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September 15, 2008

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VIA HAND DELIVERY

OPP Regulatory Public Docket (7502P)
Room S-4440
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Ms. Arthur-Jean Williams
USEPA
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2777 S. Crystal Drive
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Ms. Angela Somma
National Marine Fisheries Service
Office of Protected Resources
1315 East-West Highway
13th Floor
Silver Spring, MD 20910

Re: Comments of Dow AgroSciences LLC and Makhteshim Agan of North America on Draft Biological Opinion

Dear Docket, Ms. Somma and Ms. Williams:

Enclosed please find copies of the jointly-submitted Comments of Dow AgroSciences, LLC (“DAS”) and Makhteshim Agan of North America, Inc. (“MANA”) on the Draft Biological Opinion on EPA Registration of Pesticides Containing Chlorpyrifos, Diazinon and Malathion, released by NMFS in early August and published by EPA on August 15, 2008 in docket number EPA-HQ-OPP-2008-0654.

As directed in EPA’s August 15 notice, we are submitting one complete copy of this submission to the OPP Regulatory Docket (7502P). Several of the attachments to that submission are confidential business information (“CBI”) and must be treated at such under EPA’s regulations, 40 C.F.R. Part 2. (All of the CBI documents are included among those documents that make up Attachment E to the comments.) Therefore, we also are submitting to the docket a second copy of Attachment E from which CBI documents have been removed. Finally, we are delivering to Ms. Williams directly a courtesy copy of this letter, the comments, and

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Attachments A-D. (The material in Attachment E is so voluminous that it is not being included in that courtesy copy.)

Recognizing that Ms. Somma will have to send a copy of this submission to NMFS personnel on the West Coast, we are submitting to her two copies of the comments that include the version of Attachment E from which CBI materials have been removed. We understand that, per the Endangered Species Consultation Handbook and NMFS explanations on our September 11 conference call, NMFS intends to comply with EPA's confidentiality regulations with regard to all of these submissions. We therefore understand NMFS will obtain copies of the portions of Attachment E that are CBI from EPA, once EPA and NMFS have resolved the procedures to be followed.

In e-mails to Dr. Everich of MANA on September 4 and 5, Dr. Pangelinan requested a copy of two studies and their supporting information. In light of the arbitrary deadline under which NMFS currently is working, and in an effort to be helpful, Dr. Everich sent those studies to Dr. Pangelinan last week using an ad hoc protective system explained in his transmittal. We also are including copies of those materials in the CBI version of Attachment E.

In a September 8 e-mail to Dr. Poletika, Dr. Pangelinan requested copies of three studies. These are included in nonconfidential version of Attachment E, along with a number of other studies referenced in the comments.

These comments, the presentations by MANA and DAS personnel at the August 29 meeting, and the responses the companies provided to NMFS on the September 11 conference call demonstrate that there is an enormous amount of pertinent and reliable information on the history, future and potential impacts of diazinon and chlorpyrifos registrations that NMFS did not consider in the preparation of the Draft BiOp. This was confirmed by the comments made and questions asked by NMFS staff at the August 29 meeting, in advance of the September 11 conference call, and on that call. Certainly, as of September 11 NMFS did not have adequate understanding of these matters to prepare a meaningful Biological Opinion. The Service cannot prepare that BiOp, or otherwise comply with the ESA and its own regulations, without fully mastering the material now before it. *See, e.g., 50*

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C.F.R. § 402.14(g)(8) (“In formulating its biological opinion, any reasonable and prudent alternatives, and any reasonable and prudent measures, the Service will *use the best scientific and commercial data available* and will give appropriate *consideration to any beneficial action taken by the Federal agency or applicant.*”) (italics added). Those regulations also commit NMFS to discuss with EPA and the applicants its review and evaluation of such data, the basis for any findings in the biological opinion, and reasonable and prudent measures or alternatives. The meeting and call in which MANA and DAS have participated to date, and handful of e-mail information requests referenced above, do not fulfill this obligation. Among other things, NMFS has not yet considered most of the information MANA and DAS (and, for that matter, EPA) have provided, and NMFS has not yet identified reasonable and prudent alternatives or measures that might be appropriate. *See* 40 C.F.R. § 402.14(g). (This failure is reasonable, of course, in light of the inadequacy of the Draft BiOp.)

