



California Notice 2007-09

SEMIANNUAL REPORT SUMMARIZING THE REEVALUATION STATUS OF PESTICIDE PRODUCTS DURING THE PERIOD OF January 1, 2007 THROUGH June 30, 2007

California regulations require the Department of Pesticide Regulation (DPR) to investigate reports of possible adverse effects to people or the environment resulting from the use of pesticides. If a significant adverse impact occurred or is likely to occur, the regulations require DPR to reevaluate the registration of the pesticide.

Title 3, California Code of Regulations (3CCR), 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, ongoing DPR reviews trigger a reevaluation. Reevaluation triggers also include State and county pesticide use surveillance and illness investigations, pesticide residue sample analyses, environmental monitoring activities, and information from other state or federal agencies.

When a pesticide enters the reevaluation process, DPR reviews existing data. DPR requires registrants to provide additional data to determine the nature or the extent of the potential hazard or identify appropriate mitigation measures, if needed.

DPR concludes reevaluations in a number of different ways. If the data demonstrate that 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 upon 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(s).

This report complies with the requirements of 3CCR section 6225. Title 3 CCR section 6225 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) - products or active ingredients for which DPR receives possible adverse factual or scientific information, but no reevaluation has been initiated (see page 15).

I. FORMAL REEVALUATION

Undertaken when investigations indicate that a significant adverse impact has occurred or is likely to occur.

BRODIFACOUM - 21 Products

Pesticide products containing brodifacoum are registered in California for the control of rats and mice in residential, industrial, commercial, agricultural, and public buildings. Registrants formulate the product with a grain-based bait in pellets, mini-pellets, and wax blocks. On December 30, 1999, at the request of the Department of Fish and Game (DFG), DPR placed pesticide products containing brodifacoum into reevaluation. DFG expressed concern that California's wildlife are exposed and may be adversely affected by currently registered uses of the anticoagulant rodenticide brodifacoum. This second generation rodenticide is hydrophobic, lipophilic, and the target rodent receives a delayed lethal dose with its first feeding. After multiple feedings, a rodent may have a significant "body burden" of this persistent pesticide at death.

DPR and DFG staff met with representatives of the Rodenticide Registrant Task Force in April 2001. At that meeting, DPR agreed to review additional information submitted by the registrants. DPR's biologist reviewed all data, slides, scientific journal articles, and correspondence submitted by the Rodenticide Registrant Task Force and other brodifacoum registrants. In October 2001, DPR learned that the U.S. Environmental Protection Agency (U.S. EPA) was completing a final draft of its ecological assessment of brodifacoum and several other rodenticides. Since it appeared that U.S. EPA had the same concerns as DPR and would initiate mitigation measures at a national level, DPR decided to wait for the completion of U.S. EPA's assessment. In January of 2003, U.S. EPA released its preliminary comparative ecological assessment for nine rodenticides, including brodifacoum. U.S. EPA's preliminary assessment indicated that of the nine rodenticides studied, brodifacoum appears to pose the greatest potential overall risk to birds and nontarget mammals. Based on comments received, U.S. EPA revised its Comparative Ecological Risk Assessment on Rodenticides in July 2004.

Since the initiation of this reevaluation, DFG has identified several more incidents of non-target wildlife exposures to brodifacoum. Given the increased public interest in wildlife issues associated with brodifacoum and the length of time U.S. EPA had taken to complete its assessment, DPR began taking steps to address the problems associated with the use of

brodifacoum, and two other second-generation anticoagulants, difethialone and bromadiolone.

At a November 18, 2005 meeting of the Pesticide Registration and Evaluation Committee, DPR presented an issue paper recommending the following mitigation measures: (1) use of rodenticide baits containing brodifacoum, difethialone, and bromadiolone be restricted to “indoor structural use only,” (2) use of rodenticides outside homes, industrial, commercial, agricultural and public buildings and around transport vehicles (ships, trains, aircraft) and related port or terminal buildings be prohibited; and (3) for the protection of children and pets, limit use of rodenticides indoors to tamper-proof bait boxes. On January 31, 2006, DPR issued a letter to brodifacoum, difethialone, and bromadiolone registrants giving them an opportunity to comment on DPR’s proposed mitigation measure and/or provide alternative mitigation measures. DPR received many letters ranging from pest control agencies, food processors, registrants, and the public. Based on the comments received, DPR reconsidered its “indoor use only” proposal.

