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Via Email: [AgOrder@waterboards.ca.gov](mailto:AgOrder@waterboards.ca.gov)

Howard Kolb, Agricultural Order Project Lead Staff  
California Regional Water Quality Control Board  
Central Coast Region  
895 Aerovista Place, Suite 101  
San Luis Obispo, CA. 93401-7906

**Re: Ag Order Comment, Central Coast Ag Waiver**

Dear Mr. Kolb:

The following comments are provided by Dow AgroSciences, a manufacturer and registrant of crop protection tools, including chlorpyrifos. Chlorpyrifos is an important pest management tool of choice for coastal agriculture for the control of soil-borne pests such as root maggots on broccoli and cauliflower and a valuable component of Integrated Pest Management programs. Thus any proposed regulations should balance the need for this pest management tool with efforts to address adverse impacts on surface water quality. The Central Coast draft waiver is a very lengthy document with multiple components including an aggressive Time Schedule of Milestone Compliance Dates. These extensive materials are totally new regulatory concepts deserving of more thorough review.

Dow AgroSciences responds only to the draft waiver itself and the monitoring portions of the proposed regulatory package. While Dow AgroSciences agrees with the focus placed on managing irrigation water runoff from farms that transport farm inputs, we disagree with the prioritization of criteria in the proposed Tiers, the primary focus on chlorpyrifos and diazinon use alone as a criterion for categorization in the proposed scheme, and the use of edge of field sampling to predict ecological impacts. Dow AgroSciences suggests a more holistic systems approach to managing water quality that equally addresses all farm input components. Experience in other watersheds has shown that overly conservative restrictions on one group of pest management compounds, as exemplified by the focus on chlorpyrifos in this draft, only shifts the issues to another group of compounds without addressing the root cause.

## **I. The proposed tiered system establishes criteria that fail to address the core issues.**

1. The proposed waiver covers all irrigated lands growing commercial crops and expressly addresses all tail water discharges to surface waters.

All commercial farm operations will have to file a new Notice of Intent (NOI) to operate consistent with the waiver requirements within 30 days of adoption. These extensive NOIs will, among other purposes, characterize the farm operation and thereby place the lands into one of three "Tiers" based on four factors which are alleged to determine water quality. This new regulatory system and these four factors are of particular concern to Dow AgroSciences given that these criteria involve 1) size of operation, 2) crop types, 3) proximity to water courses, and 4) whether the operator uses chlorpyrifos or diazinon.

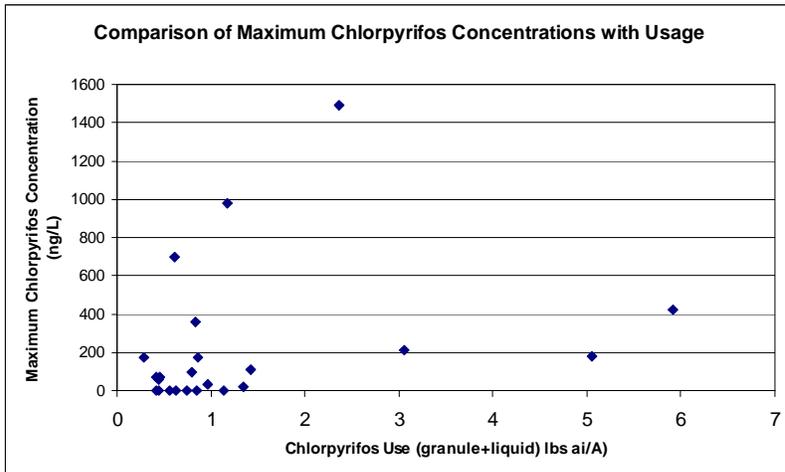
The size of the farm operation and the use of chlorpyrifos should not automatically subject the farm to the unnecessarily strict Tier 3 regulatory regime. Number of acres or use of a particular agricultural pest management tool do not necessarily equate to a discharge problem. The regulatory criteria should instead focus on identified discharge problems. The larger size of operations may actually increase the ability of a farm operation to implement management strategies to eliminate discharge. Similarly, good farm practices coupled with irrigation controls can avoid problems even if the farm responsibly relies on chlorpyrifos, or any other crop protection pesticide, for effective pest management.

