ALMOND HULLERS & PROCESSORS ASSOCIATION

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Public Workshop
Eastern San Joaquin General Order
Deadline: 6/1/16 by 12:00 noon

June 1, 2015

Ms. Jeanine Townsend
Clerk to the Board
State Water Resources Control Board
1001 I Street, 24th Floor [95814]
P.O. Box 100
Sacramento, CA 95812-0100

Re: SWB proposed amendments to the CVRWB's Irrigated Lands Regulatory Program

Dear Ms. Townsend:

We are submitting comments on behalf of the California Almond industry regarding the proposed changes by the State Water Board to the Central Valley Regional Water Board's Irrigated Lands Regulatory as issued for the East San Joaquin Water Quality Coalition. The Almond Hullers and Processors Association (soon to be Almond Alliance) represents almond growers, huller/shellers and processors in California.

In short, a number of the proposed changes are misguided and based on a misinterpretation of the Agriculture Expert Committee on Nitrogen Management's advice. Furthermore, the SWB's proposal doesn't account for the long and hard argued work by all parties, nor does it account for the reality that agriculture is not an engineered system that can tidily be regulated with the traditional tools used for implementing such regulations. Agriculture functions within a complex biological, geological, climate/weather environment and provides an fundamental need for society: food and fiber.

- Proposal: Remove the distinction between high and low vulnerability areas.

Removing the distinction between high and low vulnerability areas loses sight of what good regulation is about – regulating where the effort makes a difference to the environment. The argument used by the SWB relies on a misinterpretation of the report by the Agriculture Expert Committee. The committee was tasked to review what it takes for good nitrogen management by farmers. That is a different question to what makes good regulations. So, with a focus on agronomics, the committee's advice is useful to growers and provides guidance to the SWB or CVRWB what factors to take into consideration when developing regulations to minimize the potential for nitrate leaching. However, if implementing all of the proposed measures will not make a difference in water quality because of the nature of the geology or other factors in low risk areas, than the effort is a waste of government resources, along with waste of grower resources. We urge the SWB to stick with the current definition of high and low vulnerability areas as the current definition is adequately conservative and includes all of the key regions where efforts will over time make a difference and not waste resources.

- Proposal: Instead of allowing the N use data and practice data to be aggregated by the Water Quality Coalitions, that the data be reported to the Central Valley Regional Water Board.

The State Water Board has not considered the full cost and resources needed to compile and aggregate the tremendous amount of data collected when a program is based on use of practices rather than actual

measurements. The CVRWB would need to hire some 50 + additional staffers to manage the data flow. Again the question to ask is whether this proposed change in the regulation improves the quality of ground water. In short it does not. The Coalitions are in a much better position to work with their grower members where improvements seem to be necessary based on the data submitted. It is through that interaction and education that the Coalitions have already successfully improved water quality, as evidenced by the reduction in detection of certain pesticides in surface water. The SWB is concerned that the CVRWB doesn't have access to the grower data, however the current regulation allows the CVRWB to request data whether for a specific grower or location at any time from the Coalition. So, the CVRWB does have access to the raw data. We fail to see how this proposed change will improve ground water quality beyond what the current regulation will already achieve over time.

- Proposal: CVRWB is directed to develop numeric ratios for each crop for N on/N removed for regulatory purposes after several years of data
- That growers report N applied along with N removed, which means yields.
  - Focus will be on 3 year averages of N applied/N removed with harvested crop.
  - If exceed average by 1 standard deviation, then must undergo special training in N management

Again, the SWB is applying legal standards developed for engineered systems and is not acknowledging that agriculture is not a simple system. Thus, we think that the use of Nitrogen Use Efficiency, the ratio of N applied to the amount of N removed with the harvested crop (what leaves the field, not what is sold) is a good metric to assess the efficiencies of a grower's N applications. However, SWB assumption that the CVRWB can come up with a metric for each crop that works for all situations is again a major oversimplification of the realities of the agronomic systems. The almond growers through the Almond Board of California has invested significantly in research on both the N needs and when needed by almonds. For example, the nitrogen use efficiencies are dependent on the type of irrigation systems. Irrigation systems are a significant investment for perennial crop growers and thus are not changed quickly once an orchard/vineyard is established. So, the ratio that a grower with a microirrigation system can obtain is quite different from that of a grower with (or another orchard by the same grower) that is still using flood irrigation or a solid set irrigation system. Thus, the SWB assumption that can come up with one nitrogen ratio for each crop is naïve.