In January 2007, U.S. EPA provided its proposed risk mitigation decision for nine rodenticides and opened a 60-day public comment period, which was extended to May 18, 2007. The nine rodenticides can be grouped into first and second-generation anticoagulants and non-anticoagulants. The first-generation anticoagulant active ingredients include chlorophacinone, diphacinone and warfarin. The second-generation anticoagulant active ingredients include brodifacoum, bromadiolone, and difethialone. The non-anticoagulants include zinc phosphide, bromethalin, and cholecalciferol. The overall focus of U.S. EPA’s proposed risk mitigation decision is to make all second-generation anticoagulants restricted use materials for use by certified applicators and require use of tamper-resistant bait stations for above ground applications. Homeowner or consumer use of first-generation anticoagulant and non-anticoagulants products will be block formulations preloaded in tamper-resistant bait stations. The proposal allows for consumer placement in and around structures as long as the solid bait remains in the tamper-resistant bait stations. Additionally, U.S. EPA is considering specific labeling improvements to rodenticide labels.

In May 2007, DPR provided comments supporting U.S. EPA’s proposed risk mitigation decision. U.S. EPA’s risk mitigation decision is consistent with DPR’s proposed mitigation measures. DPR will defer finalizing the reevaluation pending the outcome of U.S. EPA’s efforts.

CHLOROPICRIN – 49 Products

Chloropicrin is a colorless liquid that volatilizes readily when released into the atmosphere. Chloropicrin has been used as an insecticide since 1917 and a soil fumigant since 1920. As a space and soil fumigant, chloropicrin controls nematodes, bacteria, fungi, insects, and weeds. Chloropicrin can be used alone or in combination with other fumigants such as telone or

methyl bromide. Small amounts of chloropicrin are added to methyl bromide and other fumigant applications as a warning agent.

Data submitted to DPR under the Birth Defect Prevention Act indicate that chloropicrin has the potential to cause adverse health effects at low doses. The National Institute for Occupational Safety and Health (NIOSH) set an 8-hour time-weighted average (TWA) of 0.1 parts per million (ppm) as the reference exposure limit (REL) for workers exposed to chloropicrin. The NIOSH standard of 0.1 ppm was recommended primarily for the prevention of eye irritation in humans.

Air monitoring data submitted in 1999 by the Chloropicrin Manufacturers Task Force (CMTF) indicate that the air levels of chloropicrin at some distances from treated greenhouses or fields could exceed the NIOSH standard. In the CMTF studies, off-site movement of chloropicrin was monitored during and after soil fumigation using four application methods in three states. At the Arizona applications, considered to have meteorological conditions most comparable to California, 4 of the 16 monitoring stations located 180 feet from the treated fields had chloropicrin levels at or exceeding the NIOSH standard. The highest level monitored was around 1,700 $\mu\text{g}/\text{m}^3$ (i.e., 0.25 ppm). The flux or emissions of chloropicrin was also measured using the aerodynamic method. At the Arizona sites, the flux ranged from 114 to 222 $\mu\text{g}/\text{m}^2/\text{sec}$, or 12 to 25 percent of the chloropicrin applied during the highest 6-hour period. In addition, depending upon the aeration system used, the ambient air concentrations of chloropicrin near treated greenhouses could increase significantly as a result of the required ventilation operation. A typical aeration would involve venting the air in the greenhouse directly out to the exterior environment.

Pursuant to this reevaluation, DPR required chloropicrin registrants to conduct and submit the results of various worker exposure and air quality monitoring studies from field and greenhouse applications. DPR completed its review of the required monitoring data in August 2005. In November 2005, the CMTF responded to DPR's comments and questions regarding the studies. All of the data and information will be used in the risk assessment of chloropicrin, which DPR anticipates submitting out for external peer review in the second quarter of 2008.

CHLORPYRIFOS – 45 Products

The pesticide active ingredient chlorpyrifos is an insecticide registered for use on a variety of agricultural crops, turf, and for control of various insects indoors and outdoors. Chlorpyrifos is formulated as dust, wettable powders, emulsifiable concentrate, concentrates and ready-to-use solutions.

In March 2004, DPR placed all agricultural use (includes turf use) products containing chlorpyrifos into reevaluation. The basis for the reevaluation is monitoring data collected by

the Central Valley Regional Water Quality Control Board. The monitoring data showed chlorpyrifos levels in the rivers and tributaries of the San Joaquin Valley, the Sacramento/San Joaquin Delta, and Monterey County tributaries that exceeded water quality objectives (WQO) for aquatic invertebrates.

Pursuant to this reevaluation, chlorpyrifos registrants are required to: (1) identify the processes by which chlorpyrifos pesticide products are contributing to detections of chlorpyrifos in surface water at levels that exceed WQOs, and (2) identify mitigation strategies that have been shown to reduce or eliminate chlorpyrifos residues in surface water. The basic manufacturer of chlorpyrifos responded to the reevaluation with the submission of data and information. DPR reviewed the submitted information, and agreed with the basic manufacturer's assessment of the modes of transport of chlorpyrifos residues to surface water. DPR then asked the basic manufacturer to identify mitigation strategies that will reduce or eliminate chlorpyrifos residues in surface water when used under California conditions for all major agricultural uses. The company responded with the submission of data from three studies. In August 2005, the basic manufacturer identified mitigation measures that are intended to reduce chlorpyrifos residues in surface water when the products are used under California conditions.

