DEPARTMENT OF PESTICIDE REGULATION
PESTICIDE REGISTRATION AND EVALUATION COMMITTEE
Meeting Minutes – July 16, 2009

Committee Members/Alternates in Attendance:

Syed Ali, State Water Resources Control Board (SWRCB)
Anna Fan, Office of Environmental Health Hazard Assessment (OEHHA)
Martha Harnly, Department of Public Health (DPH)
David Luscher, Department of Food and Agriculture (CDFA)
Stella McMillin, Department of Fish and Game (DFG)
Jodi Pontureri, SWRCB
Ann Prichard, Department of Pesticide Regulation (DPR)
Angela Csondes, Air Resources Board (ARB)
Rebecca Sisco, University of California, IR-4 Program
Barry Wilson, University of California, Department of Environmental Toxicology
Dave Whitmer, California Agriculture Commissioners and Sealers Association
Elena Yates, Integrated Waste Management Board

Visitors in Attendance:

Denise Alder, DPR
Chuck Andrews, DPR
Ruben Arroyo, Kern County Agriculture Department
Dennis Bray, Alameda County Agriculture Department
Henry Buckwalter, Compliance Services International
John H. Butala, Toxicology Consultants, Inc.
Laura Crendall, UC Davis
Nasser Dean, Western Plant Health Association (WPHA)
Michael Doug, DPR
David Duncan, DPR
Tom Estill, Ensystex
Shifang Fan, DPR
George Farnsworth, DPR
Joseph Frank, DPR
Billy Gaither, Pest Control Operators of California
Adolfo R. Gallo, DPR
Joyce Gee, DPR
Parakrama Gurusinghe, DPR
Linda M. Hall, DPR
Amy Her, DPR
Victoria Hornbaker, CDFA
Josh Johnson, DPR
Anne Katten, California Rural Legal Assistance Foundation
Lillian Kelly, DPR

Elaine Khan, OEHHA
Artie Lawyer, Technology Services Group
Barbara LeVake, TriCal Inc.
Shelley Lopez, DPR
Eileen Mahoney, DPR
Pat Matteson, DPR
Eric Miguelino, DPR
Rosemary Neal, DPR
Mai Ngo, DPR
Eric Paulsen, Clark Pest Control
Margie Read, DPR
Chris Reardon, DPR
Terrell P. Salmon, UC Cooperative Extension
Charles Salocks, OEHHA
John Sanders, DPR
Regina Sarracino, DPR
Jay Schreider, DPR
Jing Tao, DPR
Atac Tuli, DPR
Chris Valadez, California Grape and Tree Fruit
Anthony Van Ruiten, Best Best & Krieger
MaryLou Verder-Carlos, DPR
Miglena Wilbur, DPR
Pam Wofford, DPR

1. <u>Introductions and Committee Business</u> – Ann Prichard, Acting Chairperson, DPR

a. About 50 people attended the meeting.
b. A correction to the minutes of the previous meeting held on May 15, 2009, was identified to reflect the attendance of Rebecca Sisco of the University of California, IR-4 Program.

2. <u>Chloropicrin Workshop – Toxic Air Contaminant Workshop</u> – Sheryl Beauvais, Terrel Berry and Carolyn Lewis, DPR

Dr. Sheryl Beauvais and Dr. Terrell Barry presented information on the environmental fate of chloropicrin, along with DPR's estimates for exposures of the public to chloropicrin in ambient air and exposures of bystanders during applications. Chloropicrin is a fumigant pesticide; fumigants are gases that during use fill an area, such as a building or soil in a field, and poison targeted pests. Chloropicrin has a low odor threshold and causes sensory irritation at very low concentrations. In addition to its use as a pesticidal active ingredient, it is added as a warning agent to the odorless fumigant methyl bromide. Small amounts of chloropicrin are

also co-applied in structural fumigations with sulfuryl fluoride, as a warning agent. There are 47 registered products containing chloropicrin in California, including eight products where chloropicrin is used as a warning agent. Many chloropicrin products are mixtures with methyl bromide or 1,3-dichloropropene. Chloropicrin use in California increased from about 2.5 million pounds in 1993 to about 5.5 million pounds in 2007. At least 99% of chloropicrin use each year is in pre-plant soil fumigation; use on strawberry fields accounts for an average of 68% of pounds of chloropicrin applied.

