PESTICIDE REGISTRATION
AND EVALUATION COMMITTEE (PREC)
Meeting Minutes –November 20, 2015

Committee Members/Alternates in Attendance:

Brian Larimore, Department of Resources Recycling and Recovery (CalRecycle)
Charles Salocks, Office of Environmental Health Hazard Assessment (OEHHA)
Eric Lauritzen, California Agricultural Commissioners and Sealers Association (CACASA)
Lynn Baker, Air Resources Board (ARB)
Margaret Reiff, Department of Pesticide Regulation (DPR)
Patti TenBrook, U.S. Environmental Protection Agency (EPA), Region 9 –via webcast
Rebecca Sisco, University of California, IR-4 Program
Stella McMillin, Department of Fish and Wildlife (CDFW)
Valerie Hanley, Department of Toxic Substances Control (DTSC)

Visitors in Attendance:

Anne Katten, California Rural Legal Assistance Foundation
Catherine Caraway, OEHHA
Henry Buckwalter, FMC Corporation
Imelda Muzio, MVP Consolidated, LLC –via webcast
James Nakashima, OEHHA
Roberta Firoved, California Rice Commission
Steve Markofski, Yamaha Unmanned Systems Division

DPR Staff in Attendance:

Amy Budahn, Environmental Monitoring Branch
Andi Cameron, Pesticide Registration Branch
Ann Hanger, Pesticide Registration Branch
Brian Hughes, Enforcement Branch
Chris Collins, Environmental Monitoring Branch
Colin Brown, Environmental Monitoring Branch
Craig Cassidy, Communications Office
David Duncan, Environmental Monitoring Branch
Denise Alder, Pesticide Registration Branch
Edgar Vidrio, Environmental Monitoring Branch
Eileen Mahoney, Pesticide Registration Branch
Emma Wilson, Worker Health and Safety Branch
Jeanne Martin, Enforcement Branch

continued DPR Staff in Attendance:

Jennifer Teerlink, Environmental Monitoring Branch
Jim Shattuck, Enforcement Branch
John Inouye, Pesticide Registration Branch
Ken Everett, Enforcement Branch
Kevin Solari, Worker Health and Safety Branch
Leslie Crowl, Worker Health and Safety Branch
Lisa Ross, Worker Health and Safety Branch
Okla Hensley, Enforcement Branch
Russell Darling, Pesticide Registration Branch
Scott Wagner, Environmental Monitoring Branch
Sheryl Gill, Environmental Monitoring Branch

1. Introductions and Committee Business –Margaret Reiff, Acting Chair, DPR

a. About thirty-eight (38) people attended the meeting and thirty-eight (38) viewers on the webcast.
b. Lynn Baker clarified in the meeting minutes from the July 17, 2015 PREC meeting, on Page 14, under Committee Comment, DPR has requested and not hired ARB to monitor the pesticide for four to six weeks in an area heavily impacted by the pesticide looking at acute exposure.

2. Use of Drones in Pesticide Application

Introduction to the Yamaha RMAX Remotely Piloted Helicopter and Review of U.S. Activities –Steve Markofski, Yamaha Unmanned Systems Division

Yamaha Motor Corporation started in 1955 with the production of its first motorcycle (YA-1,125cc). In 1960, Yamaha Motor Corporation began business operations in the U.S. (Los Angeles, California). Yamaha's first commercial-use unmanned helicopter, "R-50," was completed in 1987. Yamaha Global Products include uses for land, water, power, commercial, and industrial products. The RMAX remotely piloted helicopter is a portable platform that is brought to the site loaded and prepped to perform spray applications. Yamaha developed the spray system and tailored the RMAX to the spray system.