MANA and DAS insist on full and meaningful compliance with NMFS’ regulations and the ESA. We note, in this context, that in the arbitrary stipulated Settlement Agreement NMFS joined in the *NW Coalition for Alternatives for Pesticides v. NMFS* case, it committed to the Court that NMFS would complete the covered consultations (including the one addressed in the Draft BiOp) “consistent with requirements of the ESA and [NMFS’] implementing regulations.” Stipulated Settlement Agreement and Order of Dismissal, at ¶ 1, *NW Coalition*, No. 07-1791-RSL (W.D. Wash. July 30, 2008).

DAS and MANA also recognize the challenge facing NMFS. It is inconceivable that NMFS can master this material and fulfill its obligations before October 31. MANA and DAS thus renew their request that NMFS promptly exercise its unilateral right under Paragraph 4 of the *NW Coalition* settlement to reorder its biological opinions to allow more time to complete this one, or invoke the provisions of Paragraph 5 of that settlement to obtain approval of the necessary revision to the schedule. In the event that NMFS chooses to proceed under Paragraph 5, and other parties to the *NW Coalition* settlement do not consent to an adequate revision, DAS and MANA are prepared to offer a statement to the Court explaining the need for that extension.



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In addition, DAS and MANA also remain fully prepared to provide further to Service personnel as they fulfill their responsibilities, and look forward to working with you.

Thank you.

Sincerely,

A handwritten signature in black ink, appearing to be "D. Weinberg", written over a horizontal line.

David B. Weinberg
*Counsel to Dow AgroSciences, LLC
and Makhteshim Agan of North America, Inc.*

Attachments

cc: Ephi Gur
Scott Rawlins
Robert Everich
Michael Grisham
Michael Shaw
Joh Fitt
Ken Racke
David Menotti
Patrick Donnelly

COMMENTS OF DOW AGROSCIENCES LLC
AND
MAKHTESHIM AGAN OF NORTH AMERICA, INC.
ON DRAFT BIOLOGICAL OPINION ON THE
EPA REGISTRATION OF PESTICIDES CONTAINING CHLORPYRIFOS,
DIAZINON AND MALATHION

September 15, 2008

This paper and its attachments constitute additional comments of Dow AgroSciences, LLC (“DAS”) and Makhteshim Agan of North America, Inc. (“MANA”) on the draft Biological Opinion on EPA Registration of Pesticides Containing Chlorpyrifos, Diazinon and Malathion (the “Draft BiOp”), first made available to DAS and MANA to review in early August, 2008.

Introduction

DAS holds registrations issued by EPA for a technical chlorpyrifos product and chlorpyrifos end-use products. It thus is an “applicant,” as that term is used in the Endangered Species Act (“ESA”),” as to EPA registration of pesticide products that contain chlorpyrifos as an active ingredient. MANA holds registrations for both chlorpyrifos and diazinon technical and end use products. It thus is an “applicant” as to EPA’s registrations of pesticide products that contain either as an active ingredient. . Nonetheless, the first opportunity MANA and DAS had to review the draft occurred after its public release, in early August, 2008, as a result of the previously-unannounced Stipulated Settlement Agreement in *NW Coalition for Alternative Pesticides, LLC., et al. v. NMFS* (W.D. Wash, No. 07-1791-RSL).

As MANA and DAS personnel explained at the meeting of registrants, NMFS and EPA held on August 29, this Draft BiOp is fundamentally flawed and its analysis largely irrelevant to current and future conditions.

The time that has since been allowed for comment has been insufficient to allow a detailed, line-by-line analysis of the draft, or even a full marshalling of all of the pertinent studies and other information NMFS should have considered before releasing it, even solely to EPA and the registrants (as required by NMFS’ regulations). Moreover, while MANA and DAS appreciated the opportunity to hear the NMFS staff’s explanation of the Draft BiOp on August 29 and the opportunity to present to the staff information with which the staff clearly was unfamiliar then and in a September 11 conference call, those discussions should be considered largely introductory. Even after those discussions and this submission, there remains considerable additional expertise that the companies are prepared to share with NMFS.

