protection.

EPA should consider, for example, whether the information 1) raises questions about the validity of any modeling or assumptions used in developing its risk assessments, 2) indicates that the Agency's regulatory requirements are insufficient to lead to changes in pesticide use that would result in preventing harm, 3) suggests that the adverse effects are limited to a highly unusual geographic, meteorological or other situation; or 4) indicates that users are failing to comply with regulatory requirements. Depending on the results of this inquiry, EPA should take action to strengthen its program to address the reason(s) for the break-down in protection. (While this recommendation pertains to evaluating the adequacy of the overall regulatory program for mitigating spray drift, EPA could apply its principles to the assessment of other aspects of its regulatory decision-making.)

3. Other Comments

The individual workgroup members provided the following additional comments for EPA consideration in connection with this topic. These comments

do not reflect a consensus of the workgroup, and therefore the reader should not necessarily assume any other workgroup member agrees with an author's comment.

- Matching risk assessment models with real-world conditions (Sass)
- Focus groups of diverse pesticide applicators would be a helpful tool for EPA to use in determining the impact of labeling on user behavior and risk (Kegley, Sass)
- Determining the extent of compliance (Sass)
- More resources needed for states & tribes to do enforcement/training/certification/monitoring (Berger, Scott)
- More monitoring of drift, preferably by an objective entity, would provide more information on the effectiveness of the label in preventing drift. (Kegley, Sass, Foster)

## I. CWA/FIFRA OVERLAP

### 1. What the workgroup did

OW staff provided background information on the Clean Water Act and programs to protect water quality and an overview of the Total Maximum Daily Load (TMDL) program which affords an avenue for EPA to address pesticide impairments including those from drift. This presentation included a discussion of the following points:

- There are a total of 970 impairments for pesticides nationwide; 667 of these are for the general category of "pesticides," e.g., no specific chemical is identified. Many of the impairments are due to banned pesticides.
- As there is limited monitoring for pesticides, these numbers may not reflect the true extent of the pesticide-related impairments. States often do not monitor for many of the currently-used pesticides and herbicides. There are also a limited number of water quality criteria for specific pesticides, which are one of the bases for making impairment decisions. In addition, the information may not fully reflect the most recent 303(d) lists for 2004, as not all of the state lists have been submitted to EPA.
- There are 675 approved TMDLs for pesticides. The majority of these are for banned/legacy pesticides, but there are some TMDLs for currently used pesticides.
- It is important to note that there is currently no distinction regarding the cause of the impairments – e.g., whether it is from runoff, direct application, or from residuals. It is through the development of the TMDL that the sources are identified and loads allocated.

- The TMDL process is contingent on 303(d) listings of a water body which is a result of having water quality data that violates a water quality standard. Therefore it is important to have water quality criteria for current use pesticides and to provide resources for water quality monitoring of these pesticides.

Workgroup members provided an overview of how aquatic pesticides are regulated in California and how state water permits are written; how inspectors in Indiana investigate incidents of pesticide off target drift and enforce pesticide use requirements. The workgroup also discussed how state laws, rules, and policies vary in addressing off target drift.

## 2. Consensus

### *a. Findings*

The workgroup was pleased that the Offices of Water and Pesticide Programs are working together to protect the nation's waters.

### *b. Recommendations*

The EPA should develop water quality criteria for current use pesticides for adoption by the States as water quality standards. The EPA should continue or expand resources for monitoring of current use pesticides in water bodies.

## 3. Other Comments

- A NPDES permit is required in California if the application leaves residual pesticide and/or the application has an unintended effect. (Baggett)
- A national rule cannot address local conditions, which is one of the purposes of an NPDES permit. (Kegley, Sass, Fry)
- Since EPA reviews pesticides under FIFRA regulations with regard to pesticide safety to water, NPDES Permits should be unnecessary. In effect requiring a NPDES Permit would greatly expand the requirements for use beyond the label requirements which already take water impacts into account. (Schertz, Thrift, Adcock)
- Current drift labeling needs to be more consistent and significantly improved. (Scott, Baggett, Brickey, Thrift, Witt)
- Spray drift doesn't just affect water; it also affects neighbors, workers, and wildlife. (Kegley)
- Pesticides are intentionally released into the environment for the benefit of society and are not pollutants, and therefore not subject to NPDES permitting. (Staats, Adcock)

## Appendix 1

### **Scoping Subgroup of the Drift FACA Workgroup**

The scoping subgroup focused on establishing the boundaries of the full workgroup's discussion. The scoping subgroup also identified topics which may fall within those boundaries but did not try to further refine or guide those discussions. Finally, the scoping subgroup was unable to reach agreement on whether a few particular issues should be discussed by the whole workgroup. They bring these topics back to the full workgroup to decide whether they should be included within the workgroup's scope.

#### Workgroup Members

- Ray McAllister-CropLife America
- Susan Kegley-Pesticide Action Network North America
- Rebeckah Freeman Adcock – American Farm Bureau Federation
- George Wichterman – Lee County Mosquito Control District

#### General Framework

- The goal of the workgroup should be to minimize both the occurrence and adverse effects of drift,
- The workgroup should not be limited to any one category of applications (agricultural, vector control, residential, etc.),
  - Recognizing that the discussions should be in the context of the type of application at issue and that not all drift is undesirable (e.g. mosquito adulticides).
- The workgroup should not be limited to any one form of pesticide application (liquid, solid),
  - Recognizing that fumigants that are applied in a similar manner to other pesticides addressed by this FACA workgroup would also be within the scope of the workgroup (e.g., sprinkler applications of metam sodium).
- While the workgroup should give particular attention to the effect of drift on water quality, it is acknowledged that drift may also affect workers, bystanders, wildlife and the environment,
  - Recognizing that the physics of drift and therefore the controls will likely be the same,
  - Recognizing that some of the approaches for reducing drift to water will generally be effective to reduce exposure of workers, bystanders, wildlife, and the environment,

- And recognizing that the focus on spray drift and water quality should not produce outcomes that shift the risks to other media.

Topics agreed *should be* a focus of the full workgroup

- Labeling specific to drift mitigation
  - Recognizing that workgroup members may have ideas to improve labels in a manner potentially unrelated to drift (e.g. reorganization of labels as a whole to provide greater overall clarity), drift mitigation should be the primary focus
- Drift mitigation practices
- Identifying the extent of the problem of drift to water.

Topics agreed *should not be* a focus of the full workgroup

- NPDES rule
- Volatilization
  - Recognizing that it is an issue that merits discussion in some other venue.
- Drift across international boundaries
- Misuse
  - Recognizing that labels should be enforceable and attainable to reduce the instances of improper use.

Topics without agreement

- Product Comparisons/Consumer Choice