SPECIFICATIONS:

DIMENSIONS

Main Rotor Diameter	10 feet, 3 inches
Tail Rotor Diameter	1 foot, 9 inches
Overall Length	9 feet (Overall length with rotor 11 feet, 10.91 inches)
Overall Width	2 feet, 4 inches
Overall Height	3 feet, 7 inches
Dry Weight	141 pounds

ENGINE

Type	2-stroke, horizontally opposed 2-cylinder
Cylinder Displacement	246 cc
Maximum Output	21 hp
Starting System	Electric starter
Fuel	Regular unleaded mixed with 2-stroke engine oil
Sound Data	72 dB (at 50 meters)

PERFORMANCE

Load Capacity*	61 pounds, 12 ounces
Control System	Yamaha Attitude Control System (YACS) with GPS
Transmitter	72 MHz / 6 Frequency

LIQUID SPRAYER

Cassette Tank Capacity	2 gallons, 1 pint x 2 tanks
Discharge Method	Double-acting piston with flat nozzle
Discharge Rate	0.32 to 0.53 gallons/minute (speed-linked method)
Nozzle Pitch	4 feet, 4.75 inches
Sprayer Weight	16 pounds, 5 ounces

The RMAX sprays approximately 10 feet above the target. The maximum speed is 9-12 miles per hour. All participating crew are required to be at a 65-foot distance. Safety systems include a self-monitoring function (diagnostic before takeoff), Yamaha Attitude Control System (attitude control), GPS flight control system (speed and altitude control), radio interference or loss of radio communication measures, warning lights, indicator lights, and a rotor brake.

Development History
1983: Development begins with request from Japanese Government
1987: Yamaha completes development of R-50
1991: Yamaha begins marketing R-50 Type II in Japan
1995: Yamaha Attitude Control System introduced on R-50
1997: RMAX released offering greater payload and greater ease of use
2002: 1 million acres per year sprayed by remotely piloted helicopters
2003: RMAX Type II released, updates include GPS for greater control
2012: 2,400 RMAX helicopters in service in Japan

In Japan, the RMAX has been used on rice, wheat, soybeans, pine trees, vegetables, and fertilizers. Remotely piloted helicopters are recognized solutions to several key problems confronting agriculture today including an aging farming population, restrictions on manned crop dusting due to spread of urbanization (less drift), and the depressed cost of agricultural products. The RMAX has proven to increase pesticide application safety, increase coverage efficiency and accuracy, and significantly lower application costs in Japan.

In 2012, University of California, Davis and Yamaha Motor Company initialed a project investigating the use of the RMAX, an unmanned helicopter for agricultural spraying. The 2015 project is a continuation and expansion of the cooperative work. The project conducted an

analysis of typical pesticide label suitability for use with the RMAX spray system and identified pesticide labels consistent with RMAX application. The RMAX was able to apply registered pesticides to manage a portion of Oakville test vineyard from bud break to harvest in order to determine efficacy and deposition. The project adapted the AGDISP model to the RMAX characteristics and the field verified the performance of the model as compared to observed spray swath. The project demonstrated the vehicle operation to agricultural industry, media, and regulatory representatives while educating them on the technology and concepts of using an unmanned aerial vehicle in agricultural spraying. The advantages of the RMAX included a safer application than manned ground application, improved operational efficiency, no soil compaction, no crop damage, and quality spray deposition.

The Federal Aviation Administration (FAA) Modernization and Reform Act of 2012 Section 333 gives the FAA the authority to grant a case-by-case authorization for unmanned aircraft systems to perform commercial operations in the National Airspace System prior to the finalization of unmanned aircraft system rules. Yamaha received a Grant of Exemption for the RMAX on May 1, 2015. The Grant of Exemption allows Yamaha to operate the RMAX for agriculture related operations in the U.S. The pilot in command (PIC) must hold a Sport Pilot Certificate, the PIC must hold a current U.S. Driver's License, and the PIC and Visual Observer must complete Yamaha RMAX Certification Training for roles. Additionally, the RMAX can only be used during daylight hours, in good weather, in operations over uninhabited areas (e.g., vineyards, fields, groves, and orchards), and operations must be in a visual line of sight. Operation is defined as "agricultural aircraft operation" and will be in accordance with Title 14 of the Code of Federal Regulations Part 137.

