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Douglas Y. Okumura
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Dear Denise and Douglas:

Following up on your presentation to the State Stormwater Quality Task Force and Chris Crompton, Manager of Environmental Resources for the County of Orange, CA Public Facilities and Resources Department, sending you a copy of our US EPA 205(j) report covering the aquatic life toxicity studies that we have been conducting over the past several years in Orange County, California, I wish to bring to your attention a summary paper that I have recently completed on this work. This paper will be presented at the American Society for Testing and Materials Environmental Toxicology and Risk Assessment Conference devoted to Recent Achievements in Environmental Fate and Transport that will be held in Seattle, WA April 19 to 21, 1999. It will be published as a peer-reviewed paper in the proceedings of that conference [http://www.gfredlee.com/Watersheds/oppesticide_unb.pdf].

This 15-page paper presents a summary of the key aquatic life toxicity issues that are presented in the 210-page report that Mr. Crompton has recently sent to you. The paper focuses on some of the regulatory issues that need to be resolved in order to appropriately regulate OP and other pesticides-caused aquatic life toxicity in order that pesticides may be appropriately used, while protecting the beneficial uses of waterbodies from adverse impacts of pesticide use. If you or any of your associates have questions or comments on the complete report or this paper, please contact me.

I wish to mention that the US EPA, through a 319(h) grant awarded to Orange County Public Facilities and Resources Department (Chris Crompton's group), has provided support for Mr. Taylor and I to conduct intensive aquatic life toxicity/pesticide source studies in the Upper Newport Bay watershed over the next two years. This project is designed to provide background information that the Santa Ana Regional Water Quality Control Board can use to develop TMDLs for aquatic life toxicity and the OP pesticides diazinon and chlorpyrifos. The Santa Ana Regional Water Quality Control Board is under a court consent decree to develop TMDLs for aquatic life toxicity, diazinon, and chlorpyrifos by 2002. We will be determining the amounts of OP pesticide-caused toxicity, as well as toxicity from other causes in urban residential, urban

commercial, agricultural, and commercial nursery sources. Further, we will be examining how their use in these areas leads to aquatic life toxicity in the receiving waters for stormwater runoff from these areas.

Our studies, as well as those of others in California and elsewhere, as referenced in our report, have shown that there is a significant problem with the way in which OPP and DPR register/re-register pesticides. The problem centers around the fact that registration of pesticides does not necessarily require that information be developed on the toxicity of the pesticide to *Ceriodaphnia dubia* or *Mysidopsis bahia*, as well as several other commonly used water quality aquatic life toxicity test organisms. As you know, failing to screen pesticides for toxicity to commonly used test organisms for water quality management is leading to major problems and a significant confrontation between pesticide regulatory agencies such as DPR and OPP, and water quality management agencies such as the State and Regional Water Quality Control Boards.

DPR and OPP are being labeled as agencies that are not protecting the environment, since they are not aggressively acting to control the widespread toxicity that is now being found in the state's waters, particularly associated with urban area and some agricultural stormwater runoff and agricultural return - drain waters. If pesticide registration/re-registration required the assessment of toxicity to *Ceriodaphnia*, *Mysidopsis*, and other common water quality aquatic life test organisms, this issue could have been resolved as part of the registration process. As it stands now, the regulation of OP and other pesticides that are causing aquatic life toxicity is likely to be resolved in the courtroom.

My associates and I, as well as a number of others, are involved in urban and rural stormwater runoff aquatic life toxicity studies in various parts of California. My work is primarily focused in Orange County, although I am familiar with the work that is being done in other areas. With few exceptions, urban stormwater runoff is toxic to *Ceriodaphnia* and likely toxic to *Mysidopsis*. In our Orange County studies, while about half of the toxicity can be accounted for by diazinon and chlorpyrifos, the other half of this toxicity is due to unknown causes. As part of our studies, we have had some of our samples submitted for dual-column GC analysis. We have also had several individuals do work on toxicity identification evaluations (TIEs) for the purpose of identifying the cause of the unknown-caused toxicity in our samples. As indicted in our report and the attached paper, there are a variety of OP and carbamate pesticides in these samples. We have found the following pesticides in these samples at the concentrations indicated.

dimethoate	290 ng/L
fensulfothion	320 ng/L
prowl	180 ng/L
benomyl	500 ng/L
carbaryl	3,100 ng/L
methomyl	6,200 ng/L
diuron	2,200 ng/L
oryzalin (surfalan)	20 to 30 µg/L
metalaxyl (ridomil)	5 to 10 µg/L
simazine	3,200 ng/L
dimethoate	7,100 ng/L
malathion	200 ng/L
merphos	140 ng/L

prowl	1,200 ng/L
stirophos	140 ng/L
benomyl (carbendazim)	500 ng/L

Except for a couple of the pesticides, we cannot, however, translate these concentrations into potential toxicity, since we do not know their toxicity to *Ceriodaphnia* or *Mysidopsis*. If these pesticides had been registered, where the registrant would have to generate reliable data on the LC50s for the pesticides to *Ceriodaphnia* and *Mysidopsis*, we would be in a much better position to identify the unknown-caused toxicity. I would appreciate any information your agency has on the toxicity of the above pesticides to *Ceriodaphnia* or *Mysidopsis*.

Another issue that needs to be addressed by DPR and OPP is what constitutes a significant adverse impact associated with pesticide-caused aquatic life toxicity. At this time, Regional Water Quality Control Boards, urban stormwater runoff water quality managers, Department of Pesticide Regulation, pesticide manufacturers and formulators, and others are all facing the interpretation of these requirements relative to the Clean Water Act requirement of “no toxics in toxic amounts.” The DPR and the Water Resources Control Board, and the OPP and US EPA Office of Water need to develop guidance on how to determine what constitutes excessive aquatic life toxicity that will be sufficient to cause curtailment of use of a pesticide in urban and, for that matter, agricultural areas. This is another area where, unless this issue is resolved in the near future, the courts will make the decision. These are issues that cannot be reliably addressed by the courts in the typical approach that is used in litigation, where a judge with limited technical expertise will rule on issues without adequately considering the technical information that should be considered in developing policy on these issues.

I urge that DPR and OPP move aggressively to change the approach they use in registering/re-registering pesticides to ensure that reliable information on the toxicity of the pesticides to commonly used water quality aquatic life toxicity testing organisms is obtained. Further, DPR and OPP should take the lead in working with water regulatory agencies, agricultural interests, environmental groups, and the public in developing a consensus approach for establishing what constitutes excessive aquatic life toxicity which would cause curtailment of the use of a pesticide. If you have questions about these comments, please contact me.

Sincerely yours,

G. Fred Lee, PhD, DEE

GFL:jl
Enclosure
cc: C. Crompton
S. Taylor