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File:
Toxics
Project

November 1, 1993

Mr. Victor de Vlaming, Contract Officer
State Water Resources Control Board
P.O. Box 100
Sacramento, CA 95812-0200

Dear Victor:

It was a pleasure to meet with you at the NorCal SETAC meeting earlier this year in Old Sacramento. Although we only had a brief chance to discuss the report (Bailey II) presented by Howard Bailey, I was hoping to have a chance to discuss it with you and thank you for sharing a draft with us. Our intent had been to hold back our comments pending receipt of a copy of the final report. However, since the draft report is being presented in public forums, we feel compelled to make comments prior to receipt of the finished product:

1. Mortality and brain lesions in striped bass larvae.
We are concerned that toxicity to striped bass larvae is being attributed to rice pesticides, when, in fact, the author's own data shows that there is no such relationship.

Rice paddy water represents the highest level of pesticides in the Bailey II study, higher than the drains and the Sacramento River. Yet, out of the 9 rice paddy water samples collected, only one had any measurable toxicity to striped bass larvae. The other 8 had no measurable toxicity. The paddy water collected on 6/1/92 contained 0.4 ppb methyl parathion, 139 ppb carbofuran, and 91 ppb molinate (Table 6). These levels are in considerable excess of peak levels measured in the Sacramento River. Yet this sample was not found to be toxic to striped bass larvae in the Bailey II study (Table 3). Exposure of striped bass larvae to known concentrations of currently used rice pesticides confirmed the lack of toxicity at levels above the peak levels that have been measured in the Sacramento River (Table 7).

Similar conclusions can be reached about the brain lesions reported in the Bailey II study. Toxicity was observed in water from the Glenn-Colusa Canal. Since this water was intended as a control upstream of rice cultivation, the toxic component(s) *must not* be rice pesticides. *Brain lesions were not observed in field samples containing relatively high*



concentrations of rice pesticides. Yet, similar lesions were found in water feeding into rice cultivation and in the Sacramento River below major rice growing areas.

The authors suggest that the rice pesticides may be acting synergistically or that pesticide metabolites may be causing the toxicity to striped bass. These suggestions do not stand up to their own data, since synergism and metabolites should be operative in the rice paddy water samples. Further, neither synergism nor metabolites could be responsible for the toxicity at samples taken upstream of rice growing areas.

Another hypothesis to explain the results of the Bailey II study is that chemicals other than rice pesticides (see item 4. below), or perhaps even naturally occurring chemicals, are causing the toxicity. This hypothesis could be tested by further fractionation of the toxic samples, using toxicity to striped bass larvae as a bioassay to identify the active fractions.

The authors are to be complemented for developing sensitive bioassays, including histopathology, for assessing toxicity to early life stages of striped bass. These are challenging bioassays, where organism viability and quality control are of major concern. Control mortality was generally low in larvae, but was very high and variable in embryos. In fact, mortality in the water and solvent controls for embryos were so high (up to 82 percent) as to cast serious doubt on any observed effect.

The C18 column studies are difficult to interpret. Apparently the columns retained the toxic components, but these components were not eluted with methanol. Would the columns retain rice pesticides? If so, would methanol elute the rice pesticides from the C18 columns? What is pH i? Answers to these questions could help identify the toxic components.

Why was BUX included in this study, knowing that this chemical has not been in use for a decade? Wouldn't the resources spent on BUX be better spent on studying chemicals known or suspected of being in the drains and Sacramento River?

2. Neomysis mercedis and rice pesticides. We think that during his public presentations (assuming the Board continues to endorse public presentations of works by its contractors which have not been accepted by it), the author has the obligation to inform his audience that *Neomysis mercedis*--one of the two aquatic organisms that served as the subject of his remarks--is not even found in rice drain water, and in fact, not anywhere near rice drain water. According to State of California sources, the nearest this organism has been found to rice drain water is Isleton, California, which is a considerable distance away from the nearest location where detectable rice pesticides have been measured.

Certainly, *Neomysis mercedis* is used as a surrogate for aquatic organisms in general. We are not suggesting that the basis for using *Neomysis mercedis* is not well founded. Our only objection is that in the interest of scientific accuracy, audiences and readers should be made aware that *Neomysis mercedis* is not an organism found in or around the rice production area of California, nor are rice pesticides found at detectable levels in *Neomysis* habitats. This species is not threatened by rice pesticides.

3. Coincidental occurrence. In order for accurate conclusions to be drawn from the above-cited study, we think the researchers have an obligation to utilize drain water taken from the same sites during periods in which rice pesticides are not applied. Implicating rice pesticides without checking the background environment, we think, is questionable science and casts serious doubt on the objectivity of the research.
4. The possibility of other causes, including dormant sprays. We were struck that the presentation immediately following the above-referenced study presentation in Old Sacramento at the NorCal SETAC toxicology conference implicated dormant sprays used on orchards in the zero survivability of aquatic organisms in various drains and creeks in and around central California. The study area included one drain known to be in the heart of rice country.