Yamaha obtained a Certificate of Waiver (COA) effective from May 4, 2015 to May 31, 2017. The COA is effective only with the approved FAA Section 333 Grant of Exemption and allows Yamaha to operate the RMAX in the U.S. Some provisions include: (1) the aircraft must be flown below 200 feet above ground level; (2) a Notice to Airman must be filed no more than 72 hours, but not less than 24 hours; (3) the PIC must give way to all manned aviation operations and activities at all times; (4) the PIC and visual observer maintain instantaneous communications at all times; and, (5) the operations is 5 nautical miles from airports with an operational control tower, 3 nautical miles from airports with published instrument flight procedures without a tower, 2 nautical miles from airports without published instrument flight procedures or tower, and 2 nautical miles from heliport, glider port or seaport.

Unmanned Aerial Vehicle (UAV) Regulatory Issues –Ken Everett, DPR

DPR is currently working with the University of California, Davis and Yamaha and is looking into licensing requirements, labeling requirements, worker protection, and drift/buffer zones. Currently, California has statutory requirements that an aerial aircraft must have a commercial pilot's license, Federal Aviation Administration medical, journeyman certificate, and apprentice certificate. Furthermore, an Unmanned Aerial Vehicle (UAV) would be required to follow the aerial application requirements including labeling and instructions. DPR's Environmental Monitoring Branch is working on a drift study and modeling. DPR's Worker Health and Safety Branch is working on exposure study protocols, pilot exposure, observer/mix loader exposure, equipment movement exposure, and personal protective equipment requirements.

For questions regarding DPR's UAV Regulatory Issues, please contact Environmental Program Manager I, Ken Everett at 916-376-8950 or by e-mail at <Ken.Everett@cdpr.ca.gov>.

3. <u>Updates to the Worker Protection Standards and Impacts on California</u> –Leslie Crowl, DPR

In 1992, the U.S. Environmental Protection Agency (U.S. EPA) implemented a set of regulations known as the Worker Protection Standards (WPS) to address worker safety concerns in the agricultural industry. On March 18, 2014, the U.S. EPA published proposed revisions to the WPS in the Federal Register. On August 18, 2014, DPR submitted comments to the U.S. EPA on their proposal. On November 2, 2015, U.S. EPA published a final WPS rule in the Federal Register.

Under WPS, employers are required to ensure that workers and handlers are trained once every five years. U.S. EPA revised this requirement and now requires workers and handlers to be trained annually. In California, handlers are currently required to be trained annually. In California, the new revisions will change worker-training requirements only. Previously, there was no requirement as to how an employer must verify a worker or handler has received pesticide safety training. Employers must now maintain records of worker and handler training for two years and provide the information to employees upon request. In California, the handler training record keeping is already required. California will need to add a requirement for worker training record keeping. U.S. EPA added additional topics to worker and handler training (reducing take home exposure, exclusion zones, minimum age, respirator use, etc.). California has already included most topics in DPR's Pesticide Safety Information Series; however, those topics would need to be clarified in regulation as part of the training requirements.

U.S. EPA currently requires employers to notify workers orally or by posting warning signs on fields under reentry interval requirements (if worker is within a quarter mile of the treated site). Now all outdoor applications with reentry intervals greater than 48 hours will require posting. In California, the posting requirements will change for reentry intervals greater than seven days to 48 hours. U.S. EPA currently requires employers to provide pesticide specific hazard information (Safety Data Sheets) at the central display in addition to the previously required application information. California currently requires pesticide specific hazard information to be maintained and will now be required to make it available at the central display. Previously, pesticide records had to be maintained and posted at a central display for 30 days in addition to the reentry interval. Pesticide Application and Hazard Information must now be maintained for two years and be made available to workers, medical personnel, or "designated representatives," if requested. Currently, California requires record keeping for two years and California must add U.S. EPA's requirement for records to be provided to "designated representatives" upon request.