At the end of January 2006, DPR requested that the basic manufacturer provide monitoring data to demonstrate effectiveness of mitigation measures. In June 2006, the basic manufacturer submitted additional information, in lieu of the monitoring data requested. At a September 2006 meeting, the basic manufacturer presented DPR with a surface water monitoring strategy to assess the impact of the current mitigation measures. A total of seven monitoring sites were proposed for the San Joaquin Valley. In October 2006, DPR requested that the basic manufacturer also monitor coastal areas.

In February 2007, the basic manufacturer submitted a revised monitoring proposal, which includes monitoring in the Delta, East and West San Joaquin watersheds. Additionally, the registrant will investigate how chlorpyrifos from granules is getting into surface waters by investigating application methods and use patterns, and begin development of BMPs specific to granule applications in the central coastal valleys. DPR anticipates receiving a final report of monitoring at the specified sampling locations and an evaluation of chlorpyrifos detections versus use patterns by the first quarter of 2008.

CYFLUTHRIN – 57 Products

The pesticide active ingredient cyfluthrin is a nonsystemic pyrethroid insecticide registered for use on numerous field, fruit, and vegetable crops, including citrus. In addition, DPR registers pesticide products containing cyfluthrin for use on lawns and ornamental plants, animals, and around industrial, institutional, agricultural, and household structures. DPR initiated the reevaluation on May 8, 1998, based on its investigation of a May 1997 outbreak of respiratory irritation reported among orange harvesters exposed to residues of

cyfluthrin in Tulare County and other pesticide illness reports related to cyfluthrin. As a part of the investigation of the Tulare County incident, DPR's Worker Health and Safety Branch conducted two separate inhalation-monitoring studies in orange groves during orange harvest. DPR determined that since dust and pollen are a part of the normal working environment, something different in the work environment led to the workers' respiratory irritation symptoms. DPR believes that the application of cyfluthrin to the citrus groves close to harvest led to the respiratory symptoms experienced. DPR compiled the results of its monitoring study in "Health and Safety Report, HS - 1765."

In mid-September 1998, the basic manufacturer of cyfluthrin submitted the results of several studies and journal articles concerning the respiratory irritation of cyfluthrin. On October 29, 1998, DPR met with the basic manufacturer to discuss the cyfluthrin reevaluation. At that meeting, DPR agreed to review the submitted studies and journal articles before deciding whether to require additional data. DPR reviewed the results of three studies regarding respiratory irritation. In the mouse study, a NOEL of 5.4 mg/m³ was identified, which was based on the reduced respiratory rate noted at the 21.9 mg/m³ exposure level. In the rat study, at the lowest exposure level of 0.7 mg/m³, the respiratory rate was minimally reduced in comparison to the control animals. The author calculated a NOEL of 0.5 mg/m³. In the third study, human subjects, under carefully controlled conditions, were exposed to cyfluthrin under static conditions. Throat and nasal irritation was noted by 8 of the 10 subjects in both exposures. Due to several problems including the indeterminate concentration to which the subjects were exposed, a NOEL for sensory irritation could not be established. Since the rat is more sensitive than the mouse to the irritating effects of cyfluthrin, the most appropriate NOEL appears to be the 0.5 mg/m³ derived from the rat study.

On August 16, 2001, DPR again met with the basic manufacturer to discuss the reevaluation of cyfluthrin. At the meeting, DPR agreed to review some additional new data before requiring further tests. In October 2001, the basic manufacturer submitted: (1) two worker exposure studies regarding hand harvesting of oranges and sweet corn; (2) four indoor exposure studies; and (3) a study entitled "Study on the RD₅₀ Determination in Rats." Based on these data, DPR determined that no further structural monitoring data were required. However, DPR determined that it had insufficient data regarding worker exposure during the hand harvesting of sweet corn, so DPR required a sweet corn worker exposure study. The first phase of the corn exposure study was conducted in the spring of 2003. The second phase of the study took place in the fall of 2003. The results of the study were submitted to DPR in October 2004. All of the data and information will be used in the risk assessment of cyfluthrin, which DPR anticipates submitting out for external peer review by the third quarter of 2008.

DIAZINON – 6 Products

The pesticide active ingredient diazinon is an insecticide registered for use on a variety of agricultural crops and livestock, on turf and for control of various insects indoors and outdoors (about 80% of usage). Diazinon is formulated as dust, granules, wettable powders, seed dressings, emulsifiable solutions, impregnated materials, encapsulated materials, concentrates and ready-to-use solutions.

