California Notice 2016-03

SEMIANNUAL REPORT SUMMARIZING THE REEVALUATION STATUS OF PESTICIDE PRODUCTS DURING THE PERIOD OF July 1, 2015 THROUGH December 31, 2015

California regulations require that the Department of Pesticide Regulation (DPR) investigate reports of possible adverse effects to people or the environment resulting from the use of pesticides. Reevaluation of a registered pesticide is required if a significant adverse impact occurred, or is likely to occur, from its use.

Title 3, California Code of Regulations (3 CCR), section 6221, specifies a number of factors under which DPR may initiate a reevaluation: (a) public or worker health hazard, (b) environmental contamination, (c) residue over tolerance, (d) fish or wildlife hazard, (e) lack of efficacy, (f) undesirable phytotoxicity, (g) hazardous packaging, (h) inadequate labeling, (i) disruption of the implementation or conduct of pest management, (j) other information suggesting a significant adverse effect, (k) availability of an effective and feasible alternative material or procedure that is demonstrably less destructive to the environment, and (l) discovery that data upon which a registration was issued is false, misleading, or incomplete. Often, an ongoing DPR pesticide review triggers a reevaluation. Reevaluation triggers also include data or information received from State and county pesticide use surveillance and illness investigations, pesticide residue sample analyses, environmental monitoring activities, and issues that may concern other state or federal agencies.

When a pesticide enters the reevaluation process, DPR reviews existing data and may require that registrants provide additional data to characterize the nature and extent of the potential hazard, and identify appropriate mitigation measures if needed.

DPR concludes reevaluations in a number of different ways. If the data demonstrates use of the pesticide presents no significant adverse effects, DPR concludes the reevaluation without additional mitigation measures. If additional mitigation measures are necessary, DPR places appropriate restrictions on the use of the pesticide to mitigate the potential adverse effect. If the adverse impact cannot be mitigated, DPR cancels or suspends the registration of the pesticide product.

This report complies with the requirement of 3 CCR, section 6225, which requires DPR to prepare a semiannual report describing pesticides evaluated, under reevaluation, or for which factual or scientific information was received, but no reevaluation was initiated. The report contains two sections:

I. *Formal Reevaluation*--initiated when an investigation indicates a significant adverse impact has occurred or is likely to occur (see page 2); and

II. *Preliminary Investigations (Evaluations)*--started when DPR receives possible adverse impact data or information resulting from the use of a product and/or active ingredient, but no formal reevaluation has been initiated (page 12).

I. FORMAL REEVALUATION

Formal reevaluation is initiated when an investigation indicates a significant adverse impact has occurred or is likely to occur. Each reevaluation is summarized with regard to the following four areas: (1) *Basis and Scope*, (2) *Data Requirements* (if any), (3) *Summary* (e.g., protocol development, study/data submission and evaluation, DPR analysis papers, risk assessments), and (4) *Mitigation Efforts and Status*.

ANTIFOULING PAINT PESTICIDES (COPPER) – 200 Products

Basis and Scope: On June 1, 2010, DPR placed antifouling paint (AFP) pesticide products containing the active ingredients copper oxide, copper hydroxide, and cuprous thiocyanate into reevaluation. DPR initiated this reevaluation based on findings from a June 2009 DPR report entitled, *Monitoring for Indicators of Antifouling Paint Pollution in California Marinas*. The report found that dissolved copper concentrations in more than half the water samples taken from salt and brackish water marinas exceeded the California Toxics Rule chronic water quality standard. Also, a third of the samples exceeded the acute standard.

California Regional Water Quality Control Boards' (CRWQCBs') water quality criteria require that all waters be maintained free of toxic substances in concentrations that are toxic to, or that produce detrimental physiological responses in human, plant, animal, or aquatic life. Dissolved copper concentrations violate CRWQCBs' water quality objectives for toxicity. DPR's report found that copper AFP pesticides applied to boat hulls are likely a major source of dissolved copper in salt and brackish water marinas, particularly during dry weather periods. The report concluded that the main pathways of copper contamination appear to be passive leaching and in-water boat hull cleaning of copper antifouling-painted boats.