Use alone is not a predictor of surface water toxicity and should not be a specific criterion for the Tiered system. As part of the CA Department of Pesticide Regulations' ongoing Reevaluation of Pesticide Products Containing Chlorpyrifos related to surface water concerns, Central Coastal Valley surface water exceedances as a function of chlorpyrifos use per delineated watershed were analyzed and found no significant correlation. Figure 1 is a scatter plot that shows a cluster of low detections with high chlorpyrifos use and high detections with low chlorpyrifos use. Surface water exceedances can occur independent of the amount of use. Regression analysis with total use as the independent variable and maximum reported concentration as the dependent variable indicated only a small amount of the variation in concentrations could be explained by use intensity. R-squared values were only 0.0516, 0.0570, and 0.126 for granular, liquid, and the sum of granular and liquid formulations, respectively<sup>1</sup>.

Even though the cropping patterns and pesticide use scenarios with chlorpyrifos are very different in the San Joaquin Valley, analysis in that area also corroborates this lack of relationship between amount of use and exceedances.

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<sup>1</sup> Bret and Poletika. 2009. Historical Trend Analysis and Field Investigations of Chlorpyrifos Exceedances in Surface Water. Dow AgroSciences report to CA DPR, 30 April 2009. 119pp.



**Figure 1. Scatter plot comparison of maximum chlorpyrifos concentrations with usage.**

These data reinforce that the mere “use” of a pesticide should not be a distinguishing criteria for onerous restrictions and conditions that do not directly address the issue of concern, but do likely contribute to changes and disruptions of Integrated Pest Management programs.

Any regulatory programs should focus on fields that actually contribute to drainage problems and reasonable characterizations of ecological impairment – not those selected by farm size or the use of chlorpyrifos, which may actually not be responsible for problems.

Even though the waiver advances the notion that "good farmers" could qualify for Tier 1 and therefore have only moderate regulatory interference to their operations, the criteria are actually set up to make this a false premise as all farms which are over 1,000 acres or if they need to use the important pesticides chlorpyrifos or diazinon, or if they are within 1000 feet of a watercourse, they are thrust to Tier 3. The tiering structure is arbitrary, and would result in unnecessary and costly changes to farm operations, requiring growers to either reduce operation sizes or switch to less effective pest management strategies.

This arbitrary system also does not allow a farmer to identify those portions of his operations that a) do not discharge at all, b) may discharge, but do not contribute to exceedance issues, and c) may have the potential of contributing to water quality issues. This is a major shortcoming of this draft and should be modified.

2. The proposed staff waiver requires farmers to have 15 hours of water quality education within the first 18 months. Dow AgroSciences supports continuing education for water quality issues, and has been a leader in product stewardship and grower outreach and education. In the past few years, Dow AgroSciences has made on-site visits to numerous farms representing a majority of the vegetable acreage in the Coastal

Valleys, met with individual growers, grower groups, and professional crop advisors, and supported BMP research, education, and outreach. We look forward to continuing our support for grower education.

3. The waiver also requires each farm to have an individual farm water management plan identifying the implementation of management practices in five areas: 1) irrigation management, 2) pesticide management, 3) nutrient management, 4) sediment control, and 5) aquatic habitat protection. It is Dow AgroSciences' position that the focus should be management of irrigation run-off as the key transport mechanism for multiple stressors of concern including pesticides, nutrients, and sediment. The pesticide component of this effort should be informed by comprehensive analyses conducted by CA DPR for pesticides such as chlorpyrifos, diazinon, and pyrethroids, as well as the realities of crop production and the need for effective pest management.

4. Growers are compelled to select either individual farm monitoring or participate in a regional cooperative monitoring program. Dow AgroSciences' experience with other water monitoring efforts throughout the state and elsewhere compels our support of an organized region-wide monitoring program. That approach provides the benefit of a region-wide data set which allows the assessment of the actual water body as well as allowing tracking back to identify source problems. While voluntary individual farm monitoring can be a useful diagnostic self-assessment tool for growers, such assessments may entail in-field or edge of field monitoring and therefore should not be used for regulatory compliance. Further, a scatter of data taken by individual farmers inconsistent with monitoring protocols will not assess the water body, will not be part of a descriptive monitoring database, and will not be scientifically useful.

This concern also relates to the unreasonable requirement that all Tier 3 farms would be required to do on-farm monitoring, and in drains within a week of chlorpyrifos use. Analyses that focus solely on one chemical obviously overlook and would fail to identify other sources of surface water toxicity, particularly if growers simply shift products used.