U.S. EPA established "entry restricted areas" adjacent to treated areas during pesticide application for nurseries and greenhouses, but has change the term "entry restricted area" to "exclusion zone" and requires new exclusion zones of up to 100 feet around the application equipment for outdoor production. California will be required to adopt U.S. EPA's new "exclusion zones." Additionally, U.S. EPA now requires all early entry workers and handlers to be at least 18 years old. California will be required to revise current handler age requirement to

apply to all handling situations and adopt early entry worker age requirement. U.S. EPA also changed requirements so pesticide safety information (Pesticide Safety Information Series A-8/A-9) must be displayed at a central location and all decontamination sites servicing 11 or more workers. California will require Pesticide Safety Information Series to be displayed at decontamination sites for 11 or more workers.

U.S. EPA changed the requirements that employers must provide "enough water" for routine washing and emergency eye flush to employers must provide 1 gallon of water per worker and 3 gallons of water per handler/early entry worker (measured at the start of their work period) for decontamination. California will need to add statutory requirements for the specific amounts of water. Currently, all handlers applying pesticides requiring protective eyewear must have one pint of eyewash immediately available. Employers must now provide water at all mixing and loading sites for ocular decontamination (when label requires protective eyewear or using a closed system) from a system capable of delivering 0.4 gallons/minute for 15 minutes or from six gallons of water able to flow gently for about 15 minutes (retains 1 pint rule). California will need to add requirements for ocular decontamination at mix/load sites.

U.S. EPA has eliminated exemptions for employees directly supervised by Certified Crop Advisors from complying with certain handler/reentry worker requirements for workers performing crop-advising tasks. Furthermore, U.S. EPA deleted the exemption for respiratory protection when operating in an enclosed cab approved for respiratory protection. Now, handlers in enclosed cabs are required to wear the label-specified respiratory protection except when the only label-specified respiratory protection is a filtering face piece respirator (National Institute for Occupational Safety and Health approval number prefix TC–84A) or dust/mist filtering respirator. California must also delete these exemptions.

Other significant U.S. EPA changes not impacting California include deletion of "grace period" for worker training, revised closed system requirements (in accordance with DPR's revised regulations), and a requirement for respiratory protection program to be consistent with Occupational Safety and Health Administration (OSHA) standards. The first round of changes is required to be in place January 2017. The second round of required changes (relating to new training topics) is expected to be in place January 2018. DPR will be providing future trainings to the County Agricultural Commissioners and industry relating to the implementation.

For more information regarding updates to the worker protection standards and impacts on California, please contact Environmental Scientist, Leslie Crowl at 916-445-4201 or by e-mail at <Leslie.Crowl@cdpr.ca.gov> or Environmental Program Manager I, Kevin Solari at 916-323-7614 or by e-mail at <Kevin.Solari@cdpr.ca.gov>.

4. <u>Recent Changes to the Pesticide Contamination Prevention Act: Pesticide Degradates in Ground Water</u> –Sheryl Gill, DPR

Detections of the fumigant dibromochloropropane in ground water in the early 1980s resulted in the passage of the Pesticide Contamination Prevention Act (PCPA) in 1985 (also known as AB 2021). However, in 2014, SB 1117 was enacted. Under the PCPA, DPR is required to obtain environmental fate and chemistry data for agricultural pesticides before they can be registered for use in California. This data is then used to identify pesticides with the potential to pollute ground water (6800b list). DPR samples wells for presence of the pesticides on the 6800b list and analyzes the results of well sampling conducted by other public agencies. DPR is required to formally review a detected pesticide to determine if its continued use can be allowed. If the formal review indicates continued use can be allowed, use modifications are adopted to protect ground water from pollution (6800a list i.e., Restricted Materials).

SB 1117 amended the PCPA to require a formal review of a pesticide to determine if its continued use can be allowed based on a detection of its degradation product in the ground water of the state. Currently, DPR has detected three degradation products in ground water in California whose "parent" active ingredient have not been detected. DPR will be initiating the review process for these three active ingredients. The review process takes approximately one year, beginning with notification to the registrant and ending with the Director's decision.