DPR initiated the reevaluation of diazinon products labeled for use as dormant sprays based on monitoring studies conducted between 1991 and 2001 by the U.S. Geological Survey, Dow Agrosiences, DPR, the California Regional Water Quality Control Board, Central Valley Region, and the State Water Resources Control Board. These studies demonstrate the presence of diazinon in surface waters of the Sacramento and San Joaquin Valleys at levels that exceed water quality criteria (WQC), especially during the dormant spray season.

To mitigate off-site movement of diazinon residues, diazinon registrants developed supplemental labeling for dormant spray diazinon products. The supplemental labeling adds mitigation measures, such as restricting application to ground equipment only, prohibiting application within 100 feet upslope of “sensitive aquatic sites,” and prohibiting application to orchards when soil moisture is at field capacity, or when a storm event is likely. The supplemental labeling has been approved for use in California for all currently registered diazinon products.

In May 2004, the registrant submitted an update on various studies that are planned or in progress, and which are intended to indicate whether the new mitigation measures will be effective. In November 2004, DPR staff met with the registrant to discuss revisions to study protocols. Because of the inclement weather during January and February of 2005, the registrant was unable to initiate the planned studies. In October 2006, the registrant submitted final reports of two studies titled: “Evaluation of Dormant Spray Technologies and Methods” authored by David L. Brown from the California State University at Chico, Ken Giles from University of California Davis, Michael Oliver, and Parry Klassen from the Coalition for Urban/Rural Environmental Stewardship (CURES); and, “Inward Only Spraying of Last Three Orchard Rows to Reduce Off-Site Deposition of Pesticides” authored by Dennis Dunbar and Robert C. Ehn of Makhteshim-Agan of North America, Tim Ksander, a Yuba City agricultural adviser, and Parry Klassen from CURES.

In February 2007, DPR received a report prepared by the University of California, Davis (UCD) entitled, “Results of the 2006 TMDL Monitoring of Pesticides in California’s Central Valley Waterways, January – March 2006.” This study indicated diazinon concentrations measured during the 2006 dormant spray season were still exceeding WQC. In March 2007, DPR forwarded the February 2007 UCD study to the registrant and requested development and implementation of further mitigation measures to reduce or eliminate diazinon residues

in surface water. The two studies submitted in October 2006 are acceptable from a scientific standpoint; however, the study reports do not indicate whether registrants will use the results to develop additional mitigation measures.

In May 2007, the registrant responded to DPR's request for additional mitigation measures by proposing a different approach. The registrant proposes to work with CURES to develop a current and historical diazinon-sampling database, searchable by chemical and sample location. From this database, the registrant proposes to identify "hot spots" areas where exceedances have occurred during dormant spray season in the Sacramento River and San Joaquin River watersheds. Next, the registrant proposes to develop a confidential questionnaire to determine what practices growers are and are not using to mitigate surface runoff, with the focus on those growers where the exceedances have occurred and work with additional growers upstream of the hot spots. In addition to the questionnaire, the registrant proposes to provide growers with educational materials prior to dormant spray applications (October/November) describing the new dormant orchard spray regulations in California and management practice education specific to diazinon use as a dormant spray. Finally, the registrant proposes to work with Orica Australia Pty, Ltd. to advance new enzyme-based technology under the name of Landguard Op-A for the treatment of water samples contaminated with organophosphate insecticides. DPR anticipates reviewing their proposal and providing comments in the first quarter of 2008.

METHYL BROMIDE – 38 Products

Methyl bromide is a colorless and odorless gas that has been widely used since the 1940s as a preplant soil fumigant for controlling nematodes, plant pathogens, weeds, and insects. After harvest, it is used to protect crops from pest damage during storage and transportation. Methyl bromide is also used to eradicate wood-destroying pests in homes and other structures, and to control pests in mills, ships, railroad cars, and other transportation vehicles.

Since the early 1990s, DPR has focused considerable attention on ensuring the safe use of the fumigant methyl bromide. The Air Resources Board monitored during the 2000 methyl bromide use season to measure ambient air concentrations and ascertain whether they posed a threat to public health. Data indicate that short-term levels of methyl bromide were well within acceptable limits. However, data also indicate that ambient air concentrations in a number of locations exceeded DPR's target exposure level for seasonal (six- to eight-week) exposures. DPR has determined that in certain high-use areas, the use of methyl bromide may cause an adverse impact. On June 26, 2001, DPR placed all products containing methyl bromide and allowing field fumigation into reevaluation based on the results of the 2000 monitoring data.