Data Requirements: Under this reevaluation, DPR requires registrants of copper AFPs to submit the following: (1) information identifying the paint type (e.g., ablative, epoxy ester); (2) data characterizing the product's copper leach rate; (3) specific mitigation strategies that reduce dissolved copper concentrations in California salt and brackish water marinas; and (4) marina monitoring data after mitigation strategies have been implemented. In March 2011, copper AFP registrants were notified of an additional data requirement to examine the impact of in-water hull cleaning activities on copper concentrations in California marinas.

Summary: DPR has completed its evaluation of leach rate and paint type information for all copper AFP pesticide products. Based on submitted paint type information, most copper AFPs are either copolymer ablative or epoxy ester. Copper leach rate and paint type provides DPR with important data and information to better assess factors that contribute to high dissolved copper concentration in marinas from AFP pesticides. In June 2012, DPR approved the American Coating Association-Antifouling Working Groups' in-water hull cleaning study protocol. DPR requested that academia be involved in all aspects of this study and the findings be submitted to a peer-reviewed journal.

On November 7, 2013, the final report entitled, "Life Cycle Contributions of Copper from Vessel Painting and Maintenance Activities" was published in *Biofouling: The Journal of Bioadhesion and Biofilm.* DPR completed its evaluation of the study. Based on the required hull cleaning study, utilization of the Marine Antifoulant Model to Predict Environmental Concentrations modeling tool (to simulate the fate of copper in typical California marinas), and all available information, DPR made certain mitigation recommendations.

Mitigation Efforts and Status: In February 2013, the California Legislature introduced Assembly Bill (AB) 425, which required DPR to determine a copper paint leach rate for recreational vessels and make mitigation recommendations by February 1, 2014. On October 5, 2013, AB 425 was signed into law. On January 30, 2014, DPR proposed establishment of two maximum allowable leach rates depending on cleaning practice. The leach rates are 9.5 $\mu g/cm^2$/day if cleaning is limited to no more than once per month and follow best management practices using soft-pile carpet, and 13.4 $\mu g/cm^2$/day for products that prohibit in-water hull cleaning. In addition, DPR recommended seven mitigation measures.

DPR presented the maximum allowable leach rates and mitigation recommendations to registrants, stakeholders, and sister agencies at several meetings. During this report period, DPR's mitigation strategy was presented to the U.S. Environmental Protection Agency (U.S. EPA). On August 12, 2015, DPR posted an updated list of copper AFP products by leach rate category on its copper reevaluation Web page. DPR is considering a revised mitigation strategy and intends to meet with registrants and stakeholders to discuss the next steps of the reevaluation. This revised mitigation strategy may include rulemaking, reformulation, leach rate information, possible label changes, and outreach material. DPR collaborated with the Port of San Diego and other state and local water agencies on boater education and outreach material for Southern California. Additionally, DPR will continue to look for collaborative opportunities with the State Water Resources Control Board (SWRCB) and other state and local agencies on copper mitigation and outreach activities to further mitigation efforts and actions to reduce copper concentrations in California marinas.

For more information on this reevaluation please, visit the following Web page: <http://www.cdpr.ca.gov/docs/registration/reevaluation/chemicals/antifoulant_paints.htm>.

CHLOROPICRIN – 37 Products

Basis and Scope: On October 16, 2001, DPR placed pesticide products containing the active ingredient chloropicrin into reevaluation. The reevaluation is based on air monitoring data which found that air concentrations at some distances from treated greenhouses exceeded National Institute for Occupational Safety & Health's reference exposure limit of 100 parts per billion (ppb) averaged over an eight-hour period. Also, DPR found that data submitted under the Birth Defect Prevention Act indicated that chloropicrin has the potential to cause adverse health effects at low doses.

