

## **Labeling for Pesticide Resistance/Guidance for Herbicide Resistance Management, Labeling, Education, Training and Stewardship: PR Notice 2016-X/2016-XX**

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EPA recently released two draft PR Notices that address pesticide resistance concerns through labeling and other regulatory measures. The PR Notices are PR Notice 2016-X, “Guidance for Pesticide Registrants on Pesticide Resistant Management Labeling” and PR Notice 2016-XX, Draft Guidance for Herbicide-Resistance Management, Labeling, Education, Training and Stewardship. The following summarizes the notices and explains their importance to the regulated community.

### **PR Notice 2016-X**

EPA continues to be concerned about pesticide resistance issues, believing that managing the development of pesticide resistance, in conjunction with alternative pest management strategies and Integrated Pest Management (IPM) programs are important contributors to sustainable pest management. Resistance management should maximize the tools available for growers to control problematic pests. It should also reduce pesticide loading in the environment and human exposure. To address these growing issues and preserve the useful life of pesticides, EPA is embarking on a more widespread effort introducing activities aimed at combatting and slowing the development of pesticide resistance.

In recent years, concern for resistance development in key pest areas has been intensifying. In addition there has been a growing consensus within the stakeholder community that labeling based language meant to help provide user information to help manage resistance, could be an important step in slowing resistance. The Agency is aware that not all pesticide labels provide the mode of action of the pesticide ingredient, and that those that do show this information, do not describe the action a pesticide user can take to avoid or delay the spread of resistance. PR Notice 2016-X works toward having resistance management information uniformly presented on all agricultural pesticides.

PR Notice 2016-X revises and updates PR Notice 2001-5. The update focuses on pesticide labels and is aimed at improving information about how pesticide users can minimize and manage pest management. PR Notice 2016-X updates 3 categories;

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1. Additional guidance to registrants and a recommended format, for resistance management statements placed on the label
  2. References to external technical resources for guidance on resistance management.
  3. Updates to the instructions on how to submit changes to existing labels in order to enhance resistance management language.

## PR Notice 2016 XX

PR Notice 2016 –XX **only** applies to herbicide resistance management, labeling, education, training and stewardship. The notice communicates EPA’s current thinking and approach to addressing herbicide resistance. It is part of a holistic, proactive approach to slow the development and spread of herbicide resistance weeds, and prolong the useful life span of herbicides and related technology. The focus on a more holistic approach is driven by the fact that herbicides are the most widely used pesticide in agriculture and no new herbicide mechanisms of action have been developed over the last 30 years (herbicide resistance weeds are rapidly increasing, as of March 2016, 249 weed species with confirmed herbicide resistance have been identified).

The Agency’s herbicide –resistance management approach divides twenty-eight (28) herbicide “Mechanisms of Action” (MOA) into three areas of concern – **low, moderate and high** – based on the risk of developing herbicide resistant weeds. The Notice provides eleven (11) elements that are focused on labeling, education, training and stewardship strategies. Herbicides with the least concern for developing herbicide-resistant weeds will have the fewest resistant management elements and herbicides with the greatest concern will have the most elements. The guidance is intended to provide herbicide users and registrants useful strategies that, when implemented, will slow herbicide resistance and prolong the useful life of herbicides.

## Low Concern Category and Proposed Herbicide Resistance Elements

1. **The MOA using the Weed Science Society of America (WSSA) grouping.** This provides critical information to growers and crop advisors when developing herbicide programs for best management practices for weed resistance.
2. **The seasonal and annual maximum number of applications and amounts for each crop.** This information allows the user to know how many applications and amounts that can be applied in order to develop an effective IPM plan for the season and year.
3. **Inclusion of Best Management Practices (BMPs) for herbicide resistance management, as appropriate.** This provides user with ready information about managing resistance and should be part of education and stewardship programs.
4. **Statements that scouting should be done both before and after application (as described in PR Notice 2016-X).** Reminding the user to scout can help insure that the proper pesticide is applied based on weed species and growth stage and determined

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effectiveness.

## Moderate Concern Category and Proposed Herbicide Resistance Elements

5. **Label statement defining likely resistance.** Provides critical information to the user and registrant or their representative, to identify likely resistant weeds and proactively take action before they become widespread.
6. **Label statements that the grower should report lack of performance to the registrant or their representative.** EPA expects that the registrant or their representative will investigate to determine if a situation meets the criteria of likely resistance. This allows early action to be taken to control these weeds before resistance becomes widespread. Prevention of the development of herbicide resistance should be the first priority; however, when likely resistant weeds are identified, the highest priority is to achieve control.
7. **Separate label tables of confirmed resistant weed species with effective or recommended rates specifically for these weeds.** This will allow the user to have a clear list of herbicide resistant weeds that may be a problem and provide specific use instructions for their control. (EPA considers this an important part of education and stewardship).
8. **Registrant reports new cases of likely and confirmed resistance to EPA and users yearly.** This will give stakeholders access to information about likely and confirmed resistance and allow them to proactively address problems.

## High Concern Category and Proposed Herbicide Resistance Elements

9. **Educational and training material for users.** Materials may include; resistant management plans, remedial-action plans, and other educational and training materials on herbicides resistance and its management. EPA recommends registrants work with agricultural extension, crop consultants, individual crop associates, the Herbicide Resistance Action Committee and the U.S. Department of Agriculture to develop plans.
10. **For formulated products containing multiple herbicides that are in different MOA groups, for each herbicide list the weeds, controlled and their minimum recommended rate on label.** The purpose for multiple herbicides in a single product is to increase spectrum of weeds controlled and not for herbicide resistance. Without clarification user may assume multiple MOA's are being used for herbicide resistance.
11. **Additional case-specific requirements.** EPA and registrant may identify additional measures that are deemed appropriate to reduce the risk and development and spread of herbicide resistant weeds during registration or re-registration. This could include such measures as mandatory crop rotation or time limited registration among others. These elements may be on the label, the technical use agreement for the seed trait or as a reporting requirement.

The PR Notices are meant to provide EPA guidance to all stakeholders. The guidance is not binding and is meant to focus stakeholders on the importance of pest management and the Agency's position. The importance of the PR Notices is the EPA's new emphasis on labeling to assist in pest resistance management, which upon issuing will mean a revision to most currently used agricultural

pesticides.

OPP is beginning to implement herbicide resistant measures for existing chemicals during registration review. OPP proposes to implement herbicide resistant measures for new herbicide active ingredients, and new uses of herbicides proposed for use on herbicide resistant crops, and possibly other case specific registration actions.

## Conclusion

The major differences between the notices are;

- PR Notice 2016-X updates PR Notice 2001-5 addressing additional and revised guidance with regard to labeling format, to deliver information on mechanism of action as it applies to resistance management.
- EPA's guidance in PR Notice 2016-XX appears to be a result of a growing concern based on the history of weed resistance and the prevailing chemical development of herbicides; while PR Notice 2016-X deals more with the accepted established knowledge that the use of insecticides employing different MOA's continues to be an accepted form of pesticide resistance management when coupled with other good agricultural practices.

The impact of these notices on stakeholders in addition to revised labeling and a greater understanding of pest resistance may be felt by smaller ingredient manufacturers with less diverse product offering now finding reductions in markets for existing products as farmers shift attention to rotating ingredients of different chemical classes. Manufacturers may also see the need for additional technical assistance and field staff to work with state agricultural experts. Farmers will need to rotate chemical use which could result in higher treatment costs which will be reflected in higher consumer costs. Finally, with the EPA statement concerning pesticide resistance and adverse events, the risk benefit analysis for some chemicals could mean the loss of some currently used chemistries.

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