

Information Transfer Disconnect: Technology, Labels, and Applicators

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Abstract

In order to ensure that applicators understand what they need to do in order to minimize drift, they must be trained in drift management professionalism and practices, or drift will continue to be the most prevalent enforcement problem. Utilizing new technology, understanding weather conditions, recognizing sensitive areas, and keeping records of application decision-making is critical. However, there is a disconnect in the current message and it needs to be addressed. There is a need for a basic set of standards that are application-specific, if a one-size-fits-all set of standards does not work. I question whether there are core principles that cross all disciplines (urban, agriculture, forestry, vector control, structural pest control) and cross all types of pesticides (herbicides, insecticides, fungicides). It is time to formally recognize that our basic, tried and true principles of the past (nozzle size, pressure, wind speed, inversions, buffers) need to be seriously evaluated for each discipline and for each pesticide type. I believe it is time to develop standards for different disciplines/pesticide types. These new, discipline-specific standards need to be included in outreach materials and they must recognize that differences occur. Outreach materials include fact sheets, training manuals and courses, nozzle manufacturer booklets, industry Best Management Practices documents, and even product labeling.

Introduction

Looking at the applicator community that receives either pre-certification or recertification (continuing education) training, there is an obvious disconnect in how drift mitigation measures are presented, whether in core training materials or presented as lectures given by engineers and equipment dealers, and product manufacturer representatives. One must always recognize who is seated in the audience: is it all wheat farmers, all vector control, or is there a mixed audience to learn about pesticides? Training has traditionally focused on the agricultural operation because the largest number of applicators is associated with agriculture. However, times are changing and more and more people are becoming certified to work in urban and rights-of-way areas. With the outbreak of West Nile Virus, there has been an increase in public health pest control.

While reviewing the new U.S. Environmental Protection Agency National Core Pesticide Education Manual, it struck me that the old tried and true principles of the past are not necessarily relevant to all applicators or to new application technology.

Old Tried and True Principles

- Apply when calm, with little or no wind speeds
- Decrease pressure to lower drift potential (<40 psi)

One Size Does Not Fit All

When I read through training materials, trade literature on drift, and new labeling on drift mitigation measures, I note that they are not appropriate for all disciplines or all applications. Even though Washington is a major agricultural state, it is also a major urban state as well. When seeking resources to educate applicators on drift, it is relatively easy to find materials suitable for agriculture, but little is written that pertains to small volume urban applicators.

Washington regulations recognize this spray volume difference and state herbicide rules have volume limits for those who must comply with the regulations. Since large volumes of spray are not applied during a single treatment in most urban areas, the concerns for drift are quite different. Regarding,

wind speed and direction, the new premise of winds between 3-10 mph is again targeted for large volume outputs, largely agricultural applications. When I conducted a google search (Oct. 10, 2004) for mitigation measures for turf and ornamental applications and pesticide drift, only one turf article showed up (Landers), and no usable hits for ornamentals. Education materials are needed to assist urban applicators with making decisions about equipment configuration and weather concerns. Materials need to be specific for the differences in herbicide, insecticide, and fungicide applications. Education materials for this group rely on materials intended for agriculture. Yet, drift complaints/violations in urban settings is equal to the numbers in agriculture. **I challenge conference attendees to evaluate the differences for urban environments and initiate development of resources targeted to this discipline for the different types of pesticide applied.**

All applicators must recognize any sensitive area nearby and make changes in their practices to ensure no significant off-target drift. Sensitive areas do not only include people, water, certain plant/wildlife habitat, and adjacent cropland, but now includes pesticide tolerant versus pesticide susceptible crops. The modeling workshop will provide conference attendees with methods for evaluating different equipment configurations and possible protective no-spray zones/buffers. Again, we need to look at how we can transfer this information to labels or to the users directly. They need the tools to provide protection for their applications.

Labels are changing each year to include more drift mitigation language and I applaud this effort. However, I caution manufacturers and regulatory agencies to READ your own LABELS, and make sure that the specific precautions listed are practical for the ALL application sites listed on the label and for the type of pesticide that is labeled. Statements intended for translocated herbicides are showing up on insecticide labels and I question whether there is sufficient efficacy with insecticides and fungicides at 300 VMD?

New technology, such as the venturi and air induction nozzles are a great improvement. However, I have had equipment suppliers conduct training who initially questioned the higher pressures and drift. With new technology, education is the key and educating educators/suppliers is critical. To ensure acceptance there must be understanding. Secondly, with some of the new technology low pressure for drift control is no longer a tried and true principle for drift mitigation. This fact must be recognized in all outreach material and core training standards must be changed. Also, state regulations that are based on the old tried and true principles of low pressure, large nozzle orifice, must be updated (WAC 16-230-010) because they currently prohibit use of new technology unless hurdles are jumped.

There is an obvious need for Best Management Practices (BMPs) for the different disciplines and also different types of pesticides where appropriate. BMPs are intended to provide guidance on strategies that can be implemented to reduce drift. As stated above, they need to recognize their intended user and also distinguish those who should not use them. It must also be noted that these are strictly guidelines that applicators should consider; some of the strategies may not be appropriate for the application.