Data Requirements: Under this reevaluation, DPR required chloropicrin registrants to conduct and submit data on various worker exposure and air quality monitoring studies from field and greenhouse applications. In August 2005, DPR completed its review of the required monitoring

data and began work on a risk assessment of chloropicrin uses as part of the reevaluation process to mitigate potential adverse effects at low concentrations. In January 2015, DPR notified chloropicrin registrants of a new data requirement to determine if chronic exposure to chloropicrin presents a carcinogenic hazard requiring mitigation. On July 24, 2015, based on evaluation of submitted and other available data and information, DPR established a mechanistic study data requirement for the scientific assessment of the carcinogenic hazard of chloropicrin.

Summary: In February 2010, DPR completed a risk assessment document for chloropicrin as a toxic air contaminant (TAC) that analyzed the risks associated with potential exposures to residents and bystanders from ambient and off-site air concentrations of agricultural use chloropicrin products. Peer review of this document by the Scientific Review Panel was completed in April 2010 and a regulation listing chloropicrin as a TAC was filed on December 9, 2010. Also in December 2010, based on the TAC risk assessment, DPR issued a risk management directive (RMD) to address resident and bystander exposures identified by the TAC evaluation. This RMD determined that the appropriate regulatory target level to restrict acute exposure to chloropicrin is 73 ppb averaged over an eight-hour period. After chloropicrin was designated as a TAC effective January 8, 2011, DPR staff initiated development of use restrictions following TAC procedures specified in state law. On November 14, 2012, DPR completed its comprehensive chloropicrin risk characterization document, which includes dietary and occupational exposure scenarios (for more information, see California Notice 2013-05).

Mitigation Efforts and Status: During the course of this reevaluation, U.S. EPA developed label mitigation measures under its Reregistration Eligibility Decision (RED) for products containing chloropicrin. These soil fumigant label measures require users to prepare site-specific Fumigant Management Plans and are intended to mitigate unacceptable exposures to workers, residents, and bystanders. The measures were implemented in two phases and went into effect on December 31, 2010, and December 1, 2012, and added more restrictions, prohibitions, and human health protection language and information on the product label. DPR completed its fumigant label reviews and continues to monitor new and amended product registrations to ensure labeling compliance.

In May 2013, DPR proposed mitigation measures designed to protect bystanders and residents from acute (short-term) exposures to chloropicrin for public comment. These mitigation measures were developed using U.S. EPA's label changes as the foundation for mitigating off-site exposures. DPR proposed additional restrictions beyond labeling and regulation to protect residents and bystanders including: additional buffer zones; restriction on buffer zone credits; acreage limits; time periods between applications with overlapping buffer zones; emergency preparedness and response; and notice of intent requirements. DPR developed the proposed mitigation measures in consultation with the Air Resources Board, the air pollution control districts, and the County Agricultural Commissioners, as required by Food and Agricultural Code section 14024(a) to protect public health concerns for residents and bystanders. In addition to consulting with state and local agencies required by law, DPR also discussed early mitigation concepts with worker advocate groups and registrants. DPR also submitted its initial technical analysis for scientific peer review. DPR received comments from several thousand people and three external scientific peer reviewers. DPR responded to the comments received.

In early January, 2015, DPR posted its "Control Measures for Chloropicrin: Control of Resident and Bystander Acute Exposure from Soil Fumigation Applications" document, dated January 6, 2015. The controls are intended to reduce risk from acute exposures that might occur near fields fumigated with products containing chloropicrin. On January 16, 2015, DPR presented the chloropicrin mitigation measures to the Pesticide Registration and Evaluation Committee (PREC) members and public attendees. On April 6, 2015, DPR issued interim recommended restricted material permit conditions for field fumigants containing chloropicrin that implement the control measures. The mitigation documents are available on DPR's Web site at <http://www.cdpr.ca.gov/docs/whs/chloropicrin.htm>. During this report period, DPR established a new mechanistic data requirement to attain more information on the potential carcinogenicity of chloropicrin.

For more information on this reevaluation, please visit the following Web page: <http://www.cdpr.ca.gov/docs/registration/reevaluation/chemicals/chloropicrin.htm>.

