Kauai Joint Fact Finding Study Group Final Draft Report

Comments, Concerns and Recommendations

Composition of Study Group

I appreciate your attempts to only involve the citizens of Kauai on the Study Group (SG). However, there are at least two major problems with that approach. First, the members of the SG have limited or no experience with (1) the environmental fate of pesticides, (2) pesticide toxicology, (3) the pesticide registration process, (4) pesticide laws and regulations, or (5) pesticide management. Each of these topics seems to have been ignored yet each is important to understanding the issues. Were the members of the SG provided with sufficient reference material to make a reasonable assessment of both the problems and their resolution?

Secondly, while you involved a long list of people in your acknowledgements (myself included) how and why were these individuals picked to participate in the SG discussions? Why weren't authorities like Drs. Lyle Wong, Po-Yung Lai, and Mike Kawate included as resources? Both Drs. Wong and Lai have working knowledge of the environmental fate of pesticides, the registration process and state and federal pesticide laws and regulations. Both have served as Pesticide Branch Chief, Head of the Plant Industry Division and as UH faculty or administration. Did your Project Team have a strong science background related to pesticide use and how did you define "strong science"? Having a professional degree in one area of science or medicine does not make you a professional in an unrelated field. Were SG members picked to provide a balanced viewpoint or to interpret data and factual information?

I bring up these two points because the SG made many recommendations that will have a major impact on how pesticides will be used and regulated statewide, not just on Kauai.

Agriculture Footprint and Pesticide Use

Only a few conclusions can be made regarding pesticide use per acre per unit time since different sources used different data (my estimates are slightly different than the SGs). Also, since GNP data could have covered more than one year, it's unclear how pounds ai per acre per year (Appendix 2, pages 33-38) was determined.

As you noted, sales records are not equivalent to use records. Use records were measured in terms of active ingredient applied during a particular period. Sales records only include a specific date which may be unrelated to when the product was actually applied.

It is unrealistic to compare pesticide use by the corn seed companies in Hawaii with pesticide use in major corn growing mainland states. Hawaii grows foundation seed; mainland states grow sweet, field, feed, and seed corn. The weather systems, ecology, insect and weed pests, soils, and economics are also different. Foundation seed is a specialty crop and therefore considered to a high cash crop like flowers, fruits and vegetables. Foundation seed production is far less tolerant of pest damage than mainland corn production. The justification for not making the comparison should be clarified.

Environmental Impact

I agree with the conclusions that there is no statistically significant evidence that shows causality between seed company pesticide use and harm to Kauai's flora and fauna. However, about 20 years ago I had a conversation with Dr. Sheila Conant, a highly respected ornithologist and former chair of the University of Hawaii's zoology department, regarding an unusual number of dead owls on Kauai (see map of dead or injured owls found on the Westside, Appendix 2, p 104). I couldn't find a discussion regarding that map, but I believe the map and my conversation with Dr. Conant may be related. She, or her contact on Kauai, may have data about owl deaths on Kauai. However, those particular deaths preceded the presence of the seed companies on Kauai. I don't think that pesticide residues or disease organism were ever linked to owl deaths.

Richard Brock, a UH faculty member, was asked by the Waikaloa Resort in Kona to monitor pesticide use on their golf courses which included anchialine ponds. Although there was a small spill of diazinon near the ponds, there was no observable impact on a small, relatively rare shrimp living in the ponds. That incident probably occurred in the late 1980s or early 1990s when we were surveying golf course pesticide use. Incidentally, I don't think that survey was referenced in your study.

Pesticide drift has always been a concern of sugarcane companies whose fields are located close to residential areas or other crops. A Maui farmer sought help from the UH department of environmental biochemistry and HDOA to resolve a concern that drift from HC&S caused damage to his papaya. Numerous papaya samples were collected and analyzed for atrazine. Although atrazine has a significant half life, nothing was found. We brought in two highly experienced faculty from UC-Davis to assist in our investigation. Again, nothing related to pesticide drift was found. Our own investigation concluded that the grower caused his own problem by refusing to follow standard papaya production practices. I bring this up because we know that pesticide drift can occur and we know that some growers refuse to admit they may be responsible for their own problems.

