VIA FIRST-CLASS AND ELECTRONIC MAIL

May 18, 2007

Mr. Joe Karkoski
Senior Water Resources Engineer
Central Valley Water Quality Control Board (CVWQCB)
11020 Sun Center Drive
Rancho Cordova, CA 95670-6114

Re: WPHA Comments Concerning Phase-II: Methodology Development and Derivation of Chlorpyrifos Criteria

Dear Mr. Karkoski:

On behalf of the Western Plant Health Association (WPHA) this letter serves to address the December 2006 University of California-Davis Report entitled "Methodology for Derivation of Pesticide Water Quality Criteria (WQC) for the Protection of Aquatic Life in the Sacramento and San Joaquin River Basins: Phase-II: Methodology Development and Derivation of Chlorpyrifos Criteria" by Dr. Patti TenBrook and Dr. Ronald Tjeerdema.

WPHA represents the interests of fertilizer and crop protection manufacturers, distributors, formulators and retailers in California, Arizona, and Hawaii, and our members comprise more than 90 percent of all the companies marketing crop protection products in these states. WPHA welcomes the opportunity to comment on this document that proposes a new methodology for derivation of pesticide water quality criteria for the protection of aquatic life in the Sacramento and San Joaquin River Basins.

In accordance with the request for comment, WPHA is offering the following as technical comments. Specifically, we offer 8 general comments followed by 45 detailed comments and questions referring to specific page numbers, all of which relate to the Phase-II Report. Please note for the record, however, that WPHA believes there are much larger questions regarding the intent of this proposal and its implications for the overall structure of pesticide regulation which are not addressed in the Phase-II Report. We are articulating these in separate correspondence with the Regional Board.

1. Review of Existing Methods

The authors are to be commended for their comprehensive review of the current state of the science regarding the derivation of numeric water quality criteria to protect aquatic life. It is obvious they understand the fundamental questions that need to be answered in this process, and the new proposed method reflects this understanding and presents an interesting synthesis of the best aspects of the existing methodologies according to the professional opinions of the authors

2. Objectives of the Report

In the introduction, the report states the goal of the project is to "develop a methodology for derivation of pesticide water quality criteria for the protection of aquatic life in the Sacramento and San Joaquin River Basins." Why is the methodology restricted to pesticides and not intended for application to all toxic constituents? Each of the existing methods reviewed in Phase I of the project is generally applicable to all chemicals and is not limited to the regulation of pesticides. What are the policy and legal implications of such a limited scope? More generally, additional specificity and transparency are desirable. For example, what is the protection goal? If it is for the protection of all species, then what is the justification for this decision? Protection of 95% of the species (USEPA 1985 method)? The widely accepted concept that aquatic ecosystems can tolerate some stress and therefore protection of all species always and everywhere is not necessary (USEPA 1985 method) is not discussed in the context of protection goals that will be met by the new proposed method. The need for a new method is not explained. Existing methods are capable of dealing with both robust and sparse toxicity data sets. Are there deficiencies in the methods used by USEPA and CDFG? If so, these deficiencies should be stated explicitly.

It is unclear why the focus appears to be on developing a new national scope criteria derivation process, instead of focusing on how available tools can best be applied or adjusted to take into account the site-specific or regional ecosystem characteristics found in the Central Valley. It would appear that this approach would be more consistent with the regional board's regulatory mandate. More benefit would be gained by expending limited resources on Central Valley specific needs, instead of changing a widely established and well accepted methodology.

3. Use of All Available Data

Specific procedures in the new proposed method exclude data that may have been used previously in existing methods, resulting in greater uncertainty in the final acute and chronic criteria for pesticides. Examples include requiring only 5 toxicity data points in an SSD compared to 8 for the USEPA 1985 method[1], exclusion of outliers in SSDs for study results that passed earlier data quality evaluation, exclusion of community level data from mesocosm studies, exclusion of species from families found outside North America, and assuming registrant GLP guideline studies are unavailable. In particular, the last point is easily addressed by working with DPR and/or USEPA OPP to obtain toxicity data submitted for registration. The use of assessment factors greatly increases the possibility of overestimating risk as reported in the cited Chapman et al. (1998) article. There may be instances where assessment factors are needed due to limited data availability. However, considering every high-quality data point and multiple lines of evidence (lab and field) should minimize the cases where an assessment factor approach is required.