The study "Pesticides and Surface Waters from Applications on Orchards" (by C. Foe, R. Sheipline and C. DiGiorgio), showed zero survivability of the aquatic organism *ceriodaphnia* in many water courses;

Mr. de Vlaming
November 1, 1993
Page 4

including those in and around rice fields, during the months of January and February.

Given this zero survivability finding, we think it is ironic that Bailey and others would not have suspected dormant sprays to have a serious effect on their study organisms. After all, the comparisons are superb. That is, those findings were found during a time period immediately preceding the rice pesticide use season, the test aquatic organisms were similar, at least one study site coincides geographically with the dominant rice production area in the state, and orchards can be found in abundance in this rice production area.

It is a further irony to us that if rice pesticides had been shown to cause zero survivability of aquatic organisms in the Delta, such as the Foe, et al study did of dormant sprays, State researchers and research money would weigh in heavily. Yet the money and staff time still seems to pour into trying to find the causal effects and aquatic toxicity of the last tenth of a part per billion of rice pesticides. We are at a loss to understand why this impact in the Delta is tolerated while research continues at agricultural drains serving rice production.

5. Questions regarding State Water Resources Control Board policy. This entire scenario raises a more serious question regarding the State Water Resources Control Board's policy concerning the release and use of research conducted by its contractors. Perhaps the best starting point in this regard would be to request a copy of the policy from you so that we may better understand what appears to be a seriously flawed protocol. Without having reviewed the policy, it is difficult for us to understand the use of research in the public forum before it has been peer reviewed and finalized. We realize that the report is still labeled "Draft" but no matter what the final version says, the onus will now be on the rice industry to try and "unring the bell."

By way of example, let me share with you a recent experience we had concerning the Governor's Bay-Delta Oversight Council ("BDOC"). The BDOC staff prepared a briefing paper on aquatic resources in the Delta which was circulated for comment from various State agencies. Imagine our surprise at discovering a comment from Christopher Foe of the

Mr. de Vlaming
November 1, 1993
Page 5

Central Valley Regional Water Quality Control Board citing the Bailey study for the proposition that there is "a strong statistical relationship between decreases in the striped bass index and the concentrations of rice pesticides in the Sacramento River in May and June."

We, of course, had no choice but to present rebuttal testimony before the BDOC. However, we are all too aware that we will continue to be haunted by the Foe letter which has now been published and circulated to hundreds of people throughout California.

We have been told time and time again that the goal of Cal-EPA is first and foremost to ensure that regulatory decisions are based on "good science." We question whether this use of incomplete research is in furtherance of the goal. If your policy is to allow the release and use of incomplete research as fact, we respectfully request that you rethink the policy. If this use is in violation of your policy, we would ask that you exert greater control over your contractors and staff to prevent a recurrence of this abuse. Finally, if you have no policy, we strongly urge you to adopt one immediately to bring a halt to this misuse of incomplete and flawed research.

Conclusion. As Jim Strock, Secretary of the California Environmental Protection Agency, and Bill Crooks, Executive Officer of the Central Valley Regional Water Quality Control Board have said, the clean-up of rice pesticides has been one of the most successful programs in the United States. Greater than 99.5 percent of all rice pesticides have been reduced from the Sacramento River at Sacramento since 1981. The agencies were unable to detect any rice pesticides in the uppermost reaches of the Delta in 1991 and 1992.

Further, as you know, there are no less than seven State agencies working on aquatic toxicity of rice pesticides. We do not know of any other commodity or crop that receives more scrutiny than does the California rice industry.

Given these facts, and the fact that rice pesticides have been scrupulously studied, it seems those reaching conclusions about rice pesticides should be held to the highest and strictest standards of the scientific method. Accordingly, we have a problem with scientific papers being presented in public forums when there are many

Mr. de Vlaming
November 1, 1993
Page 6

unanswered questions and much doubt about the conclusions being presented, especially when those reports are funded by State and Federal taxpayers and administered by employees of the State of California.

This situation also calls the State Water Resources Control Board's priorities into question. Given the progress of the Rice Pesticide Control Program, it seems there are more significant threats to water quality which are nowhere near as well understood or thoroughly studied. Further, they continue unabated in stark contrast to the restrictions placed on the use of rice pesticides. We believe it is unfair, unwise and bad public policy to continue to expend large sums on research of rice pesticides when industrial pollutants, toxic drainage from abandoned mines and pesticides unrelated to rice continue to enter the state's waters.

The success of the rice pesticide control program is generally accepted. Further, there is widespread agreement that the rice industry is ten years or more ahead of anyone else in the state in protecting water quality. In light of this, it seems that fairness, good science and common sense would dictate the allocation of limited resources to those water quality threats that are not well understood and have not been addressed. Failure to do so would be discriminatory and surely cannot be supported based on an objective assessment of the minimal risk presented to the environment and public by rice pesticides.

Thank you for your attention to this matter. Please contact me if you have any questions regarding our views.

Sincerely,

CALIFORNIA RICE INDUSTRY ASSOCIATION



by: John R. Roberts
Executive Director