I'm unclear as to why the discussion on neonicotinoides was included in the report as they are not classified as RUPs and have low toxicity to birds, fish and mammals. However, as the SG noted they are highly toxic to bees. Bee colony collapse disorder (CCD) is a serious problem. It is important to note that CCD has been linked to many factors including viruses, mites, stress during transportation, lack of food sources, in addition to exposure to insecticides such as neonicotinoides. I couldn't find a reference which linked neonicotinoides to the seed companies. I question whether the bee monitoring recommendation should be included in the final report.

Health Impacts

The JFF report identified two major problems in determining if pesticide use was linked to health; small sample sizes (populations) and lack of reliable and accurate health data.

Was there any attempt to review data from Agent Orange research conducted on Kauai during the Vietnam War? Agent Orange is a relatively persistent herbicide. The Veterans Administration has

determined that military personnel exposed to Agent Orange are eligible for treatment for a wide variety of illnesses including PTSD.

I am not an epidemiologist but the conclusions reached by the SG seem reasonable and cautious. I would expect that more data will become available when DOH reports are completed. Those reports will be critical to your final recommendations.

Regulations and Oversight

All pesticides sold or distributed in the United States must be registered by EPA. Their decisions are based on scientifically sound science showing that a product and its active ingredient can be used without posing unreasonable risks to people or the environment. EPA follows the precautionary principle by including a 100 to 1000 fold safety factor in establishing food tolerances. EPA classifies pesticides based on a variety of factors, e.g., human toxicity (acute and chronic), environmental fate, and toxicity to non-target organisms.

The DOA may register certain products for Special Local Needs and for approving Experimental Use Permits. DOA is also responsible for enforcing pesticide laws and regulations and for licensing the sale of pesticide products.

Relative to California, Hawaii's Pesticide Branch is greatly understaffed. Several states have attempted to duplicate California's pesticide regulatory framework with little success despite investing considerable financial resources.

Waimea Canyon Middle School

The 2006 and 2008 incidents at the Waimea Canyon Middle School were a major factor in the decision to collect information about seed companies and Kauai Coffee Company pesticide use. Although both atrazine and chlorpyrifos were detected, the levels were below EPA's No Observable Effect Level.

Air sampling at WCMS by Dr. Qing Li in 2012-3 suggested that the incidents may have been due to the presence of MITC (which is not used by the corn seed companies). However, MITC is found in stinkweed which grows near WCMS. It was often found in sugarcane fields and may have been more common in the past.

Milton Clark, in an appended commentary to the JFF report, rejected the possibility that levels of MITC found in stinkweed could have caused the WCMS incidents. I believe his conclusion was based on the fact that the amount of MITC found in air samples was below levels detectable by humans. Clark offers no explanation for the source of MITC except to assure the SC that the incidents could not have been related to stinkweed.

I offer the following for your consideration. The low levels detected by Dr. Li were found several years after the WCMS incidents. At the time when the incidents occurred, stinkweed may have been more common and found closer to WCMS. Could stinkweed have been removed just prior to the incidents by

grounds keepers, DOT, or parks and playgrounds employees? Could the removal process (cutting or crushing) have stimulated the release of MITC?

Is it possible that the odor came from MITC used to treat lumber, telephone poles, or sewer lines in the vicinity of the school? MITC is also a breakdown product of metam sodium, often used to fumigate soil. However, there are no records that metam sodium was used on Kauai. It may have been used many years ago in pineapple production. Is metam sodium a legacy pesticide? Did someone dispose of "old" metam sodium near the school or close enough to allow it to drift to the school?

Clark postulated that the levels of MITC collected in the air samples were below levels that would have caused headache, dizziness, nausea, cramps, and vomiting. These symptoms may also be associated with food poisoning, contaminated drinking water, exposure to petroleum, hydrocarbon solvents or tar. Did health providers collect vomit or diarrhea samples? Were other individuals living or working near the school affected?

Finally, if the levels of MITC detected by Li were below observable effects levels, were the symptoms due to mass hysteria?