CYFLUTHRIN – 36 Products

Basis and Scope: On May 5, 1998, DPR placed pesticide products containing the active ingredient cyfluthrin into reevaluation. The reevaluation is based on DPR's investigations of a May 1997 respiratory irritation outbreak reported among orange harvesters exposed to residues of cyfluthrin and other cyfluthrin related pesticide illness reports. As part of the investigation, DPR's Worker Health & Safety Branch conducted two separate inhalation-monitoring studies in orange groves during orange harvest. DPR determined that as dust and pollen are a part of the normal working environment, something different in the work environment led to the workers' respiratory irritation symptoms experienced. DPR compiled the results in its monitoring study entitled, *Health and Safety Report HS – 1765*, which found that it appears probable that cyfluthrin applied close to harvest led to the symptoms experienced.

Data Requirements: Under this reevaluation, registrants of pesticide products containing the active ingredient cyfluthrin were required to provide the following: (1) respiratory irritation study, (2) worker exposure study, and (3) monitoring data for structural application. In October 2001, the basic manufacturer submitted the following: two worker exposure studies regarding hand harvesting of oranges and sweet corn; four indoor exposures studies; and a study entitled, *Study on the RD_{50} Determination in Rats*. Based on this data, DPR determined the structural monitoring data was no longer required. However, during the course of this reevaluation, DPR determined it had insufficient data regarding worker exposure during the hand harvesting of sweet corn. As a result, in February 2002, DPR required a worker exposure study during sweet corn harvesting be conducted. The results of the study were submitted to DPR in October 2004.

Summary: In 2006, DPR determined that a comprehensive exposure assessment is necessary for cyfluthrin. In September 2008, DPR completed an exposure-scoping document for cyfluthrin intended to lay the groundwork for the risk assessment process. During this report period, DPR completed review of cyfluthrin sweet corn hand harvester studies. This reevaluation is pending further assessment of the potential risks associated with the use of cyfluthrin.

Mitigation Efforts and Status: The reevaluation of cyfluthrin is pending completion of a risk assessment of the potential risks associated with the use of cyfluthrin. Additionally, DPR is working with U.S. EPA on the risk assessment. If DPR's risk assessment concludes that use of cyfluthrin poses a risk to workers, DPR will proceed with mitigation.

For more information on this reevaluation, please visit the following Web page: <http://www.cdpr.ca.gov/docs/registration/reevaluation/chemicals/cyfluthrin.htm>.

DIAZINON – 4 Products

Basis and Scope: On February 19, 2003, DPR placed all agricultural use diazinon products labeled as dormant sprays into reevaluation. This reevaluation is based on monitoring studies conducted between 1991 and 2001 by the U.S. Geological Survey, Dow AgroSciences, Central Valley Regional Water Quality Control Board (CVRWQCB), SWRCB, and DPR. These studies reported the presence of diazinon in surface waters of the Sacramento-San Joaquin (SJ) Valley at levels that exceed water quality criteria (WQC), especially during the dormant spray season.

Data Requirements: Under this reevaluation, DPR required diazinon registrants to do the following: (1) identify the processes by which diazinon dormant spray products are contributing to detections of diazinon in surface water at levels that exceed WQC; and (2) identify mitigation strategies that will reduce or eliminate diazinon residues in surface water. In June 2010, based on analysis of monitoring data, DPR expanded the reevaluation to include in-season uses as well as dormant season applications of diazinon and required the registrants to do the following: (1) collect and evaluate all relevant (2005-2009) surface water monitoring data; and, (2) establish crop-specific mitigation measures based upon results of submitted monitoring data. The basic manufacturer agreed to conduct monitoring studies to assess the effectiveness of their proposed mitigation strategies during the dormant spray season. Also, at initiation of this reevaluation, registrants responded to DPR's concerns by developing and implementing supplemental labeling for dormant spray products.