Following application to soil, chloropicrin rapidly diffuses through the soil in all directions, then dissipates quickly, with half-lives ranging from approximately an hour to several days. Volatilization is the major pathway through which chloropicrin dissipates from soil, but chloropicrin is also degraded through biotic and abiotic reactions with a half-life in the range of 1 to 8 days. In air, chloropicrin is reactive, undergoing rapid photolysis with an estimated half-life of less than a day in bright sunlight.

Individuals might be exposed to chloropicrin if they live, work, or perform other activities adjacent to structures or fields that are being treated or have recently been treated (bystander exposure). Members of the public can potentially be exposed to chloropicrin in indoor air if they enter a structure following fumigation. Also, air monitoring studies in Kern, Monterey and Santa Cruz counties suggest that chloropicrin exposures to the public are possible from airborne residues that have moved away from a pesticide application. Exposures to chloropicrin in ambient air away from applications are anticipated to be equal to or less than bystander exposures to chloropicrin, as the highest pesticide concentrations in air occur adjacent to an application. Bystander exposure estimates are thus health-protective estimates for such ambient air exposures, and are considered to also represent all ambient air exposures to chloropicrin.

Exposure estimates for individuals next to fields during or following chloropicrin applications were calculated from concentrations based on air dispersion modeling of direct flux measurements during application site monitoring. Short-term exposure estimates for bystanders were as follows: 110,000 micrograms per cubic meter ($\mu g/m^3$, equivalent to 16,000 parts per billion or ppb) for 1-hour exposures, 44,000 $\mu g/m^3$ (6,500 ppb) for 8-hour exposures, and 7,400 $\mu g/m^3$ (1,100 ppb) for 24-hour exposures. Seasonal bystander exposure was estimated at 490 $\mu g/m^3$ (73 ppb), annual exposure was estimated at 160 $\mu g/m^3$ (24 ppb), and the lifetime exposure estimate was 70 $\mu g/m^3$ (10 ppb).

These estimates were for reasonable worst-case exposures associated with 40-acre applications at the maximum allowed application rate of 500 lbs AI/acre. To place these estimates in context (e.g., 500 lbs AI/acre was above the 99th percentile of all chloropicrin applications reported to DPR in the past 5 years), short-term exposures associated with more typical uses were also presented. Assuming the 50th percentile application rate and size of

150 lbs AI/acre and 15 acres treated (values based on applications reported to DPR's Pesticide Use Report), short-term exposure estimates for bystanders adjacent to applications were 30,000 μg/m^3 (4,500 ppb) for 1-hour exposures, 12,000 μg/m^3 (1,800 ppb) for 8-hour exposures, and 2,500 μg/m^3 (370 ppb) for 24-hour exposures. Bystanders ½ mile away from an application at the 50th percentile application rate and size would have exposures of 7,400 μg/m^3 (1,100 ppb) for 1-hour exposures, 3,000 μg/m^3 (450 ppb) for 8-hour exposures, and 250 μg/m^3 (37 ppb) for 24-hour exposures.

Exposures of bystanders adjacent to a structural fumigation with chloropicrin as a warning agent were based on monitoring conducted by the California Air Resources Board during a structural fumigation with chloropicrin as a warning agent. Exposures were estimated at 73 μg/m^3 (11 ppb) for a 1-hour duration, 16 μg/m^3 (2.4 ppb) for an 8-hour exposure, and 6.2 μg/m^3 (0.92 ppb) for a 24-hour exposure. Exposures of bystanders adjacent to enclosed space fumigation with chloropicrin were estimated at 2,400 μg/m^3 (360 ppb) for a 1-hour duration, 680 μg/m^3 (100 ppb) for an 8-hour exposure, and 210 μg/m^3 (31 ppb) for a 24-hour exposure; annual and lifetime exposure estimates were both 1.2 μg/m^3 (0.18 ppb). Indoor air monitoring following fumigation and aeration in the same study was used to estimate exposure of 140 μg/m^3 (21 ppb) for a 24-hour duration for individuals returning to fumigated structures. No seasonal, annual, or lifetime bystander or indoor air exposures from structural fumigation activities are anticipated.