Recommendations

The focus of most of the recommendations is on government agencies. This may seem appropriate given that the SG did not implicate pesticides used by seed companies to adverse environmental or human health impacts. Certified pesticide applicators appear to be well aware of how to read labels, apply pesticide products and understand Hawaii pesticide laws and regulations. This is a positive reflection on the seed companies' pesticide management program and the DOA's pesticide applicator certification program. (Based on my limited understanding, the seed company's response to a recent chlorpyrifos early reentry incident was handled responsibly.)

Not all pesticide applicators are as well trained as those who work for seed companies. Many incidents are caused by homeowners and limited-English speaking applicators, many of whom cannot read or understand pesticide labels. Label interpretation requires an understanding of how pesticides are used. This report is an opportunity for the SG to recommend support for an effective pesticide safety education program that supports human and environmental safety objectives. All applicators need to (1) understand how to minimize pesticide use through appropriate integrated pest management programs, (2) know how to calculate dosage/rates, (3) calibrate equipment, (4) manage drift, (5) store and dispose of pesticides, and (6) understand Hawaii's pesticide laws and regulations. Compliance investigations could be used to evaluate the effectiveness of pesticide safety training programs. Compliance investigations could be included as part of a recommendation to create a pesticide use surveillance program.

I agree with the need to change the composition and responsibilities of the Pesticide Advisory Committee. Determining the "chronicity" of pesticides used in Hawaii is the responsibility of EPA as defined in the oft amended Federal Insecticide, Fungicide, and Rodenticide Act and the Federal Food, Drug, and Cosmetic Act.

It's unclear how the state might initiate a robust pilot project to monitor drift with "small matching funds". I think applicators can be taught how weather conditions, nozzles and nozzle pressure and placement affect drift. Creating buffer and windbreak policies seems appropriate and is now included in many pesticide labels. Except in a few cases it may be hard to justify the cost of a drift monitoring program.

I agree with the SG's recommendation to establish a rapid response protocol for unexpected incidents and their recommendation to hire additional inspectors as needed.

The use of a licensing fee for every pesticide product sold in Hawaii if the fees so generated are limited to the DOA's pesticide programs. Those fees could be used to support research, educational programs, enforcement and other initiatives deemed necessary by the DOA. Let the DOA establish the fee structure.

Summary and Additional Comments

My major concern is the composition of the SG and the failure to include articulate and knowledgeable experts like Drs. Lyle Wong and Po-Yung Lai as consultants or volunteers. Pesticide investigations can be highly complex and both Wong and Lai have the requisite experience, knowledge, and understanding to address questions and concerns of the SG. Without their input and guidance the SG may be unaware of how pesticides are managed, where and why environmental and human health impacts are most likely to occur, and what changes might be needed to improve Hawaii's pesticide laws and regulations, inspection process, educational programs, licensing and registration policies and programs.

I am concerned about the appearance of bias. First, because of the lack of input from individuals like Drs. Wong and Lai, and second because of the appended comments from Milton Clark regarding the origin of MITC. (At the very least, Dr. Li should have been asked to respond to Clark's comments.)

The SG needs to complete its goal of bringing together available information on pesticide usage by corn seed companies and Hawaii Coffee Company. At least some of the data on health studies have been pending since July 2015. Is there any expectation that missing data can be included in the final report?

The SG needs to work with state agencies and others to help prioritize recommendations included in the report, keeping in mind which ones are most important not just to Kauai but to the entire state.

A bee monitoring should be delayed, not because bees aren't important, but because the scope of the problem is still being investigated by USDA, EPA and others. A bee monitoring program should reflect the findings of those agencies and other researchers. To go in the wrong direction would be a waste of time, and limited financial and personnel resources.

I support the recommendation to revise state pesticide laws and regulations, particularly the composition and responsibilities of the Pesticide Advisory Committee. I also support additional resources for the Pesticide Branch. The DOA should work with the College of Tropical Agriculture and Human Resources to develop a public education program, a pesticide applicator training program for immigrant farmers and other non-English proficient farmers. Both FIFRA and the Hawaii State Plan for

Certification of Pesticide Applicators identify land grant university extension service as being responsible for applicator education. A cooperative agreement between the DOA and UH Cooperative Extension Service should be formally agreed to. A second cooperative agreement should involve support for research programs of importance to DOA.

Lastly, recheck the reference section. Some references are missing and some I couldn't find in the text.