To determine the extent of seasonal exposure to methyl bromide in 2001, DPR required registrants to conduct ambient air quality monitoring in the Camarillo/Oxnard area of

Ventura County and the Santa Maria area of Santa Barbara County. The Alliance of the Methyl Bromide Industry (AMBI) completed its ambient air monitoring in October 2001 and submitted a final report in April 2002.

For 2002, DPR required methyl bromide registrants to conduct and submit the results of ambient air quality monitoring in Monterey/Santa Cruz and Ventura counties. Monitoring in Ventura County was completed in August 2002. Monitoring in Monterey and Santa Cruz counties was completed in October 2002. AMBI submitted the final results of the 2002 studies in April 2003, and DPR completed its review of the data in June 2003.

Effective January 14, 2001, DPR adopted permanent methyl bromide field fumigation regulations to mitigate possible acute exposures to methyl bromide, and then adopted amendments to these regulations April 8, 2002. However, the regulations were voided by a court decision (Ventura County Agricultural Association vs. DPR) on the grounds that DPR had not adequately consulted with the California Department of Food and Agriculture prior to noticing the regulations. In order to maintain continuity and to ensure continued protection of the health and safety of workers and the public when methyl bromide is used for field fumigation, DPR filed emergency regulations to repeal and readopt these regulations. During the process to permanently adopt these regulations, DPR determined that additional mitigation measures were necessary and proposed an additional regulatory level to protect the public and agricultural employees from possible subchronic methyl bromide exposure hazards. On November 3, 2004, the Office of Administrative Law approved the methyl bromide field fumigation regulations. DPR will determine the effectiveness of the mitigation measures before concluding the reevaluation.

CERTAIN AGRICULTURAL AND COMMERCIAL STRUCTURAL-USE LIQUID FORMULATION PESTICIDE PRODUCTS (DATA CALL-IN) – 591 Products

On February 16, 2005, DPR placed certain liquid formulation agricultural and commercial structural-use pesticide products into reevaluation. The basis for the reevaluation is concern about release into the atmosphere of volatile organic compounds (VOCs) from agricultural and commercial structural-use pesticide products. VOCs and nitrogen oxides react with sunlight to create ground-level ozone. Ozone is a major air pollutant, harmful to both human health and vegetation. Many pesticide active ingredients and inert ingredients are VOCs.

The federal Clean Air Act requires states to submit state implementation plans (SIPs) for implementing, maintaining, and enforcing national ambient air quality standards (NAAQS) for air pollutants, such as ozone, in each air quality control region of the State. Any region that does not meet the NAAQS for a given pollutant is designated as a federal nonattainment area (NAA). Currently, eight California air districts do not meet the NAAQS for ozone. In 1994, the California Air Resources Board (ARB) submitted a SIP to the U.S. EPA. The SIP included a pesticide element. The pesticide element (also referred to as the Pesticide SIP)

addresses VOCs that result from the use of agricultural and commercial structural-use pesticides. (Consumer pesticide product sources of VOCs are regulated by ARB.) In the Pesticide SIP, DPR committed to reducing VOC emissions from agricultural and commercial structural-use pesticides by specified amounts within specified time periods for five NAAs. Currently three of the five NAAs do not meet the goals established in the 1994 SIP. These goals, relative to 1990 base year, were as follows: San Joaquin Valley, 12 percent reduction by 1999; Ventura, 20 percent reduction by 2005; and Southeast Desert, 20 percent reduction by 2007.

To implement the 1994 SIP, DPR developed a method to estimate the VOC content (emission potential) of pesticide products and to calculate estimated pesticide VOC emissions. DPR used thermogravimetric analysis (TGA) data to determine the VOC content of pesticide products and, in conjunction with data from DPR's pesticide use-reporting system, calculated estimated annual VOC emission totals for those pesticide products. To obtain TGA data on agricultural and commercial structural-use pesticides, DPR placed all agricultural and commercial structural-use pesticides formulated as liquids into reevaluation in 1994, and all solid formulations into reevaluation in 1995.

However, during these reevaluations, DPR gave registrants the option of calculating the VOC emission potential of a pesticide product using water and/or inorganic subtraction, instead of submitting TGA data. In addition, if no data (either TGA or subtraction) were submitted for a given pesticide product, DPR assigned the product a default emission potential value based on the highest TGA value for the product's formulation category (default values were later revised to the median TGA value for each formulation category). As a result, DPR only had TGA data for approximately 30-40 percent of currently registered agricultural and commercial structural-use pesticides. This meant that DPR's calculations of total VOC emissions from pesticide products might have been inaccurate. Pesticide products formulated as liquids (i.e., emulsifiable concentrates, aqueous concentrates, flowable concentrates, oils) constituted the bulk of products with unknown (default) emission potentials. DPR again placed these types of products into reevaluation and required the submission of TGA data on each product by December 31, 2005.