[1] A reasonable SSD probably requires closer to 10 toxicity data points. See Wheeler, J.R., E.P.M.Grist, K.M.Y. Leung, D. Morritt, and M. Crane. 2002. Species sensitivity distributions: data and model choices. Marine Pollution Bulletin 45: 192-202.

4. Science vs. Policy

Key aspects of the proposed method are characterized by the authors as being required by policy considerations rather than being selected on scientific merit. These include types of data to be considered, one-way adjustment of final values, selection of points on a distribution and associated confidence bounds, determination of assessment factors, and frequency of exceedances. In each of these examples it would be more helpful to identify and characterize different choices supported by data and the state of the science and communicate the uncertainties so that risk managers can make appropriate decisions in relation to clearly communicated protection goals. Such decisions cannot be made independently by scientists dealing with only the risk assessment phase of the risk analysis process (risk assessment, risk management, risk communication).

5. Allowable Exceedance

There are two major factors that must be taken into account when recommending allowable exceedances to meet clear protection goals. These factors are 1) the return frequency of an exceedance, and 2) the magnitude of the exceedance above the criterion value. In the absence of protection goals in the present version of the report, we assume sustainability of aquatic communities associated with the relevant designated uses is the key policy interest of the State. For a method that will only be applied to pesticides there needs to be much more detailed interpretation of the existing data, including numerous microcosm and mesocosm studies, to make recommendations related to the protection goal. Referring primarily to old data and interpretations of point source emissions of industrial and waste chemicals is not necessarily applicable to relatively infrequent pulsed exposures typically observed for pesticide residues in water (non-point source discharges). Likewise, generalizing from recovery times following ecological disasters does not relate to generally small inputs of pesticide mass from diffuse sources.

Some consideration should be given to the ability of an aquatic ecosystem to tolerate slight exceedances, since most species will not be affected (as evidenced by SSDs). Moreover, those species affected at or near the criterion level should be examined for ability to recover from an exceedance in terms of generation time and immigration potential. Lastly, the binomial approach for listing and delisting impaired water bodies used by the California State Water Resources Control Board (SWRCB) was not evaluated[2]. Therefore, making a rigid recommendation to take action in all cases when any level of exceedance occurs above a highly protective criterion value more than once in a three-year period does not appear to be scientifically justified.

6. Selection of 5th Centile

Although the authors discuss the use of the 5th centile in other existing methods, there is no rigorous analysis supporting the decision to recommend this point on the distribution for determining criteria in the new method. Similarly, what is the scientific rationale for applying a factor of 2 to the 5th centile value? It also is important to recognize that species with more sensitive endpoints than the 5th centile value may or may not be affected at the population level. For pesticides where microcosm and mesocosm studies are available, the 5th centile value can be checked for an adequate or excessive level of protection by comparing it to population and community level responses.

[2] State Water Resources Control Board (SWRCB). 2004. Water quality control policy for developing California's Clean Water Act Section 303 (d) List. California Environmental Protection Agency, Sacramento, California.

7. Consistency in All Environmental Compartments

When considering the consistency in approach for all compartments (water, sediment, biota, air), the most important aspect probably is sediment quality, since this appears to be the next area where the State will develop regulatory science and science policy. Initiatives underway in the SWRCB related to SQOs should be included, particularly with respect to the need for multiple lines of evidence (MLOE) to reduce uncertainty in determining impairment. Also, dealing appropriately with bioavailability will become even more important for understanding sediment toxicity and impairment.