So the record is complete, we are including as Attachment A to these comments a copy of the agenda for the September 11 conference call, and the questions NMFS provided to the companies in advance of that call. The limited interactions to date between company and NMFS personnel have revealed a fundamental misunderstanding

on the part of the Service staff of pesticide registration and reregistration processes generally, and of the current and future registered uses of diazinon and chlorpyrifos in particular. For example, at the August 29 meeting one of the principal authors of the Draft BiOp asked a number of very basic questions about the reregistration process, such as whether Reregistration Eligibility Documents (“REDs”) address only uses for which changes are being made or to all uses, and whether REDs exist for all three molecules considered in the BiOp. These are appropriate questions, and the companies (and EPA) answered them, but it was alarming that NMFS did not previously understand these most basic facts. Moreover, it was clear on the September 11 conference call that, even almost two weeks after the meeting, NMFS staff had not yet had a chance to absorb much of the information that had been provided on August 29. For example, NMFS staff asked several questions that would have been answered by review of the chlorpyrifos and diazinon REDs or other publicly available information identified at the August 29 meeting.

Explanation of Attachments

DAS and MANA recognize that the consultation process requires NMFS to digest and evaluate an enormous amount of information about the legal status and use of the three chemicals addressed in this BiOp, their resulting presence in the pertinent habitat, the potential toxicological effects of that presence, and related matters. In the context of any pesticide products, this would be a very substantial task; in the context of chlorpyrifos and diazinon, which have been the subject of extraordinary study worldwide, as well as malathion, it is especially daunting. Within the time constraint established by NMFS and EPA, therefore, MANA and DAS have tried to provide as much information as possible, in as usable form as possible.

Thus, the attachments to these comments supplement the several hours of PowerPoint presentations made by the registrants on August 29. They provide both documentation of many points made in the oral presentations but not reflected on the slides used at that time (and, we understand, already in the record), plus additional information. Specifically:

- Attachment A, as noted above, includes the agenda for the September 11 conference call, and the list of pre-call questions provided by NMFS to EPA and hence to DAS and MANA.
- Attachment B is a copy of the two sets of slides presented by Dr. Poletika on August 29, showing additional notes relating to each. In addition, it includes four additional slides (at the end of the Attachment) that identify additional data sources that are available to NMFS.
- Attachment C is a copy of the slides presented by Mr. Rawlins on August 29, with specific citations to data sources added.
- Attachment D is a paper prepared by Dr. Everich, further explaining the points summarized on his August 29 slides, and also providing NMFS attention

additional pertinent information. A copy of the slides presented by Dr. Everich on August 29 also is included.

- Attachment E collects copies of supportive references and studies MANA and DAS have been able to compile in the short time period allowed, in response to NMFS' request that we submit these. A table of contents appears at the beginning of the Attachment. We regret that the time constraints imposed by NMFS have precluded MANA and DAS from specifying in their textual comments or slides the number assigned to cited studies in Attachment E, but trust that the table of contents will make the pertinent studies easy to find.

Key Aspects of the Regulatory Context and Experience

As noted above, in both the August 29 meeting and on the September 11 conference call NMFS revealed a lack of understanding about the FIFRA registration process in general, and the reregistration process and REDs in particular. MANA and DAS also have not had an opportunity to describe for NMFS in any complete way California's independent water and pesticide regulatory programs and their implications. We thus address both subjects in the remainder of these comments.¹

1. Reregistration and REDs.

Since FIFRA's enactment in 1947, "registration" of pesticide products – essentially licensing – has been required prior to their interstate distribution and sale. Registration identifies the particular uses to which the product may be put, defines the lawful amounts of the product that may be applied, and specifies application methods. These matters are described for users in the labeling that accompanies each individual pesticide product. *See generally* 40 C.F.R. Pt. 152. (EPA registration regulations).

Details of the registration scheme have evolved over the years. Initially, FIFRA enforcement was the responsibility of the Secretary of Agriculture. Registration authority was transferred to EPA shortly after that agency was created in 1970. Then, in 1972, Congress enacted a major set of amendments to FIFRA, the Federal Environmental Pesticide Control Act of 1972, Pub. L. No. 92-516, 86 Stat. 973 (1972). The 1972 amendments also made pesticide registrations renewable on a five-year basis and required EPA to reregister all then-registered products within four years.