At the end of June 2007, 591 of the original 787 products placed into reevaluation remained actively registered in California. Registrants submitted TGA data for 427 products. DPR identified 120 products, as not intended for agricultural or commercial structural use, and therefore, exempt from DPR's data call-in. Registrants requested exemptions from generating TGA data for 44 products. DPR anticipates completing TGA data reviews and evaluation of requests for exemptions by the first quarter of 2008.

CERTAIN AGRICULTURAL AND COMMERCIAL STRUCTURAL-USE LIQUID FORMULATION PESTICIDE PRODUCTS (REFORMULATION) – 558 Products

On May 31, 2005, DPR placed certain liquid formulation agricultural and commercial structural-use pesticide products into reevaluation. The basis for this reevaluation is the same as the basis for the reevaluation listed above. However, the purpose of the reevaluation is different, and it targeted 748 products.

DPR initiated the second reevaluation to meet the 1999 goal to reduce pesticide VOC emissions to 21 tons/day for the San Joaquin Valley NAA. Total pesticide VOC emissions in the San Joaquin Valley NAA were 23.2 tons/day for May-October 2002, and 26.5 tons/day for May-October 2003, exceeding the 1999 goal by 2.2 and 5.5 tons/day. Fumigants and pesticide products formulated as liquids make up most of the San Joaquin Valley pesticide VOC emission inventory. Fumigant products containing metam-sodium, 1,3-dichloropropene, and methyl bromide as primary active ingredients (chloropicrin makes up a significant portion of several fumigant products, as a secondary active ingredient) comprise the largest portion of the San Joaquin Valley VOC emission inventory. However, fumigants are not amenable to reformulation. Liquid products, particularly those formulated as emulsifiable concentrates, are the next highest contributors to the pesticide VOC inventory. Pesticide products formulated as liquids comprise approximately 40 percent of the pesticide VOC emission inventory in the San Joaquin Valley NAA area, with products containing chlorpyrifos and glyphosate accounting for approximately 15 percent (3.9 tons/day) of the inventory.

Staff analyses indicate that reformulation of the liquid pesticide products included in this reevaluation could result in significant VOC reductions in the San Joaquin NAA and throughout the state. Additionally, reformulation is one of the few regulatory options for which DPR can estimate VOC reductions using available data. Reformulation is likely a viable alternative only for liquid, non-fumigant pesticides. It is probably not possible or cost-effective to lower the VOC content of pesticides formulated as solids.

The list of pesticide products included in the reformulation reevaluation differs somewhat from the list of products included in the TGA data call-in. Pursuant to the reformulation reevaluation, registrants were required to choose one of the following three options for each product included in the reevaluation: (1) submit a written commitment to reformulate the pesticide product to a VOC emission level of 20 percent or less, including information on how the product will be reformulated, a detailed timeline for accomplishing each task, and a schedule for progress reports; (2) submit a request for exemption if the product does not meet the established reevaluation criteria; or (3) submit a detailed explanation as to why the pesticide product cannot be reformulated. Registrant responses were due March 1, 2006.

On August 31, 2006, DPR proposed to cancel 15 products for failure to comply with the requirements of DPR's May 2005 reevaluation notice. Hearings on the proposed

cancellations were scheduled for late September 2006, but before the hearings could be held, all registrants either complied with the reevaluation requirements or voluntarily cancelled product registrations. As a result, the 15 products are no longer subject to cancellation. DPR received six requests for an exemption and two were determined to be exempt from reformulation. Registrants voluntarily cancelled the registrations of the remaining seven products.

At the end of June 2007, 558 of the original 748 products remained actively registered in California. Written commitments to reformulate were received, and are pending review, for 62 products. DPR exempted 337 products from reformulation because the products' VOC emission potential is less than 20 percent. The registrants for the remaining 159 products submitted one of the following responses: (1) provided DPR with a detailed reason why reformulation is not feasible or contrary to VOC reduction; (2) explained that the product registrant is a supplemental distributor which relies on the basic registrant to make a reformulation decision; or (3) requested an exemption from reformulation because the TGA estimate is below 20 percent VOC. DPR is currently evaluating the registrant responses and anticipates reaching a decision by the first quarter of 2008.

CERTAIN PESTICIDE PRODUCTS CONTAINING PYRETHROIDS – 521 Products

DPR placed certain pesticide products containing pyrethroids into reevaluation on August 31, 2006. The reevaluation is based on monitoring surveys and toxicity studies revealing the widespread presence of pyrethroid residues in the sediment of both agricultural and urban dominated California waterways at levels toxic to *Hyalella azteca* (*H. azteca*). Scientists conducted sediment bioassays using *H. azteca*, a resident species found in some Central Valley water bodies. Scientists commonly use *H. azteca*, an aquatic crustacean, as an indicator of environmental health and water quality in streams, lakes, and other bodies of water. Significant toxicity was observed at numerous sites. There was a high correlation between concentrations of pyrethroids and observed toxicity. Findings further indicate that the unique physical, chemical, and toxicological properties of the pyrethroid class of chemicals contribute to their propensity to accumulate in sediment at toxic levels.