This is where relying on the Water Quality Coalitions to work with growers at a local level makes much more sense than to go the strictly regulatory/numeric regulatory route. The Coalitions can assess at a local level which growers are doing as well as they can given their circumstances and who would benefit from additional education.

Also, it is clear that the SWB is aiming ultimately for numeric standards for regulatory purposes once enough data is together. Again, agriculture doesn't lend itself to simple numeric standards when dealing the complexity of variability from year to year in crop demand or crops growing, different soils, the uncertainty what the soil microbes will do with the N applied, different weather or other stress conditions, etc etc.

As noted the Almond growers have funded over $500,000 in research on how best to apply N in almonds over 6 years. Most of that work was with Patrick Brown's group from UC-Davis looking at the whole question of how much N on vs N removed with the harvested crops, as well as when the trees take up N from the soil, as well as improvements to leaf sampling to allow a growers to refine the N needed mid-growing season. If include research to assess N movement with water in the soil and tree, then we spent: $800,000 over 6 years. In addition, the Almond Board of California has funded the development of a Nitrogen Budgeting tool available to all almond growers and funds maintenance of it. It also doesn't include funding for these efforts from CDFA-FREP grants as well as a USDA –Specialty Crop Research Initiative grant. Thus, serious thought needs to be given how the research needed to obtain the ratio desired by the SWB will be funded and whether there is even the research capacity within California to actually do it for all the diverse crops grown in the Central Valley.

Coming back to the theme that the SWB doesn't take into account the messiness of working in a agricultural system, one thing that we learned from the research is that mature trees store N not just overwinter but can use N internally when deprived of N. The inadequate N treatment took 2 years to

show stress effects on the trees because the trees were using N from internal sources, in essence eating themselves. So 3 year running averages are not likely appropriate for perennial cropping systems until we better understand when the N applied is actually too low for tree health.

Furthermore, there is still very limited data on the N needs when growing the trees, that is the first 1-10 years of growing almonds (longer for pistachios or walnuts) in the orchard. Here the ratio is likely changing from year to year as the orchard grows in size. How will that be address with a simple ratio of N on vs N off by crop?

And the Almond Board is currently funding research on the use of organic matter amendments such as composted manure, composted green waste, cover crops, etc., Currently annual funding is around $300,000 and will take several years due to the nature of soils and trees. One of the questions is simply to better understand the impacts of such materials on both N available from the materials and when, as well possible impacts on N fertilizer use efficiency and where kept in the soil. Coming back to the complexity of the agronomic systems that make simple engineering based regulatory thinking

For the 2014-2015 crop year, the farm gate value of California Almonds was around $4.5 billion. Almonds are California's top export crop and the largest single United States specialty crop exported by value. There are currently an estimated 890,000 bearing acres of almonds, with an additional 150,000 acres of non-bearing orchards due to come into full production over the next 3-5 years. Almonds, along with other tree nuts, are valued for their high protein content in addition to other nutrients. That protein content means that significant N fertilization is needed to provide the nutritious, healthy food valued by many and critical for those who prefer to subsist from a plant-only based diet.

Thus, we urge the SWB to enter constructive dialogue with the CVRWB, the ag groups, the research community, and others to assess whether any changes are really needed and if yes how best to achieve the goal of improved/protect ground water quality. We would argue that the current the current IRLP by the CVRWB has found a balanced way to achieve those goals as efficiently as possible given the complexity of the agronomic systems.

Sincerely,

Gabriele Ludwig, Ph.D.
Consultant to AHPA

CC: Kelly Covello, APHA

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April 30, 2015

OPP Docket
Environmental Protection Agency Docket Center (EPA/DC) (28221T)
1200 Pennsylvania Avenue NW
Washington, DC 20460-0001

RE: Chlorpyrifos Registration Review, Docket EPA-HQ-OPP-2008-0850

To Whom It May Concern:

Revised Human Risk Assessment for chlorpyrifos published on December 29, 2014.

The Almond Hullers & Processors Association (AHPA) is an association representing the California Almond industry and is organized to promote the interests of its members. Our members represent over 90% of the California Almond industry based on volume.