By 1988, EPA had reregistered the products containing just five of the approximately 600 previously-registered pesticide active ingredients.² In response,

¹ DAS and MANA also have had an opportunity to review the comments on the Draft BiOp being provided to EPA and NMFS by Crop Life America, a trade association of which both companies are members, and incorporate those comments by reference in this submission.

² Some registrations are granted for "technical" products, which contain high concentrations of their active ingredient(s). Others are granted for "end-use" products, which contain formulations manufactured from a technical product. Typically, only a handful of companies obtain technical registrations for any particular

Congress added a new section to FIFRA and established a detailed, five-phase reregistration process for older products. The provision included a detailed description of what was to be done in each phase of the process. *See* FIFRA §4, 7 U.S.C. § 136a-1) Additional requirements were added in 1996, as part of the Food Quality Protection Act (“FQPA”). The current text of FIFRA may be found at www.epa.gov/pesticides/regulating/laws.htm.³

Both diazinon and chlorpyrifos have gone fully through the reregistration process, as a result of which substantial changes have been made within the last few years in their uses. EPA has integrated these reviews and presented its conclusions from them in REDs – each RED presents EPA’s updated human health and ecological risk assessments and its decision on the reregistration eligibility of a particular pesticide. Complete copies of the REDs can be found at www.epa.gov/pesticides/reregistration/REDs/diazinon_red.pdf and www.epa.gov/pesticides/reregistration/REDs/chlorpyrifos_red.pdf.

Significantly, especially in light of the vacuum in which NMFS has been working in preparing the Draft BiOp, the RED reflects not only EPA’s analysis, but the significant input the Agency has received throughout the reregistration process from registrants, stakeholders and other interested parties.

As a result of its reviews, EPA often determines (and documents in the RED) that mitigation steps are necessary to reduce the risk to agricultural workers, wildlife and the environment. Often, EPA then holds discussions with the technical registrants to determine how best to implement these measures. They can include the cancellation of certain uses and formulations, a reduction in the amount and frequency of use, employment of new engineering controls or enacting other protective measures. As EPA did with both chlorpyrifos and diazinon registrants, the Agency then often enters into Memoranda of Understanding with the registrants. These Memoranda require label revisions within specified periods.⁴ Even if all end-use registrants are not parties to these Memoranda, changes in all end-use registrations are mandated indirectly by prohibitions on sales of technical products (from which end use products are formulated) for use in any end use product that has not had its label amended to meet EPA’s requirements.

Thus, as a result of reregistration and the RED, all labels for products containing the covered active ingredient are amended. Furthermore, using a pesticide in a manner inconsistent with the label violates FIFRA and may result in enforcement actions. Thus,

active ingredient, but both they and many others may obtain registrations for end-use products that incorporate that active ingredient.

³ FIFRA also was amended several other times between 1972 and 1988. In 1975, Congress extended the reregistration deadline by one year. Pub. L. No. 94-140, § 4, 89 Stat. 751, 752 (1975). The reregistration deadline was dropped from the statute altogether in 1978. Pub. L. No. 95-396, § 28, 92 Stat. 819, 842 (1978).

⁴ If no agreement can be reached, EPA has authority to impose these requirements through an administrative process, but this has rarely proved necessary, and did not as to diazinon or chlorpyrifos.

the RED itself lists all uses of a pesticide that will be lawful when its requirements have been implemented. In the case of diazinon and chlorpyrifos, all the amendments required from the reregistration process have been made.

2. Additional Use Restrictions Arising State Programs and Requirements.

The last few years also have seen substantial changes in chlorpyrifos and diazinon usage because of activities by the states in which salmon habitat is found. FIFRA allows states to impose their own pesticide registration requirements, and states also have authority to regulate pesticide use impacts on the environment through other water, air and waste pollution control statutes. *See, e.g.*, the Clean Water Act (“CWA”), Section 303(d), 33 U.S.C. § 1313(d)(1). The state pesticide regulatory programs in Oregon, Idaho and Washington are not dramatically different from the Federal program, although some of those state’s other regulatory programs, such as Washington’s surface water pesticide monitoring program, have resulted in collection of a considerable amount of monitoring data that is relevant to the current consultation. That Washington data is available at <http://agr.wa.gov/PestFert/natresources/SWM/default.htm>.