Pyrethroids are synthetic insecticides. DPR did not include pesticide products containing pyrethrins in this reevaluation because pyrethrins are known to break down rapidly in the environment. Pyrethrins are naturally occurring insecticides found in *Chrysanthemum cinerariaefolium*, a perennial plant with a daisy-like appearance. Additionally, DPR excluded from this reevaluation the following product types: (1) formulated as pressurized liquids, pressurized gasses, or pressurized dusts; (2) where the chemical is impregnated into another material (e.g., ear tags, pet flea collars, ant disks/stakes, but not including fabric); and (3) labeled solely for manufacturing use. DPR excluded these formulation categories because it is unlikely that the pyrethroids in these types of products will move into surface waters or sediments. Only formulations involving clothing (impregnated cloth and pressurized spray

onto clothes) were included due to concerns that the pyrethroids may contribute to the contamination of surface water when the clothing is washed.

For purposes of data requirements, DPR divided pyrethroid chemicals into three groups. The first group (Group I) consists of the first generation or “Type I” photosensitive pyrethroids. Typically, these pyrethroids are used indoors and around residential areas. The active ingredients that fall into this group are bioallethrin, d-allethrin, imiprothrin, phenothrin, prallethrin, resmethrin, and tetramethrin. The second (Group II) and third groups (Group III) consist of the newer second-generation pyrethroids. The more toxic Group II and Group III pyrethroids, most of which are “Type II” pyrethroids, are less photosensitive, persist longer in the environment, and are widely used in both agricultural and urban settings. The two active ingredients in Group II, tau-fluvalinate and tralomethrin, have not been monitored or detected in California aquatic sediments. Group III pyrethroids have been detected on aquatic sediments, and include the following active ingredients: (s)-cypermethrin, beta-cyfluthrin, bifenthrin, cyfluthrin, cypermethrin, deltamethrin, esfenvalerate, fenpropathrin, gamma-cyhalothrin, lambda-cyhalothrin, and permethrin.

The reevaluation data requirements fell into three broad classes: laboratory environmental fate data, sediment persistence and ecotoxicology data, and field mitigation and transport processes data. Registrants were variously requested to supply data from one or more classes depending on the active ingredient(s) the product(s) contain. Each registrant is required to comply with the data requirements by either generating the data themselves or relying upon data submitted by another company. Registrants of Group III active ingredients formed a data generating task force, called the Pyrethroid Working Group (PWG). Members of the PWG have committed to generate the data necessary to evaluate pyrethroid residues in sediment for those active ingredients in Group III. For Group I and II active ingredients, two registrants have agreed to generate and submit the necessary environmental fate data.

Group I Active Ingredients

In June 2007, manufacturers of prallethrin and resmethrin submitted certain environmental fate data. DPR anticipates completing review of that data by the fourth quarter of 2007. DPR expects to receive certain environmental fate data for bioallethrin, d-allethrin, phenothrin, and tetramethrin in the fourth quarter of 2007. Currently registered products containing imiprothrin are exempt from the reevaluation as they are all formulated as pressurized liquids. Future imiprothrin containing products meeting the reevaluation criteria will be included in the pyrethroid reevaluation data call-in.

Group II Active Ingredients

In January 2007, a registrant with products containing tau-fluvalinate requested a waiver from all of the data requirements for Group II active ingredients based on low use in California. DPR response is expected in the third quarter of 2007.

Group III Active Ingredients
Part 1 – Sediment Toxicity Studies

Sediment Analytical Method

In February 2007, the PWG submitted two studies entitled, “6-Month Response to Pyrethroid Reevaluation Notice – Submission of Analytical Method” and “Method Validation for Determination of Residues of Several Pyrethroid Insecticides in Sediment.” In June 2007, DPR found the studies adequate to satisfy DPR’s analytical method data requirement for all Group III pyrethroids in sediment.

Aerobic/Anaerobic California Sediment Half-Lives

In April 2007, the PWG submitted a study protocol entitled, “Aerobic Aquatic and Anaerobic Aquatic Degradation of Pyrethroid Insecticides in Three California Sediments.” DPR expects to complete its review of the study protocol by the fourth quarter of 2007.

Part 2 – Off-Site Movement and Monitoring in Areas Appropriate to Use Patterns

Off-Site Movement

In April 2007, the PWG submitted four proposals to address off-site movement of pyrethroid residues. DPR determined that two of the four proposals were not relevant to the reevaluation as they did not relate to transport mechanisms and mitigation.