The Almond Board (ABC) is a grower-enacted Federal Marketing Order under the supervision of the United States Department of Agriculture representing over 6,000 almond growers and 100+ almond handlers. The Board engages in production, nutrition and market research to support domestic and international markets. Research data and factual industry information generated by the ABC has been incorporated into these comments.

Almonds are California's top export crop and the largest single United States specialty crop exported by value. For the 2013-2014 crop year, California produced $5.85 billion farm gate of almonds on 860,000 bearing acres of orchards. There are currently an additional 100,000 acres of non-bearing orchards due to come into full production in the next 3-5 years. Since about 70% of the crop is exported, it is critically important that almonds are in compliance with quality and international food safety standards, including maximum residue levels (MRLs) established by importing countries.

Pest management is a critical component of almond production, and the ABC has funded research since 1973 to provide growers with science-based, integrated pest management (IPM) solutions. Since the 1980's growers have made significant advances in sampling, decision-making, and alternative management practices to reduce use of broad spectrum insecticides. The almond production system was one of the first to face increased regulation of organophosphates to prevent offsite movement during dormant applications. Industry supported research has resulted in the reduction of organophosphates during winter dormancy by almost 85%. In 2009, the California Almond Sustainability Program was established by the ABC to better understand the practices of growers related to water use, water quality, air quality, energy, nutrient management, pest management and bee health as a part of a continuous improvement approach to agricultural practices.

Chlorpyrifos has been an important product in IPM programs in California and the almond industry continually strives to add to the array of alternative products and best management practices. Throughout 2014, almonds participated as one of four California commodities for an in-depth discussion on chlorpyrifos use and stewardship. The project, *Identifying and Managing Critical Uses of Chlorpyrifos in Alfalfa, Almonds, Citrus and Cotton Project,* was developed as a multi-year effort to identify the pest management needs and best practices for use of chlorpyrifos in conjunction with the California Department of Pesticide Regulation (CDPR) and the University of California Statewide Integrated Pest Management Program. The full report for this project is posted on the UC IPM websites at http://www.ipm.ucdavis.edu/IPMPROJECT/CDPR_Chlorpyrifos_critical_use_report.pdf

The Almond Crop Team reviewed pest species for which chlorpyrifos is considered a highly effective product for pest management. Facilitated discussions allowed the groups to characterize what uses of chlorpyrifos were critical, i.e., key pests for which there are no or few alternatives to chlorpyrifos, important pests for which there are alternatives and finally, occasional pests for which it is important to retain access to chlorpyrifos as a part of the IPM toolbox. Alternatives to chlorpyrifos were evaluated in terms of efficacy, MRLs, cost, resistance management issues, impacts on beneficial species or other attributes for consideration in decision-making.

The Almond Crop Team identified 12 pests for which chlorpyrifos is considered of vital importance to the industry. Of these, leaffooted bugs and stink bugs emerged as “critical use” pests for which there are no or very few desirable alternatives to chlorpyrifos. It should be noted that the potential alternatives are neonicotinoid insecticides, which have their own set of issues at the moment. The remaining species either had alternative products available, or, the species were present only occasionally; this categorization did not lessen the importance of chlorpyrifos as an important tactic for these species as a part of local IPM programs.

The potential loss or over-regulation of chlorpyrifos clearly puts the almond industry at risk until similar, efficacious products with international MRLs are registered. Since such a high proportion of the almond crop is marketed to export markets, the availability of this tool puts these valuable markets in jeopardy with severe potential economic ramifications at the grower community and state levels.

The California Almond industry is extremely concerned at the revised risk assessment published in late 2014 for both practical and policy reasons. For example, we see this direction in regulatory decision-making to expand the dietary risk assessment to the worker exposure assessment use to go well beyond the intent of the Food Quality Protection Act.

We support the stated goals of the Administration to be science-based and transparent in establishing regulations. We strongly believe, however, that the Agency must consider their process to evaluate the validity, completeness and reliability of the available data in modifying use patterns for products such as chlorpyrifos.

We have reviewed and considered the practical and policy implications of the December 2014 document and provide the following comments and questions for the Agency.

As an example of using the latest scientific data or methodology, EPA incorporated available pharmacokinetic data in their review of the use of the standard uncertainty factors. We appreciate the Agency's working through the data and applying pharmacokinetic approaches.