California, however, recently has paid particular attention to the impacts of both urban and agricultural pesticide use on surface waters, including salmon habitat. This attention has had dramatic impacts on the use of chlorpyrifos and diazinon in many of the habitat areas with which NMFS is now concerned. We summarize these programs and their implications below.

a. TMDLs. After the enactment of the Federal Clean Water Act in 1972, each state was required to identify (“list”) segments of rivers and other waters within their boundaries that did not meet pollutant-specific water quality standards, even after implementation of water pollution control permit programs. *See CWA, supra*, Section 303. This identification of “impaired” waters intentionally does not require a close analysis of data, since its purpose is to serve as a screening mechanism for establishment of additional regulatory requirements.⁵ But the requirements that are to be imposed by states in response to impairment listings are quite specific. Among other things, states must identify total maximum daily loads (“TMDL”) for each impairing pollutant that further limit discharge of specific pollutants, and regulatory mechanisms to enforce those TMDLs.

In California, implementation of surface water quality programs rests with regional Water Quality Boards, under the supervision of the State Water Resources Board. The Central Valley Regional Water Quality Control Board (“Central Valley Board” or “Board”) is responsible for water quality for the huge agricultural region that

⁵ Thus, the Draft BiOp is incorrect in giving substantive significance to the fact that river segments which may be salmon habitat have been listed under Section 303 as “impaired” by chlorpyrifos or diazinon. Much of the monitoring data relied upon in making impairment designations is old and, therefore, in light of subsequent changes in permissible chlorpyrifos and diazinon use patterns and improved grower practices, irrelevant. Additionally, much of the monitoring data is of dubious quality.

makes up the Central Valley, and includes much of the salmon habitat identified in the Draft BiOp.

In 1994, the Central Valley Board listed the Sacramento and Feather Rivers as impaired by diazinon and chlorpyrifos. This listing required adoption of TMDLs for those constituents. In addition, acting under obligations created by the California water pollution control statute, the Board also amended its "Basin Plan" regulations to establish region-specific water quality objectives for diazinon and chlorpyrifos and a plan to reach those objectives.

Among other things, the Basin Plan amendment established an orchard runoff control program to protect the Sacramento and Feather Rivers. It required growers and other water dischargers to submit plans describing how they would control diazinon and chlorpyrifos discharges. The amended Basin Plan allowed collective actions to be undertaken through discharger groups or "coalitions." There are now nine separate coalitions operating in the Central Valley. More information on the Central Valley TMDL requirements and implementation can be found at http://www.swrcb.ca.gov/centralvalley/water_issues/tmdl/central_valley_projects/central_valley_pesticides/index.shtml. More information on coalition plans and performance can be found at http://www.swrcb.ca.gov/centralvalley/water_issues/irrigated_lands/index.shtml and at http://www.swrcb.ca.gov/centralvalley/water_issues/irrigated_lands/long_term_program_development/index.shtml. Monitoring data can be found at http://www.swrcb.ca.gov/centralvalley/water_issues/irrigated_lands/monitoring/index.shtml. All of these sites also provide links to additional relevant information.

b. WDRs. The Basin Plan amendments referenced above also served to implement "waste discharge requirements" ("WDRs") required under California's water pollution control law, the Porter Cologne Water Quality Control Act, 7 Cal. Water Cd. § 13000 *et seq.* Unlike Federal law, which requires permits only for pollutants "point source" discharges into waterways, the Porter Cologne Act also prohibits non-point source discharges. These include such things as runoff from farm fields.

When the Porter Cologne Act's requirements first came into effect, decades ago, the Central Valley Board adopted a waiver that exempted agricultural operations from these permits. However, in 1999 legislation was enacted in California that required regional water boards to review existing waivers and either to renew them (under certain conditions) or replace them with WDRs. In amending its Basin Plan, the Central Valley Board adopted a revised waiver from permit requirements, but one which was conditioned on dischargers (farmers, orchardists, etc.) meeting WDRs for chlorpyrifos, diazinon and a number of other pesticides and pollutants.