Getting the Word Out

The knowledge base for drift mitigation is quite impressive. However, to gain adoption of drift mitigation practices by applicators, there needs to be continual outreach efforts on the part of educators, regulators, equipment suppliers, and product representatives. Education is worth the investment by all players: chemical manufacturers, federal and state regulators, applicators, and the general public.

If you count the number of agricultural engineers who work for the Cooperative Extension service, you note fewer and fewer replacements by universities. There are certain regions in the United States that do not have an engineer to support applicator safety education. This responsibility then falls on the shoulders of state pesticide education specialists, who are not engineers and can only transfer

information supplied to or found by them. There have been some successes in getting quality outreach materials into the hands of educators and equipment suppliers, such as the Spray Drift Task Force Fact Sheets (SDTF).

Engineers, please share your fact sheets with educators. You can either join the American Association of Pesticide Safety Educators (AAPSE), or work with a pesticide safety educator who is a member and send announcements out about new/revised fact sheets and Powerpoint® presentations. I commend Robert Wolf of Kansas State University for making his presentations easily available to other educators (Wolf).

EPA needs to share drift mitigation language they are finalizing on product labels with educators, prior to new labels in the market place. Educators require this timely information to be proactive in getting the word out to applicators. Educators cannot read each label to determine which labels have changed and should be discussed during the upcoming training season. Make announcements regarding new label language and types of products that uses specific language.

Nozzle manufacturers need to supply educators/suppliers with updates including the benefits of new technology and use specifications. Manufacturers conduct a fair amount of training on their nozzles; share your training resources and fact sheets with other trainers. Additionally, when manufacturers make service calls to local suppliers within a state, set up a meeting with the state pesticide safety educator and bring them up to date on drift mitigation technology. Lastly, consider an exhibitor booth at the biennial North American Certification and Safety Education Workshop that is scheduled for August 16-18, 2005 in Madison, Wisconsin.

Pesticide product representatives need to include, at a minimum, a discussion of drift mitigation for products they discuss during meetings with applicators. Explain why the language is printed on the label and how to comply to ensure efficacious applications and reduced drift.

In-office, in-business training forums are easy to set up and require little time by the attendee with no travel. **I challenge attendees of this drift conference to work with me to set up a train the trainer forum on drift mitigation principles, even one aspect of drift mitigation.** Simply develop a Powerpoint® presentation that can be downloaded from a web site, and hold a conference call lecture from the slides. Resources can be shared electronically or by mail if people pre-register. As the AAPSE Membership Committee Chair, I have suggested just such an in-office training event to support professional development of trainers; focusing a topic on drift and sending out the proceedings of this conference to all members would be a great first effort.

Applicators

Applicators are the source of all decisions. It is the applicator who assesses the site conditions and areas adjacent to and downwind from a treatment site. They, in turn, set up their spray equipment to suit the type of product and settings necessary for efficacy and drift management. They make the ultimate decision about turning the spray boom or wand on and off. In order to document their professionalism, they keep records. Too often the records are incomplete or do not meet state or federal requirements (Ramsay and Foss 2004). Also, state and federal laws that require recordkeeping may not clearly state their intended requirements leading to misunderstanding and substandard records. Records that document professionalism regarding drift mitigation practices include:

- Site of treatment
- Product name (plus any spray adjuvants)
- Tank mix concentration (including spray adjuvants)
- Date of application
- Start and stop times of application
- Pre-planning decisions made
 - Precautions for sensitive areas adjacent to treatment area and downwind

- Label requirements
- Application specifics
 - Nozzle type, size, system pressure (effective boom length –aerial)
 - Air stability conditions
 - Wind direction and speed in mph (how and where measured)
 - Temperature and humidity (how and where measured)
- Occurrence that caused applicator to shut down application

A study conducted in Washington found that approximately 40% of applicators did their best to *estimate* wind direction and approximately 37% *estimated* wind speed; only 17% used an instrument to *actually* measure wind direction and 20% used an instrument to measure wind speed. When documenting wind speed, only 65% recorded in miles per hour, while the others used words to describe the conditions (gusty, calm, variable). This is a violation of Washington laws. There is a definite need to emphasize that applicators must properly assess site conditions prior to making the application and even during the application to ensure conditions have not significantly changed. Quality recordkeeping documents professionalism.

When considering the applicator's role in drift mitigation, educators, manufacturers, and regulators must understand who the applicator is and what added suggestions or requirements have on their operations. If drift mitigation strategies are overly burdensome or confusing at all, compliance is an issue.

Where to Go from Here

The first step is for each of us to evaluate the current core standards for our respective countries. Is it at all possible to define a core set of drift mitigation standards that are suitable for 90% of the applicators out there? If not, how do we capture the differences? Should drift mitigation be taught as part of category-specific training (turf/ornamental separate from agriculture)? Would it facilitate better understanding by the different types of applicators to have their discipline-specific Best Management Practices? At what point are drift mitigation measures the same for insecticides and herbicides; at what point are they different?

It is my hope that the workshop session on Best Management Practices, following my talk, will start the ball rolling. We have come a long way in the past 10 years in technology and risk assessment modeling, but we still do not have sufficient numbers of quality materials to support discipline-specific drift education for all applicators and others concerned with pesticide spray drift.

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