8. Averaging Periods

The 1-h and 4-d averaging periods are consistent with the USEPA 1985 point-source method that established these general recommendations from a review of limited data for chemicals dissimilar to modern pesticides. It is not clear from the discussion in the present report that they are applicable to California NPS conditions. The typical monitoring programs conducted for pesticide residues in surface water do not appear to be compatible with these averaging periods, and historical monitoring data sets may support more appropriate numbers.

Specific Comments and Questions

Page ii. Why does this methodology apply only to pesticides? All of the referenced established methods are generally applicable to toxic contaminants. What are the policy implications? If the method is solely targeted at pesticides, then it should more fully benefit the data generation, risk assessments, and overall registration process that occurs on a routine basis at the state and federal level. The proposed methodology demonstrates a lack of understanding of the pesticide registration process and the resources that go into it.

When will the Phase-III report be available and what is the process associated with it? Will and if so, when will the basin plan be amended to incorporate the new methodology? Will and if so, when will the regional board post responses to these comments on their website?

Page 2-1. The authors state 11 other pesticide data sets were used from EPA, but only 9 references are given. While it is doubtful that the situation will occur routinely, exclusion of aquatic toxicity test results from species in non-North American families is unnecessary. Taxonomy is an imperfect predictor of relative sensitivity, and under the current proposed scheme each study should be judge on its quality. Judging relevance of specific species as a surrogate for the species found in a specific ecosystem is valid but is generally reserved for site-specific criteria development.

Page 2-2. Acute methods for plants should be included.

Page 2-4. While the MATC is acceptable, USEPA's recently released Cu criterion document[3] highlighted the EC20, where calculable, as generally corresponding to the MATC and as being the preferred chronic endpoint. The same should be done in the CA methodology.

[3] USEPA, 2007. AQUATIC LIFE AMBIENT FRESHWATER QUALITY CRITERIA – COPPER: 2007 Revision. EPA-822-R-07-001. 47 pg.

Page 2-6. It is unclear how the use of non-traditional endpoints may be used to derive criteria if those endpoints have been adequately linked to effects on survival, growth and reproduction or population tests, and the criteria developed from them, are predictive and protective of ecosystem. Will and if so, when will those parameters be developed? Who makes this very critical decision on the use of non-traditional endpoints for criteria derivation? Is it a panel of experts and/or a regional board scientists?

Multi-species data from field and semi-field studies should be more fully incorporated in the criteria development process. These are our best available tools to assess whether single species laboratory available, they should be used to adjust any criterion developed based on single species laboratory data, as the science dictates (either higher or lower).

Page 2-7. Inordinate concern is expressed for the role of dietary exposure as an important route of exposure in aquatic tests. Most research has shown that exposure through the water is the dominant route of toxicant entry for most substances and aquatic organism.

Page 2-10. How do the data evaluation criteria affect use of the EPA ECOTOX database?

Page 2-11. Registrant data are assumed not to be available. However, for all pesticides with outdoor uses, a full data set of physical chemical data is available. This should be the first source of information in this area.

Page 2-13. Linkage of endpoints to survival, growth, or reproductive effects is appropriate.

It is understandable that there is a preference to rely on aquatic toxicity data generated using technical grade test material, it unwise to have a blanket exclusion of tests conducted with formulations. Formulation tests may add additional species to the process, which is very important. Formulation studies should be considered at least as supplemental information.

It is agreed that studies that greatly exceed the solubility limit are less than ideal, but they do have some limited utility. For example, if an insecticide has a set of algal studies with values greater than the solubility limit, this data is an indication that algae are unlikely to be sensitive to the material and this factor needs to be include in the criteria derivation process. A similar situation exists when endpoints are reported as "< or >." While these values are not useful for regression analysis, they are useful in ranking a species relative sensitivity. Such studies, if otherwise valid, should be included in the total "n" (number of studies) available, either when ranking studies for criteria derivation based on an SSD approach, or using the assessment factor approach.

Page 2-14, paragraph 1 – The rationale behind using the 75th percentile of scores for the reliability rating is needed. Chlorpyrifos may not be a good dataset to use for this benchmark, since this is a fairly rich dataset and most other pesticide toxicity data sets will be less extensive.