DPR awaits the submission of an overall plan to address transport mechanisms and mitigation and explain how the two relevant proposals address off-site movement of pyrethroid residue. Upon receipt, DPR will provide stakeholders 60 days to comment on the overall plan and the two relevant proposals entitled “Investigation of Sediment Toxicity in Kirker Creek and Pleasant Grove Creek Phase I: Ground Truthing Land Uses and Stormwater Input Points” and “The Use of Agricultural Sediment Basins as a Best Management Practice in Irrigated Tomatoes.”

Monitoring in POTWs

In March 2007, the PWG submitted a proposal to address the fate of pyrethroids in Publicly Owned Treatment Works (POTWs). DPR sent the POTW proposal to key stakeholders representing the State Water Resources Control Board and Regional Water Quality Control Boards, and storm water and wastewater agencies for comment. In April 2007, DPR received comments on the proposal from Tri-TAC, a technical advisory committee for POTWs in California. The PWG plans to establish a small working group with DPR staff and members of Tri-TAC to exchange information and to jointly develop study protocols.

In January 2007, DPR met with registrants to discuss protocol development for off-site movement research, use of surrogate active ingredients, monitoring at POTWs, and stakeholder and U.S. EPA's Special Review and Reregistration Division involvement in the reevaluation process.

In April 2007, DPR hosted a Pyrethroid Forum bringing together pesticide registrants and stakeholders. The Pyrethroid Forum agenda and presentations are available on the Registration Branch's Web site at:

<<http://www.cdpr.ca.gov/docs/registration/reevaluation/chemicals/pyrethroids.htm>>.

By the third quarter of 2007, registrants will be notified that products registered after the initiation of the reevaluation are subject to the Pyrethroid Reevaluation data requirements.

II. PRELIMINARY INVESTIGATIONS (EVALUATIONS)

DPR conducts preliminary investigations on products for which DPR or other State or county agencies have identified possible hazards. As a result of evaluation, the investigations may lead to formal reevaluation.

Copper-based antifouling paint (AFP) water quality impairment workgroup activities and statewide monitoring study of AFP active ingredients are ongoing. These efforts will allow DPR to determine if AFPs, particularly those that contain copper, should be placed into reevaluation.

In December 2006, Mr. Michael W. Graf submitted a letter and exhibits to DPR on behalf of Pesticide Action network (PAN), Organización en California de Líderes Campesinas, Center for Environmental Health, Center On Poverty & the Environment, and the statewide coalition Californians for Pesticide Reform. Mr. Graf requested that DPR place chlorpyrifos-based pesticide products into reevaluation. Mr. Graf based this request on the submitted information, which he feels demonstrate that continued use of chlorpyrifos is likely to have significant adverse impacts on human health due to ambient air concentrations. DPR reviewed Mr. Graf's submission in March 2007 and determined that reevaluation was not warranted based on recent research to assess the inhalation risk of chlorpyrifos. DPR is collecting relevant ambient air exposure data, has initiated evaluation of the health significance of chlorpyrifos and diazinon levels measured in the air at Parlier, and has initiated a risk assessment for chlorpyrifos.

On March 13, 2007, Ms. Kristina Boudreaux submitted a letter requesting DPR place all Roundup® products into reevaluation. The request stemmed from DPR's removal of two products from the List of Pesticide Products Prohibited from Use in Schools. Education Code section 17610.1 (Assembly Bill 405) prohibits the use of certain conditionally registered pesticides on school sites. Included in the prohibition are all conditionally registered pesticide products containing a new active ingredient. Roundup® is a trade name used by a

registrant of herbicide products containing the active ingredient glyphosate or various glyphosate salts. Glyphosate is not a new active ingredient. However, these two products also contain the new active ingredient ammonium salt of imazapic. These two products are conditionally registered due to the lack of a one-year storage stability study and a corrosion characteristics study. The registrant submitted the missing studies, and after evaluation, DPR determined that the data were sufficient to support full registration of both products. Once the products were no longer conditionally registered, they could lawfully be used on schoolsites, and so DPR removed the products from the AB 405 list.

Controlled animal toxicology studies indicate that glyphosate presents a low toxicity risk to humans and wildlife. Animal studies designed specifically to investigate potential carcinogenic effects gave either no indication of carcinogenic activity or very slight indications and only at high oral feeding levels. Data currently available to DPR do not support the placement of products containing glyphosate into reevaluation.

For more information, please contact Ms. Denise Webster, Program Specialist in the Pesticide Registration Branch, by e-mail at <dwebster@cdpr.ca.gov> or by telephone at (916) 324-3522.

Original signed by

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October 18, 2007

Date

cc: Ms. Denise Webster