



BEST BEST & KRIEGER
ATTORNEYS AT LAW

5/22/07 Bamtg Item 12
Diazinon & Chlorpyrifos
Deadline: 5/2/07 12 noon

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VIA E-MAIL
SONG HER, CLERK TO THE BOARD
COMMENTLETTERS@WATERBOARDS.CA.GOV

Re: Comment Letter – Delta Chlorpyrifos and Diazinon TMDL

Dow AgroSciences (“DAS”) submits the attached comment relative to the State Water Resources Control Board’s (“Board”) proposed Basin Plan Amendments to the Water Quality Control Plan for the Sacramento River and San Joaquin River Basins in the Central Valley for The Control of Diazinon and Chlorpyrifos Runoff into the Sacramento-San Joaquin Delta.

COMMENT NO. 1. THE PROPOSED ADDITIVITY FORMULA IS SCIENTIFICALLY UNSOUND

DAS has closely participated with the Regional Board staff in the development of the San Joaquin River TMDL and this Delta TMDL.

DAS takes no issue at this time in respect to the objective levels or the general application of the new additivity formula included in this Basin Plan/TMDL. There is one particular element of its application, however, where the proposed additivity formula has a substantial scientific defect.

In particular, the proposed additivity formula does not account for the fact that if a chemical is present at very low levels where there is no biological influence from that chemical, there is no scientific basis for applying the additivity formula. DAS pointed out during the Central Valley Regional Board’s Basin Plan amendments for the San Joaquin River and Delta, that there is no scientific support for applying additivity in situations of very low concentrations of a single pesticide. The scientific peer reviewer (Allan Felsot) engaged to review the San Joaquin River and Delta Basin Plan amendments also pointed out this defect. That expert stated:

While concentrations of co-occurring compounds with identical modes of biochemical action are known to be additive, the appearance of joint toxicity has been shown only to occur above a certain threshold. Thus far for aquatic organisms, co-occurrence of OP insecticides at levels that are scientifically below LC50 do not seem to be additive.

Felsot, A. 2005, *A Critical Analysis of the Draft Staff Report*, “Basin Plan Amendments to the Water Quality Control Plan for the Sacramento River and San Joaquin River Basins for the Control of Diazinon and Chlorpyrifos Runoff into the Lower San Joaquin River.”

The Central Valley Board’s staff response refers to Deener [sic] et al., 1988, a journal article purporting to support the Board’s staff position that there is no concentration below which Chlorpyrifos or

Song Her, Clerk to the Board
May 2, 2007
Page 2

Diazinon will no longer contribute to the overall toxicity of the mixture¹. After careful review of this paper, it is obvious that the sweeping conclusion that any compound will contribute to the toxicity of the mixture, even if it is present at an extremely low concentration, is not applicable to the situation under consideration in the Staff Report. First, the chemicals tested in Deneer et al., 1988 are all industrial chemicals with non-specific mechanisms of action eliciting general narcosis effects. In contrast, Chlorpyrifos and Diazinon have specific mechanisms of action related to inactivation of acetylcholinesterase at neural junctions. Second, in their discussion Deneer and co-workers state, “. . . every specific-acting chemical obviously possesses some anaesthetic potency, depending on its hydrophobicity. Under normal circumstances, the concentrations of these chemicals will be too low to cause the biological response through their specific mode of action. They will however, contribute to the total anaesthetic potency of the mixture.” If the Board’s staff considers Chlorpyrifos and Diazinon to have significant anaesthetic potency important in this regulatory context, DAS requests the evidence be presented as we are not aware of any such data.

Additionally, the Deneer paper, now twenty years old, was fully available to Felsot when he wrote his peer review analysis which held otherwise.

Thus, when either Chlorpyrifos or Diazinon are present only in very low concentrations, there is no basis to apply the proposed additivity formula.

DAS again comments that the selection of a numeric water quality criteria as the denominator in the additivity formula is not supported by general principles of toxicology. Additivity expressions generally compare endpoints obtained from testing on the same organism², not derived values such as numeric criteria which may or may not be comparable, since they probably come from different sets of test species.

Sincerely,



William J. Thomas, Jr.
for BEST BEST & KRIEGER LLP

WJT:CJC:ps

cc: Dow AgroSciences
Bryan Stuart (Via E-Mail Only)
Nick Poletika (Via E-Mail Only)

¹ Deneer, J.W., Sinnige, T.L., Seinen, W. Herments, J.L.M. 1988. The joint acute toxicity to *Daphnia magna* of industrial organic chemicals at low concentrations. *Aquatic Toxicol* 12:33-38.

² Lloyd, R. 1987 Special tests in aquatic toxicity for chemical mixtures: interactions and modification of response by variation of physicochemical conditions. Pages 491-507 in *Methods for Assessing the Effects of Mixtures of Chemicals*, ed. by V.B. Vouk, G.C. Butler, A.C. Upton, D.V. Parke and S.C. Asher. Scientific Committee on Problems of the Environment, SCOPE 30, John Wiley & Sons, New York.