Page 2-15. It is highly unlikely that any pesticide will be registered in the US (or most other countries) based solely on two data points. This statement is misleading and illustrates a lack of understanding of the intensive registration process that pesticides undergo. No other group of materials has as much ecotoxicology data generated prior to commercial use, as pesticides do.

Page 2-16. Exclusion of some taxa from the EPA list is justified by the authors by citing insensitivity to pesticides. As all taxa would need to represented in the community its exclusion would seem to bias the statistics. Consideration should been given to molluscicides. If not, then what is the rationale for it's exclusion? WQC are supposed to represent the entire community, and excluding or including species based on perceived sensitivity is scientifically unjustifiable.

Most standard testing methodologies for benthic invertebrates include sediment. Inclusion of a water column benthic crustacean test requirement is inconsistent with current standard test methodologies to assess the toxicity to benthic organisms.

Page 2-17. Reducing data to the species rather than genus level is appropriate.

Page 2-18. It is understood why the more sensitive life stage is being chosen, but it should be the more relevant life stage for the ecosystem of concern. On this point, the regional board is better served by considering site-specific approaches rather than developing new national scope criteria.

Page 2-19. Care needs to be taken on when and how "outliers" are removed from the process. Exclusion of data is easily perceived as arbitrary, and a reason (i.e., related to study design or reporting) beyond simply not fitting a specific distribution should be required.

The protection goal is given as protection of all species in an ecosystem. If and how does this relate directly to the language of the regional board basin plan? Please provide WPHA the statutory definition of the term "protection" as utilized by the CVWQCB in regulatory actions.

Page 2-21. Are the pesticide data sets reported in Table 2.1 representative of Central Valley conditions? If not, then what is the rationale and justification for its applicability? Also, the data sets appear to be incomplete. For example, many more species than 9 have been tested with atrazine.

Page 2-22. The authors note that it is "important to minimize violations of distributional assumptions," yet they bias the data set by placing an emphasis on sensitive species, instead striving for a robust and representative data set. As mentioned above, "< and >" values can be included in the ranking process to determine the total "n", but not used for the regression. This will lead to a more realistic ranking of relative sensitivities. It should also be noted that the importance of distributional assumptions in this application of SSDs (deriving a single point estimate) is debatable, since non-distributional approaches have been shown to work as well.[4] The practicality of the USEPA 1985 method in using the four points close to the 5th percentile should not be dismissed.

[4] Newman, M.C., D.R., Ownby, L.C.A., Mezin, D.C., Powell, T.R.L., Christensen, S.B. Lerberg and B.A. Anderson. 2000. Applying species sensitivity distributions in ecological risk assessment, assumptions of distribution type and sufficient numbers of species. Environ Toxicol Chem 19:508.

Page 2-35. The comparison of how the data sets fit the various distributions that is summarized in Table 2.3 is misleading. Burr type III distribution represents a family of distributions, so of course it appears to fit more compounds than when compared to individual distributions. Also, while the USEPA standard WQC method cites a log-triangular distribution, actually what is done for criteria development is to use the 4 points close to the 5th centile to derive the criterion. The EPA standard method recognizes a critical point; if we are interested in deriving a point estimate from an SSD, then it is relatively unimportant if overall fit to the distribution is good – the key question is whether the fit is good at the lower end – where the 5th centile is being estimated. There is much practical value in the EPA method of relying on the data points closest to the centile of concern. The confidence interval around the 5th percentile is a better predictor of fit/value of the method when deriving WQC. In cases where the full distribution will be used (such as generation of joint probability curves) then the model fit is of larger importance.

Page 2-37. Rather than prescribe the distribution to use for the pesticide toxicity data, Burr III distribution, why not use the distribution that best fits the data?