At the present time, about 80,000 growers farming over 9 million acres are subject to conditions of this waiver, which is often referred to as the "ag drainage waiver." Working through their respective coalitions, as referenced above, significant improvement in water quality has been attained.

c. California Department of Pesticide Regulation (“CDPR”) Reevaluations. As noted above, states may have independent pesticide registration and regulatory programs. California has the most comprehensive such program in the nation. It is implemented by the CDPR.

On February 20, 2003, the CDPR published notice of its intent to begin a “reevaluation” of pesticide products containing diazinon. (California Notice 2003-2.) CDPR initiated this reevaluation based on monitoring studies conducted between 1991 and 2001 that, it asserted, demonstrated the presence of diazinon in the Sacramento and San Joaquin valleys at levels that exceed the Department of Fish and Game’s (“DFG”) water quality criteria (“WQCs”), especially during the dormant spray season.

In response to this reevaluation, diazinon registrants were required to identify the processes by which diazinon dormant spray products contributed to detections of diazinon in surface water at levels that exceeded WQCs and to identify mitigation strategies that could reduce or eliminate diazinon residues in surface water. In addition, MANA and other diazinon registrants agreed to add additional directions to the labeling of all products sold for dormant spray use in California. These directions are now in place. (A copy of the “supplemental label” that documents them is included in Attachment E.)

Similarly, on March 16, 2004, CDPR initiated a reevaluation of chlorpyrifos products. (California Notice 2004-4.) It was based on data analogous to that described above in the diazinon context.

In response, DAS provided CDPR with references to research that identified mechanisms by which chlorpyrifos enters surface waters, and described numerous mitigation strategies and stewardship initiatives already underway. These included Federal label changes (arising from reregistration) that added buffer zones, restricted maximum use rates for certain corps, and restricted the number of applications allowed annually. DAS also continued its support of research initiatives on best management practices “BMPs”, including the use of enzymes to remediate pesticides from edge-of-filed runoff.

Some of the efforts of both companies in response to reevaluation (and, for that matter, the other regulatory programs described here) are being coordinated by the not-for-profit Coalition for Urban/Rural Environmental Stewardship, or “CURES.” Detailed information on CURES’ programs can be obtained at <http://www.curesworks.org>. A CDPR report on the registrants’ responses to these reevaluations and current status of those activities is California Notice 2008-3, and can be found at <http://www.cdpr.ca.gov/docs/registration/canot/2008/ca2008-3.pdf>.

d. CDPR’s Spray Drift Regulations. Largely as a result of the work described immediately above, CDPR promulgated “Dormant Spray Regulations” applicable to all pesticides except dormant spray oils and biological compounds. (The regulations thus apply to both diazinon and chlorpyrifos.) *See* CAL. CODE REGS.tit.3, § 6960. These regulations were based upon the provisions in the diazinon dormant spray supplemental

label and, like the label, now are in place in California. Additional information on CDPR's efforts with regard to spray drift can be found at <http://www.cdpr.ca.gov/docs/enforce/drftinit/drftmenu.htm>.

e. Summary of Impacts of the Restrictions and Revisions Described Above in California. The effects of all of the programs described above are demonstrated by a number of the monitoring reports. They also are a significant reason that reliance on historic data in evaluating future effects on salmonid habitat is inappropriate. (Most of the monitoring reports below are included in Attachment E.)

With regard to diazinon, for example, these studies are pertinent:

- Hall, Jr., L.W., (2003) "Historical Analysis of Diazinon from the San Joaquin River Watershed with Implications for Exceeding Water Quality Targets." Diazinon concentrations from 50 sites sampled during 1991 to 2001 show concentrations ranging from non-detected to 36.8 µg/L with the 90th percentiles for the 50 sites over the 10 year period ranging from 0.298 to 25.152 µg/L.
- Hall, Jr. L.W. (2002) "Analysis of Diazinon Monitoring Data From The Sacramento And Feather River Watersheds: 1991-2001." Diazinon concentrations from 27 different mainstem and tributary sites, at the 90th percentile, ranged from 0.012 to 14.9 µg/L.
- Hall, Jr., L.W. and R.D. Anderson, (June 2008) "Analysis of Diazinon Environmental Monitoring Data from the Sacramento and Feather River Watersheds: 2001-2007." A total of 2,285 diazinon measurements were available from 111 mainstem and tributary sites in the Sacramento/Feather River watersheds from 2001-2007. Six years of diazinon data ranging from 2001-2007 were available for three mainstem sites and four tributary sites. Based on regression analysis of annual mean values, temporal data for the three mainstem sites showed a consistent declining trend in diazinon concentrations from 2002-2007 and for two of these sites the declining trend was statistically significant. Most important, the various trend analyses all point to declining diazinon concentrations and significant reductions in the diazinon target exceedances for the Sacramento and Feather River watershed during the data summary time for 2001-2007.
- Central Valley Regional Water Quality Control Board, (May 16, 2006) "Irrigated Lands Program: Pesticides Detected in Water." Results from pesticide monitoring for the Irrigated Lands Conditional Waiver Program for August 2004 through September 2005 detections of diazinon ranged from 0.004 to 3.6 µg/L with 40 samples exceeding the 0.16 µg/L objective. None of the exceedances were in main stem water bodies. Note that the Diazinon dormant spray regulations were approved by DPR on March 19, 2004 and probably had minimum impact on changes in spray practices for the winter 2003/2004 dormant spray season.

- Sacramento Valley Water Quality Coalition “Diazinon Runoff Management Plan for Orchard Growers in the Sacramento Valley: 2006 Annual Report.” No samples collected at any of the five compliance monitoring locations (35 samples) exceeded the USEPA national criterion or the proposed San Joaquin/Sacramento River objective of 0.16 µg/L. Verbal reports from David Guy at the Sacramento Valley Coalition indicate no exceedances at any of the 2007 collection sites.
- Sacramento Valley Water Quality Coalition, (June 2, 2008) “Diazinon Runoff Management Plan for Orchard Growers in the Sacramento Valley: 2007 Annual Report.” This study was submitted to the Regional Water Quality Control Board by the Sacramento Valley Coalition. In this Annual Report, two of the thirty-five samples collected at the five compliance monitoring locations in 2008 exceeded adopted concentration-based TMDL objectives for diazinon. Neither of the two exceedances was from dormant applications.

With regard to chlorpyrifos, the following studies are also pertinent:

- Giddings, J.M., Poletika, N.N., Havens, P.L., Hendrix, W.H., and Woodburn, K.B. (2003) “Chlorpyrifos Analysis of Risks to endangered and Threatened Salmon and Steelhead”, Dow AgroSciences Unpublished Report GH-C 5638, MRID 46025301.
- Giesy, J.P, Solomon, K. R., Coats, J.R., Dixon, K., Giddings, J., and Kenaga, E.E. (1999) “Ecological Risk Assessment of Chlorpyrifos in North American Aquatic Environments,” *Rev. Environ. Contam. Toxicol.* 160:1-129, MRID 44696701.
- Poletika, N.N., Woodburn, K.B., and Henry, K.S. (2002). “An Ecological Risk Assessment for Chlorpyrifos in an Agriculturally Dominated Tributary of the San Joaquin River.” *Risk Anal.* 22:291-308. MRID 44711601.
- Hall, Jr., L.W., Killen, W.D., and Alden III, R.W. (2007). “Relationship of Farm Level Pesticide Use and Physical Habitat on Benthic Community Status in a California Agricultural Stream.” *Human Ecol. Risk Assess.* 13:843-869.
- Van Wijngaarden, R.P.A, Brock, T.C.M., and van den Brink, P.J. (2005). “Threshold Levels for Effects of Insecticides in Freshwater Ecosystems: A Review.” *Ecotoxicol.* 14:355-380.

Conclusion

As these comments and MANA and DAS’ prior submissions to NMFS and EPA in the last three weeks demonstrate, there is an enormous amount of pertinent and reliable information on the current and future ecological implications of diazinon and chlorpyrifos registrations that NMFS did not consider in preparing the Draft BiOp. DAS and MANA fully understand the challenge facing NMFS in mastering this information and, on the basis of that mastery, consulting with EPA and the applicants about what

additional mitigation actions might be required to protect threatened or endangered salmonids. The companies are hopeful that this submission will assist NMFS in that task, and remain fully prepared to provide further information and guidance to Service personnel as they fulfill their responsibilities.