Summary: In July 2005, DPR approved the basic manufacturer's submitted protocols intended to evaluate the effectiveness of the proposed mitigation strategies. In September 2006, the final studies were submitted, but were found to not provide information as to whether registrants intended to use the information to develop and implement additional mitigation measures. Meanwhile, DPR began working on possible mitigation measures and in July 2006 approved dormant spray regulations to restrict pesticide application during the dormant season (i.e. rainy season in winter). These regulations require the operator of the property to follow certain practices, prohibits certain applications, and requires written recommendation from a pest control adviser before an application. By December 2006, all dormant spray diazinon product labels were amended. The supplemental labels added more ecologically protective language such as prohibiting application when soil moisture is at field capacity and/or when a storm event is likely, and restricting dormant applications on orchards to ground application equipment only.

In February 2007, DPR received a report prepared by University of California, Davis (UCD) entitled, *Residues of the 2006 TMDL Monitoring of Pesticides in California's Central Valley Waterways, January–March 2006*. This study found that diazinon concentrations measured during the 2006 dormant spray season were still exceeding WQC. DPR forwarded the UCD

study to the registrants and requested the development and implementation of further mitigation measures to reduce or eliminate diazinon residues in surface water. In February 2008, the basic manufacturer submitted two reports entitled, *Analysis of Diazinon Environmental Monitoring Data from the Sacramento/Feather River Watersheds: 2001–2007*, and *Project Report: Landguard OP-A as a Best Management Practice in Dormant Season Use, December 2007*. In October 2008, the basic manufacturer submitted another report titled, *Analysis of Diazinon Environmental Monitoring Data from the San Joaquin River Watershed: 2001–2007*.

In October 2009, DPR analysis of monitoring data from 2003-2008 found that diazinon was detected in 637 out of 2,635 samples collected from water bodies located in the Central Valley, Central Coast, and southeastern California. As a result, on June 22, 2010, the Director expanded the reevaluation to include in-season uses as well as dormant season applications and required additional data of the registrants in order to better assess surface water runoff and exceedances. In March 2011, the basic manufacturer submitted a combined monitoring report for both dormant and in-season monitoring entitled, *Summary of Diazinon Water Column Monitoring Data for Nine California Regions: 2005-2010*, which DPR found to be acceptable. In September 2011, DPR completed an analysis memo entitled, *Analysis of Diazinon Agricultural Use in Regions of Frequent Surface Water Detections*.

Mitigation Efforts and Status: During the course of this reevaluation, various mitigation measures have been implemented. In 2004, U.S. EPA eliminated all sales of outdoor residential use diazinon products. In July 2006, U.S. EPA finalized its RED on diazinon requiring certain mitigation measures to reduce human health and ecological risk such as provisions to cancel certain agricultural crop uses and aerial applications, reduce the amount and frequency of use, and employ engineering controls and other protective measures. On July 18, 2006, DPR adopted dormant spray regulations that placed further restrictions on the use of diazinon products. Additionally, through the Dormant Spray Water Quality Initiative, DPR continues to work to prevent aquatic toxicity from residues of diazinon in the Sacramento and SJ rivers. At this time, DPR is evaluating diazinon pesticide monitoring and use data and is assessing the next steps of this reevaluation. Additionally, DPR will continue to monitor U.S. EPA's, SWRCB's, and CVRWQCB's efforts for possible opportunities to collaborate on mitigation.

For more information on this reevaluation, please visit the following Web page: <http://www.cdpr.ca.gov/docs/registration/reevaluation/chemicals/diazinon.htm>.

NEONICOTINOIDS (NITROGUANIDINE INSECTICIDES) – 260 Products

Basis and Scope: On February 27, 2009, DPR placed certain pesticide products containing the active ingredients imidacloprid, thiamethoxam, clothianidin, and dinotefuran into reevaluation. This reevaluation is based on an adverse effects disclosure involving the active ingredient imidacloprid. DPR's evaluation of the adverse effects data noted two critical findings: (1) high levels of imidacloprid in leaves and blossoms of treated plants, and (2) increases in residue levels over time. Thiamethoxam, dinotefuran and clothianidin are in the same chemical family as imidacloprid, known as nitroguanidine insecticide class of neonicotinoids, and have similar properties and characteristics (e.g., soil mobility, half-lives, and toxicity to honey bees).