The 5th centile is characterized as having been validated by field studies, but the details supporting this characterization specifically for pesticides are not provided – were effects found at the 5th centile, or was it shown that the 5th centile from laboratory data is highly protective? For example, it was demonstrated for pyrethroids that the 5th centile was quite protective of aquatic ecosystems: LOEC concentration from multiple mesocosm and field studies with cypermethrin and esfenvalerate corresponded to around the 50th centile of the acute SSD for arthropods, the most sensitive group of species for the pyrethroids.[5] Ecosystems are typically quite robust, especially in comparison to laboratory - based single species data.

The authors note Solomon's comment that *"…any percentile may be chosen as long as it can be validate against knowledge of ecosystem structure and function,"* yet it does not appear that this logic was applied to this methodology. Since the Central Valley extends over a limited set of ecosystems, these ecosystem characteristics should be considered when drafting, and applying WQC.

Page 2-38. What evidence will be considered to adjust criteria down from the 5th centile level? Can it be adjusted up if there is supporting evidence? If not, why is the adjustment allowed to be only in one direction? Similarly, what evidence is necessary to move from a median 5th centile estimate to a lower 95% confidence limit estimate?

Page 2-39. Aggregation of taxa by habitat is mentioned only in passing. A more detailed treatment with respect to the USEPA provision to establish site-specific criteria would be helpful. The more that a WQC can include site-specific factors, such as species or important water quality parameters, the more relevant the WQC will be for the ecosystem of concern. Condemnation of the USEPA's standard WQC derivation methodology as the "most often criticized" is a bit unfair. Since it is the first widely applied distributional (before the term "SSD" was common) based criteria development methodology, it is not surprising that it is the one most often criticized/cited.

[5] Giddings, J.M., Solomon, K.R., and S.J. Maund. Probabilistic risk assessment of cotton pyrethroids: II. Aquatic mesocosm and field studies. Environ Toxicol Chem 20(3):660.

Page 2-40. The authors should provide references for assumptions that "apply to all SSD models," since it is not clear that they are indeed universal. In listing assumptions common to all SSD models, there is mention that protecting the most sensitive species will protect all species in an ecosystem. This is very conservative and therefore is best suited as an indication of potential impairment of the biological community. Basic ecology suggests that most ecosystems are relatively robust and can tolerate changes in species composition without changes in ecosystem function. Nowhere is there discussion of the relationship between protection and impairment. Biological data from specific water bodies are necessary to confirm impairment. Are biological criteria under consideration? If not, what is the rationale for its exclusion?

Page 2-41. Assumptions specific to the USEPA method include *"aquatic ecosystems can tolerate some stress and occasional adverse effects, therefore protection of all species at all times and places is not necessary."* The assumptions listed for the RIVM and ANZECC methods do not address this point. The proposed method also does not explicitly discuss this point. What is the author's perspective and rationale?

Page 2-44. In the section on comparing the lowest value in each data set with the resulting criterion to determine whether or not criteria are protective, there is no discussion of the uncertainty associated with testing of different species for each chemical. Presumably this is never done in a manner that systematically attempts to identify the most sensitive taxa, what is the significance of this comparison with actual protection levels? Comparing these values to field and mesocosm studies would probably be a better measure of whether they are protective.

Page 2-45. Why has dividing the 5th centile by two been kept in the new proposed methodology? This appears to be a holdover from a method that the authors have criticized elsewhere. Do other regulatory authorities divide the 5th centile by 2? If so, please name them and their relevance to this issue.

Instead of developing criteria for pesticides using a new methodology, either a SSD or assessment factors approach, it is more appropriate to rely on the recently released aquatic life benchmarks by USEPA OPP for pesticides to meet the needs of the regional board. These are values already applied in the regulatory context and use all the data available to the USEPA OPP registration process.

Page 2-47. The authors state, "*Each of the points raised by Chapman et al. (1998) need to be evaluated in the context of water quality criteria derivation, which is not the same as ecological risk assessment.*" Such a distinction is not consistent with recent examples of pesticide criteria derivation such as the USEPA OPP and OW cooperation on the draft ambient aquatic life water quality criteria for atrazine[6]. These criteria draw on numerous ecological risk assessment publications and incorporate risk assessment principles into the final expression of criteria conditions.