Registrants present additional information at a public hearing of the PREC subcommittee (including DPR, State Water Resources Control Board, and OEHHA). The subcommittee reviews data and makes recommendation to Director. Examples of recommendations by the subcommittee include: (1) the ingredient found in the soil or ground water has not polluted, and does not threaten to pollute, the ground water of the state; (2) the agricultural use of the pesticide can be modified so that there is a high probability that the pesticide would not pollute the ground water of the state; or, (3) regulation or cancellation of the pesticide will cause severe economic hardship and DPR shall recommend a level of the pesticide that does not significantly diminish the margin of safety recognized by the subcommittee to not cause adverse health effects. Examples of decisions made by the Director include: (1) concurs with the subcommittee and adopts modifications that result in a high probability that the pesticide would not pollute the ground water of the state; (2) concurs with the subcommittee that regulation is not needed or will cause severe economic hardship on the state's agricultural industry. The Director shall adopt the subcommittee's recommended level or shall establish a different level; or, (3) determines that, contrary to the finding of the subcommittee, no pollution or threat to pollution exists.

Seven out of nine of the active ingredients formally reviewed by the PREC subcommittee were placed on the 6800a list and are now subject to use restrictions to mitigate their potential to pollute. Some recent decisions have been on the active ingredients hexazinone and bentazon. Based on the detected concentrations of hexazinone (0.05 to 0.27 µg/L) and the health-protective level of 170 µg/L established by OEHHA, hexazinone was not found to have polluted ground water. Bentazon was placed on the 6800a list and use was prohibited on rice and in some counties.

DPR will be reviewing alachlor, dacthal, and metolachlor based on detections of degradates in ground water. Alachlor use has dropped substantially over years to 10,000 pounds/year. There have been sixteen wells with confirmed detections (0.05 to 1.04 ppb). Currently, U.S. EPA has a Maximum Contaminant Level of 2 ppb and OEHHA has a public health goal of 4 ppb. Dacthal is used approximately 200,000 pounds/year and mainly in Monterey and Imperial on cole crops and onions. There have been approximately 200 detections (0.05 to 30 ppb) and U.S. EPA has a Health Risk Limits of 70 ppb. DPR is planning to monitor for dacthal degradates this summer/fall. Metolachlor is typically used on tomatoes, corn, beans and is approximately used 300,000 pounds/year. Metolachlor has been confirmed in thirty-three wells (0.05 to 3 ppb). U.S. EPA has determined a Health Advisory Level of 700 ppb and has developed a Drinking Water Equivalent Level of 3,500 ppb for metolachlor. For more information regarding the Pesticide Prevention Contamination Act, please visit DPR's Web site at <http://www.cdpr.ca.gov/docs/emon/grndwtr/index.htm>.

5. <u>Committee Comment</u>

Rebecca Sisco inquired as to how large a field would be practical for RMAX use. Steve Markofski stated it would be difficult to deploy the RMAX in hundreds of acres: but in Napa, where the fields are (on average) five acres, the RMAX would be ideal.

Patti TenBrook asked if there have been any crashes with the RMAX. Steve Markofski stated no, in the U.S., the RMAX has a clean record. Patti TenBrook further inquired how this compares to piloted crop dusting. Steve Markofski stated this is hard to compare, as it is apples to oranges. Additionally, Patti TenBrook inquired if Yamaha has reached out to U.S. EPA's Office of Pesticide Programs as this could be considered a new application method. Steve Markofski stated Yamaha has not yet reached out to U.S. EPA's Office of Pesticide Programs.

Eric Lauritzen inquired if there is a duration of exclusion zone in regards to the restrictions to prevent drift exposure changes in the Worker Protection Standards. Leslie Crowl stated the 100 feet exclusion zone is not around the field, the exclusion zone is around the pesticide application equipment as it is spraying the field.