<u>Major Concerns with the Revised Human Health Risk Assessment for Chlorpyrifos</u>

- Expansion of the use of the FQPA safety factor from the dietary risk assessment to the worker exposure assessment.

- Unsubstantiated reinstatement of FQPA 10X Safety Factor from the 2011 assessment.

- Use of epidemiological studies when animal studies clearly contradict adding a 10x FQPA safety factor.

Request for Elaboration on Specific Points in the Assessment

We request the Agency provide detailed responses to the following questions about the Revised Human Health Risk Assessment:

- Why was the decision made to reinstate the FQPA Safety Factor (SF) to a full 10X from the 1X SF previously established in its 2011 assessment?

- What are the criteria for determination of the value of epidemiological studies in the EPA risk assessment process? Currently, given the plethora of epidemiological studies with various claims in the published literature, clear criteria for when a study (studies) rise to the quality for inclusion are needed, and that is not substantiated in this case.

- What is the context of the epidemiology studies being used?

- How does EPA decide which toxicological data submitted will be put in relation to any data incorporated from the epidemiological studies? Was the extensive data provided by chlorpyrifos manufacturers incorporated into the review process?

- What are the drivers that influence the apparent differences in risk for ground boom applications versus airblast applications?

- Why is modeling data used when extensive real-world monitoring data for chlorpyrifos is available?

We understand that EPA's evaluations must be based on validated test data or other significant scientific evidence, including full access to underlying data. We are perplexed, however, that the Agency continues to use modeling for drinking water exposure rather than use of real world measurements and other field validated information when it is available.

Over the last ten years, California Almond growers have been paying for surface water quality monitoring under the Irrigated Lands Regulatory Program (ILRP). There have been detects of chlorpyrifos in surface water in the Central Valley but the ILRP has mechanisms for addressing it that have been successful in reducing the rates of detections. Thus, it is extremely frustrating when this resource of real life surface water chlorpyrifos concentration data and the stewardship effort is not recognized or fully utilized by the Agency.

Currently, almost no crops pass the drinking water assessment because of the assumptions EPA makes in determining the potential for a pesticide to be in drinking water. EPA has numerous conservative assumptions built into the current drinking water exposure assessment, which are not readily apparent from the risk assessment.

- The farm pond model underlying the drinking water assessment is highly conservative for drinking water, as that concentrated a location for run off is not typical for drinking water sources.

- For the spray drift calculations, EPA assumes that airblast applications are made to young, dormant trees, meaning there is almost no tree present to intercept the spray – very much the worst case scenario. Again, for almonds, dormant, non-bearing trees are not the time for

applying chlorpyrifos, as most reasons for application are to protect the fruit, not the tree itself. EPA doesn't include a spray drift calculation for a more typical application to at least a bearing dormant orchard, or to a bearing orchard with leaves for comparison.

- EPA doesn't seem to be questioning the modeled results compared to what real life experience has been. When the model predicts such an extreme level of risk (grapes supposedly cause a risk 1325 times above the acceptable level by themselves!!!), that doesn't jive with the sense of risk in reality, then some questions need to be asked about the assumptions going into the modelling effort. A similar issue occurred with the first organophosphate risk assessments conducted under the criteria of the FQPA in the late 1990's. When EPA opened up both their assumptions and methods for discussions, much more realistic risk assessments were developed.

- The levels detected in California are nowhere near the levels purportedly present based on the assumptions and models used by EPA to calculate drinking water concentrations. Thus, we have serious doubts about basing risk mitigation on seriously flawed calculations. We note that in the case of chlorpyrifos, there are a lot of data for water concentrations from across the country, and to dismiss that reality is not doing justice to the scientific data available for the risk assessment.

- As a side note, we request that EPA initiate review of any of the data on ways to reduce spray drift from airblast sprayers. This work has occurred for ground boom applications but not for airblast sprayers. There is published literature on the efficacy of "smart sprayers" to reduce drift and ground deposition; there are also studies on the efficacy of various nozzles in reducing drift. We urge EPA to initiate review immediately to see whether credits for certain sprayer set ups can be given.

The AHPA and the ABC remain available to provide the Agency with any further information needed during this phase of regulatory decision-making regarding chlorpyrifos.

Sincerely,

Gabriele Ludwig, Ph.D.
Consultant to AHPA