[6] USEPA. 2003. Ambient aquatic life water quality criteria for atrazine -revised draft. Office of Water, EPA-822-R-03-023.
Note also these comments from USEPA: "The revised criteria in today's publication incorporate information on the toxicity of atrazine to aquatic plants and invertebrates that had not been available at the time of the 2001 publication. The change in critical endpoints reflects the scientific views received from the public." http://www.epa.gov/waterscience/criteria/atrazine/atrazinefacts.html

Since pesticides undergo a risk assessment in the licensing process under FIFRA, and the proposed methodology is currently intended to apply only to pesticides, there is a need to better harmonize the two systems of evaluation to better serve the entire regulatory process at the federal and state levels.

Note, for example, the recent release of aquatic life benchmarks by OPP[7], which are characterized as "only indicators." This characterization would appear to require consideration of risk assessment principles. If the regional board does not wish to do this at the stage of criteria derivation, then it is clearly necessary to bring in other lines of evidence to reach impairment decisions - which should then be based on risk characterization procedures.

Page 2-48. The authors state *"all criteria are extrapolated values."* Therefore they are subject to uncertainty, and additional lines of evidence are needed to determine whether specific local aquatic communities are actually impaired when any numeric criteria are exceeded. This is particularly true when the numeric criteria are quite low, the allowable exceedance frequency is set at three years in all cases, and no consideration is given to the magnitude of the exceedances.

Page 2-50. The use of toxicity data from the daphnid family for limited toxicity data sets may be overprotective for some chemical classes and underprotective for others, depending on taxa that are sensitive to a particular mode of action.

Page 2-51. Table 2.6 provides a clear example of why limited toxicity data (n<5) should never be used to establish criteria. The assessment factors are derived from insecticide data. Are these generally applicable to all classes of pesticides? If so, what is the rationale for its use?

Page 2-52. Marine organisms should only be used if salinity does not affect the toxicity of the pesticide. For example, salinity can affect the toxicity of metals used as active ingredients.

Page 2-54. The Great Lakes guidance document select the 80th percentile as a default value of ACRs. It should be stated clearly that if an ACR is available, for example chlorpyrifos, then this ACR is used and not the default value of 12.4. The very large ACR for lindane is suspect. The ACRs are derived from insecticide data. Are these generally applicable to all classes of pesticides? If so, then why?

Page 2-55. The reference supporting the statement ". . . *the chronic averaging period of 4 days has been shown to be long enough to observe the equivalent of chronic toxicity (USEPA 2002) . . .*" appears to be incorrect. It is therefore not possible to evaluate the supporting evidence. Also, this statement may not be true for growth endpoints in longer-lived species such as fish.

Page 2-56. The comments that chlorpyrifos and diazinon are not fast acting toxicants is not supported by the newly derived chlorpyrifos acute and chronic values which are nearly identical and a previously published EPA diazinon criterion of 100 ng/L for both the acute and chronic criteria[8].

[7] USEPA. 2007. Technical Overview of Ecological Risk Assessment Aquatic Life Benchmark Table, http://www.epa.gov/oppefed1/ecorisk_ders/aquatic_life_benchmark.htm.
[8] United States Environmental Protection Agency (USEPA). 2000. Draft Ambient Aquatic Life Water Quality Criteria Diazinon. Report, Contract Number 68-C—98-134, USEPA, Duluth, Minnesota.

Page 2-58. In the discussion of evidence for ecosystem recovery times, the authors appear not to distinguish between ecological disasters and studies where more environmentally relevant concentrations were investigated. This is an example of omitting consideration of the magnitude of exceedance above a specified level and merely assuming all exceedances will have the same level of impact. This is clearly not the case as evidenced by SSDs.

Page 2-60. The summary of pulse exposure studies likewise fails to consider dose as a factor influencing time to recovery.