Data Requirements: Under this reevaluation, DPR requires registrants of neonicotinoid pesticide products containing imidacloprid, thiamethoxam, clothianidin, and dinotefuran to provide the following data: (1) field-based residue studies in pollen, nectar, and leaves from specific agricultural orchard and row crops for each of the four active ingredients; and, (2) LC_{50} studies on honey bees starting at the larval stage through emergence. For data requirement purposes, DPR's Pesticide Use Reporting database was used to determine the crops of focus for each active ingredient. During this reevaluation, additional data were requested of imidacloprid registrants as the data provided were found to be inconclusive. The initial study strategy did not involve "worst-case" scenarios. DPR modified its residue study strategy to require controlled applications at the highest maximum application rate per year for two consecutive years. In October 2012, additional data were required of the thiamethoxam registrants, using the modified residue strategy, on strawberry, stone fruit, cotton, and citrus. In May 2013, additional data were required of clothianidin registrants, using the modified residue strategy, on almonds, cucurbits, stone fruits, and fruiting vegetables.

Summary (by Active Ingredient):
Imidacloprid: On September 15, 2009, DPR notified registrants of products containing imidacloprid of the field residue data requirement on the following seven commodities: almonds, citrus, cotton, cucurbits (melons), fruiting vegetables (tomatoes), pome fruit (apples), and strawberries. Rather than conduct a residue monitoring study in almonds, imidacloprid registrants removed use on almonds from their labels.

In April 2010, the registrant submitted draft study protocols for residue monitoring studies in cotton, melons, tomatoes, apples, and strawberries. The draft protocols were reviewed by DPR, U.S. EPA, and Pest Management Regulatory Agency (PMRA) Health Canada. In May of 2011, DPR received final reports from residue monitoring studies conducted in citrus (light and medium soil), cotton, and tomato. In March 2012, DPR provided a review of the submitted reports and found both the cotton and tomato studies to be unacceptable because they did not represent a worst-case scenario. As a result, DPR required new two-year prescriptive residue monitoring studies representing a worst-case scenario for fruiting vegetables and cotton, and expanded the crops required to include stone fruit (cherries) for a total of 8 crops required.

On March 21, 2012, DPR received a final report examining acute toxicity effects in honey bee larva. In April 2012, the basic manufacturer submitted a final report on citrus entitled, *Summary of key findings and conclusions of investigations to evaluate bee exposure levels at Southern California citrus groves previously treated with imidacloprid.* In May 2012, DPR reviewed and accepted four two-year prescriptive residue study protocols for cotton, tomatoes, cherry, and apple. On December 28, 2012, DPR received strawberry and melon final reports. On June 3, 2014, DPR received revised interim reports on cotton and tomato. On November 20, 2014, DPR received interim reports on apple and cherry. In December 2014, DPR received a final report examining chronic toxicity effects in honey bees. On June 30, 2015, DPR received a final report on cotton and a progress report on tomatoes. DPR anticipates residue monitoring study final reports on cotton, tomatoes, apples, and cherries in the first and second quarter of 2016.

Thiamethoxam: On September 15, 2009, DPR notified registrants of products containing thiamethoxam of the field residue data requirement on the following four commodities: cucurbits (melons), fruiting vegetables (tomatoes), pome fruit, and strawberries. In response, the basic manufacturer submitted draft protocols for residue monitoring studies in melons, tomatoes, and pome fruit, which were reviewed by DPR, U.S. EPA, and PMRA. In March 2011, the basic manufacturer requested a waiver from the requirement to monitor pome and strawberries due to limited California field applications of thiamethoxam in 2009 and 2010. In January 2012, the basic manufacturer submitted final reports for tomatoes and acute toxicity effects to larval honey bees. In October 2012, DPR notified the basic manufacturer of new two-year prescriptive residue studies for strawberry, and expanded the required crops to include almond, citrus, cotton, and stone fruit for a total of 8 crops required. DPR granted a waiver for residue monitoring study on pome fruit. On January 23, 2013, DPR received a final report on cucurbits (cucumbers), and final protocols on citrus, cotton, and stone fruits (cherry, peach, plum). In February 2013, rather than conduct a residue study in almonds, thiamethoxam registrants removed almond use from their labels. In September 2014, DPR received interim reports on citrus and cotton. On July 22, 2015, DPR received a final report on cotton. On October 26, 2015, DPR received an interim report on strawberry. On December 29, 2015, DPR received a final report on stone fruit (cherry, peach, plum), and anticipates a final report on citrus and strawberry by the third quarter of 2016.