## **II. The requirement for edge of field monitoring overestimates ecological impacts and is inconsistent with established water quality management programs.**

1. Water quality standards for the protection of aquatic life established for chlorpyrifos and diazinon and expressed as chemical concentrations are applicable only to surface water aquatic life habitat receiving discharge, not the discharge itself. While edge of field monitoring may be useful for individual farmers to assess their own management practices, it is not appropriate for assessing water quality.

As to the proposed provisions on pesticides, we understand the derivation of the unnecessarily low limit on chlorpyrifos of 0.025 µg/l and the use of *Ceriodaphnia dubia* as a standard US EPA toxicity test species. Table 2 in the MRP sets forth the reporting limit and Table 4A identifies the EPA methodology for chlorpyrifos. The very low limit

on chlorpyrifos was determined according to the 1985 US EPA guidelines<sup>2</sup> that recognize some perturbation of aquatic systems is acceptable. Therefore this limit should be interpreted as a conservative protection level but not a level that predicts the occurrence of adverse effects if exceeded. There are multiple lines of evidence indicating this predictive value is considerably higher than 0.025 µg/l. A reasonable alternative of 0.10 µg/l has been proposed, taking into account all available information<sup>3</sup>.

Thus, the draft waiver takes a conservative criterion for water quality and compounds the conservatism by applying it to edge of field discharge which is not representative of aquatic life habitat.

2. The waiver has several provisions relative to aquatic habitat, riparian areas, and vegetative cover. Dow AgroSciences and others have researched, supported, and promoted the use of vegetative buffers and their importance in controlling residue run off<sup>4,5</sup>. Therefore, we support reasonable efforts to provide for such mitigation strategies. However, this waiver should be amended to reward and encourage such buffer vegetation rather than making it a regulatory requirement. Considerable research has also been conducted on the use of flocculating agents such as polyacrylamide (PAM) and degradative enzymes such as Landguard™ that can reduce chlorpyrifos levels in irrigation water run-off. The ability to use these mitigation tools should be an important component of mitigation measures permitted under the waiver.

3. The milestones advanced in the waiver are important, but in our view, are unrealistic. Agriculture cannot meet all water quality standards in such a short time frame (pesticides in two years, sediment in three years). Since the water quality concerns of the Central Coastal Valleys were brought to our attention, Dow AgroSciences has been supporting continued monitoring to develop a consistent database for historical comparisons, investigated use patterns and application practices, and supported educational outreach and stewardship efforts. These efforts have begun to show success. In areas where four or more years of monitoring data are available from the same stations, 10 of 13 sites show improvements in reductions in chlorpyrifos levels. Additional improvements need to be made, including continued efforts to create awareness as well as development and adoption of innovative mitigation measures consistent with Integrated Pest Management goals. A reasonable and pragmatic approach should be supportive of such goals without adversely impacting the agricultural economy of the region.

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<sup>2</sup> Stephan, C.E., D.I. Mount, D.J. Hansen, J.H. Gentile, G.A. Chapman, and W.A. Brungs. 1985. Guidelines for Deriving Numerical National Water Quality Criteria for the Protection of Aquatic Organisms and Their Uses. United States Environmental Protection Agency. PB85-227049.

<sup>3</sup> Giesy, J.P., K.R. Solomon, J.R. Coates, K.R. Dixon, J.M. Giddings and E.E. Kenega. 1999. Chlorpyrifos: Ecological Risk Assessment in North American Aquatic Environments. *Rev Environ Contam Toxicol* 160: 1-129.

<sup>4</sup> Poletika, N.N., P.N. Coody, G.A. Fox, G.J. Sabbagh, S.C. Dolder, and J. White. 2009. Chlorpyrifos and Atrazine Removal from Runoff by Vegetated Filter Strips: Experiments and Predictive Modeling. *J. Environ. Qual.* 38:1042-1052.

<sup>5</sup> USDA NRCS. 2000. Conservation Buffers to Reduce Pesticide Losses. March 2004. 25 pp.

### **III. Summary**

Chlorpyrifos is an important pest management tool for Coastal growers. Use of an individual pesticide should not be a criterion for water quality regulation within the context of this waiver. Rather, irrigation management practices are necessary to address transport mechanisms responsible for pesticide, fertilizer, and sediment runoff. Finally, surface water quality monitoring for regulatory purposes should occur in receiving waters, not edge of field monitoring.

Dow AgroSciences is actively working to address to water quality issues in Coastal Valleys and looks forward to continuing our efforts with growers, CA DPR, and Region 3 Water Quality Control Board.

Sincerely,

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