Discussion followed about the potential for exposures from multiple fumigations, such as an individual who is adjacent to both a soil fumigation and a structural fumigation. Although that scenario is not specifically addressed, the exposure assessment has an appendix containing exposure estimates for consecutive days of soil fumigations. This estimate would prove higher concentrations than a structural fumigation conducted near a soil fumigation.

The primary effects observed with short and long-term exposure to chloropicrin are sensory and respiratory irritation. The mechanism of action for chloropicrin is not well understood, but may involve reaction with biological thiols, such as glutathione and hemoglobin. A benchmark concentration (BMC) estimate of 26 ppb based on eye irritation in humans was selected for evaluating 1-hr exposures to chloropicrin. An acute no-observed-effect level (NOEL) of 400 ppb was observed in a rabbit developmental toxicity study based on maternal effects during the first few days of exposure (deaths, red discolored lungs, pulmonary edema, signs of sensory and respiratory irritation, and reduced body weights and food consumption). This NOEL was converted to 8-hr and 24-hr human equivalent concentrations (HECs) of 270 and 90 ppb, respectively. A benchmark analysis was also performed to determine the most sensitive endpoint and species with seasonal and chronic inhalation exposure to chloropicrin in rats and mice. The most sensitive endpoint with sub chronic inhalation exposure was rhinitis in female rats with a BMC of 120 ppb (HEC = 35 ppb). The most sensitive endpoint with chronic inhalation exposure was bronchiectasis in female mice with a

BMC of 59 ppb (HEC = 32 ppb). A slight increase in adenomas and carcinomas was seen on female mice that were significant by trend analysis and pair-wise comparison when survival was taken into consideration. There was also an increase in the multiplicity of these tumors and a shortening of the time-to-tumor with dose. The cancer potency was estimated to range from 1.3 $(mg/kg/day)^{-1}$ for the maximum likelihood estimate to 2.2 $(mg/kg/day)^{-1}$ for the 95th percent upper bound. There was no evidence of increased sensitivity in infants and children based on the developmental and reproductive toxicity studies where the NOELs for fetal or pup effects were equal to or higher than the maternal or parental NOELs. However, direct exposure to neonates was not evaluated.

The risk for non-carcinogenic health effects is expressed as a margin of exposure (MOE) which is the ratio of the HEC from the animal study to the air concentration from air monitoring or modeling. Generally, an MOE of at least 100 is desirable assuming that humans are 10 times more sensitive than animals and that there is a 10-fold variation in the sensitivity of humans. Since sensory irritation was observed in humans, there is no need for interspecies uncertainty factor. Furthermore, this endpoint involves a direct-acting mechanism of toxicity where toxicokinetic variation among individuals is not anticipated. Therefore, a MOE of 3 may be adequate. The negligible risk level for cancer is one in a million or 10^{-6}. California regulations state that if the air concentrations of a pesticide are not 10-fold below the reference concentration that is considered protective of human health, it meets the criteria to be listed as a toxic air contaminant. In other words, if the MOEs are not greater than 1,000 when an animal NOEL is used or greater than 30 for sensory irritation in humans, it meets the criteria for listing. For cancer, if the risk is not less than one in 10 million or 10^{-7}, it would meet the listing criteria. With soil fumigation, all of the MOEs for bystanders were less than their target MOEs and the cancer risk estimates were greater than one in 10^{-7} by orders of magnitude. With structural fumigation, the bystander MOEs were much higher, but still lower than their target MOEs. The MOEs for indoor air following structural fumigation were also less than their target. With enclosed space fumigation, the bystanders MOEs were significantly less than their target MOEs and the carcinogenic risk estimates were significantly greater than 10^{-7}. Offsite air concentrations of chloropicrin clearly meet the criteria for listing it as a toxic air contaminant based on its use for soil fumigation, structural fumigation and enclosed space fumigation.