Clothianidin: On September 15, 2009, DPR notified registrants of products containing clothianidin of the field residue data requirement on pome fruit. In November 2009, the clothianidin basic manufacturer submitted data and information documenting limited use in California and its inability to perform the residue monitoring study required under the reevaluation. Instead, the basic manufacturer proposed to conduct small-scale studies, analogues to magnitude-of-residue studies, on cucurbit (pumpkins). In January and April 2011, the basic manufacturer submitted an acute larval toxicity study protocol, and a draft protocol for conducting pollen and nectar residue sampling in cucurbits. In February 2012, the basic manufacturer submitted a final report on toxicity effects to larval honey bees. In May 2012, DPR granted a waiver for residue monitoring study on pome fruit. On May 9, 2013, DPR notified the basic manufacturer that two-year prescriptive residue studies are also required for almond, fruiting vegetable, pumpkins, and a stone fruit (peach) for a total of 5 crops required. In May 2013, DPR received an interim report on the pumpkins. In August 2013, the basic manufacturer submitted a combined tree protocol (almond, pome, and stone fruit) to address U.S. EPA, PMRA Health Canada and DPR's reevaluation. DPR received the tree protocol in February 2014 and the study is in progress. On March 4, 2014, DPR received a year two interim report on pumpkins. On October 2, 2015, DPR received interim residue reports on almond and peach, and submission of U.S. EPA required interim residue data on apple and a final report on cotton. Clothianidin registrants are in the process of removing fruiting vegetables from their labels and DPR anticipates label amendments to be submitted shortly after U.S. EPA acceptance. DPR anticipates receiving final reports on almonds and peaches, and submission of U.S. EPA required residue data on apples, by the fourth quarter of 2016.

Dinotefuran: On September 15, 2009, DPR notified registrants of products containing dinotefuran of the field residue data requirement on the following three commodities: cotton, cucurbits, and fruiting vegetables. In November 2009, the dinotefuran basic manufacturer submitted data and additional information on the environmental fate and behavior of their

products. In March 2012, the basic manufacturer submitted a report evaluating foraging honey bees and hives after exposure to dinotefuran. In addition, DPR received acute toxicity effects to honey bee data. In January 2014, the registrant submitted a protocol to conduct an acute larval toxicity study. In January 2015, DPR jointly reviewed residue protocols required by U.S. EPA for potato, tomato, pumpkin, cucumber, cherry, cotton, and cranberry. On October 28, 2015, DPR received a final report on acute larval toxicity effects to honey bees. DPR anticipates residue studies on potato, cranberry cucurbits, and fruiting vegetables by the first quarter of 2016. DPR anticipates residue studies on cotton and stone fruit by fourth quarter 2016. A colony feeding study, required by U.S. EPA, is underway with a final report anticipated in November 2016.

Mitigation Efforts and Status: In April 2010 and December 2012, imidacloprid and thiamethoxam registrants, respectively, agreed to remove use on almonds from all product labels in California. DPR considers this to be an important mitigation step in pollinator protection since almond orchards require a large number of pollinators.

During the course of this reevaluation, on August 15, 2013, U.S. EPA notified registrants of neonicotinoids of new labeling requirements for all formulations having outdoor foliar use directions (except granulars). This required registrants to include prescribed bee protective language on their product labels by the 2014 agricultural use season for existing and new product registrations. In November 2013, DPR required registrants to submit amended labels to California shortly after U.S. EPA acceptance. DPR has completed its pollinator label review and continues to monitor new and amended product registrations to ensure labeling compliance. Improved pollinator protective labels are currently in the California marketplace.