Rebecca Sisco asked for further clarification on the exemptions for applying in an enclosed cab. Leslie Crowl stated currently, U.S. EPA has an exemption for enclosed cabs approved for respiratory protection. The exemption is out-of-date because the agency that used to approve them is no longer doing so. Therefore, in theory, there are no approved cabs that have been maintained. So now, U.S. EPA is requiring handlers in enclosed cabs to wear the label-specified respiratory protection except when the only specified respiratory protection is a filtering face piece respirator or a dust/mist filtering respirator.

Charles Salocks inquired as to when the Health Risk Limits (dacthal) and Health Advisory Level (metolachlor) were developed. Sheryl Gill stated the limits/level were very old and the numbers are often for the parent and not the degradate of the active ingredient.

Charles Salocks asked if DPR's monitoring includes the hazardous waste sites that DTSC uses. Sheryl Gill stated the hazardous waste sites are generally point source and DPR only has authority of the sales and use of pesticides.

6. Public Comment

Henry Buckwalter asked in the RMAX analysis, did Yamaha perform an assessment of the drop size [volume median diameter (vmd) ratio analysis] being produced by the equipment or did they not need to perform this calculation because the analysis went straight to parts per million (ppm). Steve Markofski confirmed the analysis utilized ppm.

John Inouye inquired if Yamaha has explored use of the RMAX in aquatic settings and if the RMAX would require a California Agriculture Certificate. Steve Markofski stated the RMAX has shown to be quite effective in aquatic weeds. Application data is currently being conducted in Australia. Ken Everett stated the RMAX would require an Agriculture Certificate. John Inouye further inquired if Yamaha has done any testing with the University of California, Davis aquatic center. Steve Markofski stated the University of California has their own Certificate of Waiver to operate the RMAX, but their primary research focus to date has been vineyard applications.

Catherine Caraway asked for further information regarding the RMAX usage on trees and if Yamaha is going to consult with the National Forestry Service. Steve Markofski stated the RMAX has been used on trees in Japan. However, it will take program expansion and data to conduct tree applications in the U.S.

James Nakashima inquired if the RMAX spray drift is managed in Japan. Steve Markofski stated the RMAX takes into account weather and wind direction. Manned operations and unmanned operations would be managed the same way in regards to spray drift.

John Inouye inquired as to the compatibility of loading closed systems. Steve Markofski stated research is currently being conducted with UC Davis for the RMAX using closed systems.

Steve Markofski stated the Section 333 exemption Yamaha received from the Federal Aviation Administration has passed through the public comment period and Yamaha is working to achieve FAA Part 137 Certification. The Federal Aviation Administration has deemed a sport pilot license is valid for the RMAX to conduct aerial applications.

John Inouye asked for the current definition of a "worker." Leslie Crowl stated a person working in a treated field who is not a handler. John Inouye stated that it might be a burden for employers to train all new workers, including contractors. Leslie Crowl stated employees could go from one employer to another with a record of their training from a previous employer and show they have been trained within the last year, which should alleviate the burden.

Imelda Muzio inquired how the Worker Protection Standard changes affect the train the trainer programs approved by the director. Leslie Crowl stated, at this point, there are no pending changes to the programs. Imelda Muzio further inquired when the additional required training

topics be made available. Leslie Crowl stated U.S. EPA is still working on the training topics and has stated the goal is to have the topics available by June 2017 for implementation January 2018.

Anne Katten asked when DPR would be proposing new regulations to factor in the Worker Protection changes. Leslie Crowl stated DPR is currently working on the new regulations. Lisa Ross stated DPR is focusing on the language U.S. EPA is requiring and is expecting the proposals to be available in April 2016.

Anne Katten inquired as to whether DPR has seen any effects of the drought in pesticide levels in the ground water monitoring. Sheryl Gill stated some of the monitoring sites have gone dry. However, the ground water monitoring is not setup to determine impacts from the drought.

7. Agenda Items for Next Meeting

No agenda items identified for the next meeting.

The next meeting is scheduled for Friday, January 15, 2016 at 10:00 a.m. in the Sierra Hearing Room on the second floor of the Cal/EPA building, located at 1001 I Street, Sacramento, California.

8. Adjourn