Page 2-61. The conclusion that a 3-year recovery time is necessary for all excursions above either acute or chronic water quality criteria is not supported by the evidence cited by the authors. Additional interpretations of microcosm and mesocosm studies have been omitted (for example, see Giddings reference for comment on Page 2-37 above).

Page 2-64. Solid Phase Micro Extraction (SPME) technology is probably superior to SPMD devices to characterize bioavailability.

Page 2-65. It is appropriate to allow correction for bioavailability when data are available. The precedent clearly has been set to adjust criteria based on water quality factors that have been shown to modify toxicity. Equilibrium partitioning theory is well establish and should be used where appropriate to modify criteria. To not modify the criteria, based on bioavailability considerations, leaves one with criterion that will have little relevance to the real world.

Page 2-67. Additivity should take into account response thresholds and use valid measures of effect, such as a relative toxicity approach based on common testing (cited Felsot, 2005 reference) and not water quality criteria based on independent testing.

Page 2-72. The new proposed mixture methods will likely propagate error inherent in the individual components, rendering the methods unsuitable for regulatory decision-making. Also, the expressions are overly complex. The regional board would be better served by investing in biological monitoring to determine the status of aquatic communities if mixtures truly are a concern.

Page 2-73. Adjusting derived criteria down to protect a most sensitive species results in the criteria resembling even more closely a screening value that will require additional lines of evidence to support decision-making on actual impairment.

Does the regional board have the authority to regulate water quality to protect terrestrial wildlife? If so, please describe the statutory and regulatory authority and basis for this process concerning this specific issue.

Registrant BCF studies are the most robust data sources. The regional board should work with DPR and USEPA OPP to resolve any concerns they have in this area, since it is addressed in the pesticide registration process.

Page 2-75. Why is it not possible to adjust derived criteria upward after they are evaluated against field or semi-field data?

Does the regional board have the authority to regulate water quality to protect endangered and threatened species? If so, please describe the statutory and regulatory authority and basis for this process concerning this specific issue.

Page 2-76. The suggestion to use QSARs to protect endangered and threatened species is interesting. The USEPA OW holds national consultations with the Services to evaluate the protection level of existing federal criteria. It would behoove the CVWQCB to track closely this consultation.

Pages 3-4 and 3-5. How does the toxicity data screening process developed by the authors compare with the process used by USEPA OW for their development of water quality criteria? To the criteria used for inclusion in the USEPA ECOTOX database? Ecotoxicity Data – The acceptance criteria score of at least 70 based on a maximum score of 100 as described in Table 3.6 is problematic and will allow invalid data to be used for criteria development. For example, a study conducted with an impure chemical used for testing (minus 15) could still obtain a passing score of 85. Another example would result in an acceptable score of 92.5 with controls that did not meet the acceptability requirements of the method.

Page 4-14. The authors explain the differences in their new lower acute and chronic criteria for chlorpyrifos compared with the EPA or CDFG values by stating that different data sets were used for final calculations. A more detailed analysis should be included that explains how the three specified methods produce differing chlorpyrifos criteria.

In conclusion, thank you for your consideration of WPHA's general and specific comments and questions concerning the Methodology for Derivation of Pesticide WQC for the Protection of Aquatic Life in the Sacramento and San Joaquin River Basins: Phase-II: Methodology Development and Derivation of Chlorpyrifos Criteria. WPHA appreciates your diligence, and looks forward to reviewing your complete and timely responses to this important document. We continue to welcome all opportunities to work with CVWQCB on this and other important water quality issues.

Sincerely,

/s/ Nasser Dean

Nasser Dean
Director, Environmental & Regulatory Affairs

cc via email:

Pamela Creedon, CVWQCB
Ken Landau, CVWCQB
Mary-Ann Warmderdam, DPR
Paul Gosselin, DPR
Jerry Campbell, DPR
Tobi Jones, DPR
Mark Rentz, DPR
John Sanders, DPR
Chris Beegan, SWRCB
Daniel Merkley, SWRCB
Barbara Todd, CDFA