In June 2014, DPR held a workshop to educate and inform beekeepers, biologists, and County Agricultural Commissioners on how to identify bee hive disease and pests. The workshop addressed how to investigate incidents of bee colony damage where pesticides are suspected of playing a role. DPR will work closely with beekeepers and County Agricultural Commissioners to prevent problems.

On June 20, 2014, a Presidential Memorandum creating a federal strategy to promote the health of honey bees and other pollinators was signed. In June 2014, a DPR, U.S. EPA, and PMRA Health Canada collaborative document entitled, *Guidance for Assessing Pesticide Risks to Bees* was completed and posted on U.S. EPA's Pollinator Protection Web site.

Multi-Agency Collaboration: DPR continues to work closely with U.S. EPA and PMRA Health Canada. DPR has worked with U.S. EPA and PMRA on several neonicotinoid aspects including colony effects. U.S. EPA required higher tier honey bee toxicity studies. Tier II, or a feeding study, exposes bee colonies to known concentrations of a pesticide and examines the effect. In December 2014, DPR received a final report on the imidacloprid colony feeding study. A Tier III study, or full field study, is a field-level study that looks at long-term effects under environmentally realistic exposure conditions. Imidacloprid registrants are conducting two Tier III studies: one with pumpkins to simulate exposure scenarios in Northern U.S. and Canada, and a second one in California with cotton. Since the cotton study is being conducted in California, DPR provided input on the study parameters and evaluated the study protocol. Interim summary

information was received in December 2015, however these studies are still in progress and final reports are anticipated in early 2017.

U.S. EPA required thiamethoxam, clothianidin, and dinotefuran registrants to conduct a Tier II colony feeding study. DPR expects to receive the final report on the colony feeding study for thiamethoxam and clothianidin in January 2016 and dinotefuran in December 2016. Additional residue studies are being conducted for U.S. EPA in 2015 and 2016 that will add to DPR's understanding of how all four neonicotinoids are expressed in the pollen and nectar of representative orchard and row crops including the crops required for DPR's reevaluation. In January, U.S. EPA will release a preliminary pollinator risk assessment for imidacloprid, which was a collaborative effort between DPR and U.S. EPA. Analogous preliminary pollinator risk assessments for thiamethoxam, clothianidin, and dinotefuran are anticipated in December 2016. An imidacloprid full risk assessment, to include human health, surface water, and updated pollinator assessments is anticipated in December 2016 and December 2017 for thiamethoxam, clothianidin, and dinotefuran.

At this time, DPR is working closely with its partners to investigate honey bee effects data and bee attractive residue data in flowering plants available in the open literature, conducted and submitted by the registrants, and other possible studies that would be scientifically meaningful to the reevaluation.

For more information on this reevaluation, please visit the following Web page: <http://www.cdpr.ca.gov/docs/registration/reevaluation/chemicals/neonicotinoids.htm>.

II. PRELIMINARY INVESTIGATIONS (EVALUATIONS)

DPR conducts preliminary investigations of products (and active ingredients) for which the department, or other State or county agencies, have identified possible hazards. As a result of evaluation, the investigation may lead to formal reevaluation. No preliminary investigations have been initiated at this time.

DPR continues to work on ways to improve the reevaluation program. For more information on the reevaluation program, please visit the following Web page: <http://www.cdpr.ca.gov/docs/registration/reevaluation/reevals.htm>.

For more information, please contact either Ms. Denise Alder, Senior Environmental Scientist in the Pesticide Registration Branch, by e-mail at <Denise.Alder@cdpr.ca.gov> or by telephone at (916) 324-3522, or Mr. Carlos Gutierrez, Environmental Scientist in the Pesticide Registration Branch by email at <Carlos.Gutierrez@cdpr.ca.gov> or by telephone at (916) 445-2885.

Original signed by ***April 26, 2016***

Ann M. Prichard, Chief
Pesticide Registration Branch
(916) 324-3931

Date

cc: Ms. Denise Alder, DPR, Senior Environmental Scientist (Specialist)
Mr. Carlos Gutierrez, DPR, Environmental Scientist