3. <u>Risk Assessment Prioritization – Joyce Gee, DPR</u>

The "Prioritization and Status of Active Ingredients for Risk Characterization: Report #51" was presented to the Committee. The updated list contains 11 new active added to the list. One active ingredient was placed in high priority, eight in moderate priority and two in low priority for risk assessment initiation. One active ingredient, endosulfan, was removed from the list as DPR completed the risk assessment. The status of several active ingredients

currently in the process has progressed since Report # 50, as indicated by italics in the listing. A copy of Report # 51 can be found at <www.cdpr.ca.gov/docs/risk/priot.pdf>.

4. <u>Impact of U.S EPA's Decision on Field-Use Rodenticides</u> – Victoria Hornbaker, CDFA and Terrell Salmon, UC Cooperative Extension

Victoria Hornbaker reported on the impact of U.S. Environmental Protection Agency's (U.S. EPA's) Reregistration Eligibility Decision (RED) on field-use rodenticides. She stated that U.S. EPA released its Risk Mitigation Decision (RMD) for ten rodenticides on May 28, 2008. The RMD is based on the RED Rodenticide Cluster, July 1998, and comes after 10 years of discussions between U.S. EPA, registrants, and environmental groups. The RMD places certain requirements on the registrants including product phase-outs, labeling changes and packaging size restrictions.

U.S. EPA's 1998 REDs made field use products restricted use. CDFA is concerned that the restricted use designation may restrict the ability of people to continue using these rodenticides. To purchase and use a federally restricted pesticide, a person must at least have a Private Applicator's Certificate. CDFA is concerned about the ability for non-certified applicators (ranchette owners) to get a certificate. Larger commercial farming operations usually have a certified applicator either on staff or hired as a contractor. It is unclear whether small, non-commercial "ranchette" owners will continue to use these rodenticides since they have to take a test to obtain a Private Applicator Certificate. It is imperative that rodenticide use be maintained to help control vector born diseases, decrease the likelihood of untreated properties acting as rodent reservoirs, and to mitigate the economic impact of rodents on the agricultural community.

In response to this need, CDFA is requesting that DPR consider creating a separate exam tailored to rodenticide usage. This will insure that users are well trained and know how to use the baits. CDFA is willing to develop and maintain a kiosk based training/exam in cooperation with DPR.

Terrell P. Salmon, a UC Cooperative Extension Wildlife Specialist, discussed the interactive kiosk developed to give users detailed information to how to control pests, such as ground squirrels. The kiosk is a touch screen computer that contains extensive text and videos on ground squirrel biology and control. Information on pesticide safety and use, endangered species and personal protection when controlling squirrels is also included. The kiosk provides a test taking capability that CDFA believes can be modified to test rodenticide users so that they can obtain a "Private Applicators Certificate."

4. Air Monitoring Network – Randy Segawa, DPR

DPR plans to set up a network to sample ambient air for multiple pesticides in several communities on a regular schedule, over the next five years. DPR will use data gathered to evaluate and improve protective measures against pesticide exposure. The project is expected to begin later this year. DPR discussed pesticide use data for five candidate monitoring regions, and how this data could be used to help select the pesticides and communities for monitoring. PREC members will review this data and make recommendations at the next meeting as to which pesticides DPR should include in the monitoring project and which regions should be selected for monitoring. Additional information is available on DPR's Web site at <http://www.cdpr.ca.gov/docs/emon/airinit/air_network.htm>.

5. Public Comment

No public comments were submitted.

6. Agenda Items for Next Meeting

The next meeting will be held on Thursday, August 20, 2009, in the Sierra Room on the second floor of the Cal/EPA building, located at 1001 I Street, Sacramento, California.

7. Adjourn